July 2017 | Initial Study/Mitigated Negative Declaration

TEMECULA VALLEY CHARTER SCHOOL

County of Riverside

Prepared for:

County of Riverside
Contact: Larry Ross
4080 Lemon Street, 12th Floor
Riverside, California 92502
951.955.9294

Prepared by:

PlaceWorks
Contact: Dwayne Mears, Principal, Schools Facilities Planning
3 MacArthur Place, Suite 1100
Santa Ana, California 92707
714.966.9220
info@placeworks.com
www.placeworks.com

PLACEWORKS

Table of Contents

Table of Contents

APPENDICES

List of Figures

List of Tables

Table of Contents

Abbreviations and Acronyms

AAQS	ambient air quality standards
AB	Assembly Bill
ACM	asbestos-containing materials
ADT	average daily traffic
amsl	above mean sea level
AQMP	air quality management plan
AST	aboveground storage tank
BAU	business as usual
bgs	below ground surface
BMP	best management practices
CAA	Clean Air Act
CAFE	corporate average fuel economy
CalARP	California Accidental Release Prevention Program
CalEMA	California Emergency Management Agency
Cal/EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
Cal/OSHA	California Occupational Safety and Health Administration
CalRecycle	California Department of Resources, Recycling, and Recovery
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDE	California Department of Education
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
cfs	cubic feet per second
CGS	California Geologic Survey
CMP	congestion management program
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level

Abbreviations and Acronyms

CO	carbon monoxide
CO_2e	carbon dioxide equivalent
Corps	US Army Corps of Engineers
CSO	combined sewer overflows
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
EIR	environmental impact report
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GHG	greenhouse gases
GWP	global warming potential
HCM	Highway Capacity Manual
HQTA	high quality transit area
HVAC	heating, ventilating, and air conditioning system
IPCC	Intergovernmental Panel on Climate Change
L_{dn}	day-night noise level
L_{eq}	equivalent continuous noise level
LBP	lead-based paint
LCFS	low-carbon fuel standard
LOS	level of service
LST	localized significance thresholds
M_W	moment magnitude
MCL	maximum contaminant level
MEP	maximum extent practicable
mgd	million gallons per day
MMT	million metric tons

Abbreviations and Acronyms

MPO	metropolitan planning organization
MT	metric ton
MWD	Metropolitan Water District of Southern California
NAHC	Native American Heritage Commission
NO_X	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
O_3	ozone
OES	California Office of Emergency Services
PM	particulate matter
POTW	publicly owned treatment works
ppm	parts per million
PPV	peak particle velocity
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
RMP	risk management plan
RMS	root mean square
RPS	renewable portfolio standard
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SIP	state implementation plan
SLM	sound level meter
SoCAB	South Coast Air Basin
SO_X	sulfur oxides
SQMP	stormwater quality management plan
SRA	source receptor area [or state responsibility area]
SUSMP	standard urban stormwater mitigation plan
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TNM	transportation noise model

Abbreviations and Acronyms

tpd	tons per day
TRI	toxic release inventory
TTCP	traditional tribal cultural places
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
UWMP	urban water management plan
V/C	volume-to-capacity ratio
VdB	velocity decibels
VHFHSZ	very high fire hazard severity zone
VMT	vehicle miles traveled
VOC	volatile organic compound
WQMP	water quality management plan
WSA	water supply assessment

1. Introduction

The Temecula Valley Charter School Board of Directors is seeking approval from Riverside County for development of a public charter school for 600 K-8 students in the community of French Valley in unincorporated Riverside County. Temecula Valley Charter School is proposing to relocate an existing charter school campus from 35755 Abelia Street in French Valley (about 1.4 miles southeast of the proposed project site) to the proposed campus—two parcels on the west side of Winchester Road (State Route 79) between Keller Road and Pourroy Road.

1.1 PROJECT LOCATION

The project site is in the unincorporated community of French Valley in western Riverside County. French Valley is surrounded by unincorporated county to the south and east; unincorporated county and the City of Menifee to the north; and the City of Murrieta and unincorporated county to the west (see Figure 1, *Regional Location*). French Valley is part of the larger San Jacinto Basin, a broad valley interspersed with hills that spans much of western Riverside County. The basin is bounded by the Santa Ana Mountains on the southwest and the San Jacinto Mountains on the northeast. Regional access to the site is via Winchester Road (SR-79), which passes next to the eastern site boundary.

The project site is about 14.6 acres and consists of two parcels: Assessor's Parcels Number (APN) 476010059 and APN 476010013. The site is about 1,120 feet north of the intersection of SR-79 with Pourroy Road/Abelia Street (see Figure 2, *Local Vicinity*). The proposed school site is approximately 8.5 acres, consisting of all of parcel -059 and the east edge and southeastern part of parcel -013.

An unnamed existing road, partly paved and partly dirt, provides access from SR-79 to the residences on the western parcel.

The site includes approximately 1,235 linear feet of Koon Street along the southern site boundary. The project would develop Koon Street to its ultimate half-width, or about 18 feet wide including curb and gutter; the area of Koon Street to be developed would be about 0.5 acre.

The project would also develop the eastern half-width of a segment of Pourroy Road, currently a dirt road, extending from its intersection with Flossie Way about 385 feet south to an existing paved segment of Pourroy Road. The area of Pourroy Road to be developed is about 0.16 acre.

In this document, "project site" refers to the two parcels totaling 14.6 acres plus the sites of the two roadway improvements that total about 0.65 acres. "School site" refers to the 8.5-acre site of the proposed school.

1.2 ENVIRONMENTAL SETTING

1.2.1 Existing Land Use

The western parcel is developed with two single-family residences, one garage, and two above-ground water tanks. The eastern parcel is vacant and appeared to have been tilled shortly before a site visit on July 21, 2016 (see Figure 3, *Aerial Photograph,* and Figures 4 and 5, *Site Photographs*).

1.2.2 Surrounding Land Use

The project site is surrounded by rural residential uses to the west and north; a single-family home abuts the northern site boundary on west. The project site is surrounded by vacant land to the south and by vacant land and agricultural uses to the east across SR-79 (see Figure 3, *Aerial Photograph*). Lake Skinner Recreation Area is about 1.7 miles to the southeast, and Diamond Valley Lake is about 3 miles to the northeast. Interstate 215 is about 4.1 miles to the west. Two concrete culverts pass under SR-79 east of the project site, carrying stormwater southeastward under the roadway.

1.3 PROJECT DESCRIPTION

1.3.1 Proposed Land Use

The project consists of construction and operation of a K-8 charter school for 600 students. Six one-story school buildings, totaling about 44,998 square feet of building area, would be clustered in the east-central part of the project site around a quad (see Figure 6, *Site Plan*). The buildings would consist of four classroom buildings containing 31 classrooms and totaling 27,180 square feet; a 9,468-square-foot multipurpose building; and an 8,350-square-foot administration building. The multipurpose building, which would be built in the south-central part of the project site, would be about 27 feet high, and the four classroom buildings would each be about 18 feet high (see Figures 7, *Elevations, Multipurpose Building,* and 8, *Elevations, Classroom Building C2*).

Most of the westerly parcel onsite would be left as is. The vacant single-story residence atop the hill in the northwestern part of the project site, and the garage, two aboveground water tanks and a concrete pad in the west-central part of the project site would remain. A mobile home in the west-central part of the project site would be removed.

The northwestern part of the project site, a hill topped by a vacant single-family residence, would be left as is.

Athletic Facilities

Athletic facilities would consist of the multipurpose room, and a soccer field in the southwest corner of the school site.

Access and Parking

School site access would be via Koon Street, currently a paper street, which would begin at the Flossie Way/Pourroy Road, extend along the project site's southern boundary and end in a cul-de-sac at SR-79. School access from the Koon Street cul-de-sac would be via two 1-way driveways forming an elongated one-way loop next to the east site boundary, with the school's 100-space parking lot in the center of the loop. A fire land would extend over paved areas around the school buildings. A flow-through drop-off lane would loop around the periphery of the parking lot.

A new driveway would be built just west of the campus connecting an existing driveway from the remaining residence on the hill to Koon Street.

Project development would also include paving approximately 385 feet of Pourroy Road extending south from the intersection of Koon Street to a currently paved portion of Pourroy Road. The areas of Koon Street and Pourroy Road that would be developed would total about 0.65 acre.

Landscaping

About 3.3 acres of landscaping would be installed; the majority of which would be in the southwest part of the school site and would include the new soccer field; with most of the remainder being along the northeast campus perimeter (see Figure 5, *Site Plan*).

Hardscape

The project proposes development of about 180,500 square feet, or about 4.1 acres, of pavement, including a surface parking lot, driveways, and walkways.

1.3.2 Project Operation

Staff

Project operation would employ about 40 faculty and staff.

Calendar and Schedule

Currently, student school days on the academic calendar of the existing Temecula Valley Charter School for the 2016-17 school year extend from August 17, 2016, to June 2, 2017. However, the academic calendar for the opening year of the charter school (which is anticipated for fall of 2018) and beyond may change based on the needs of the Temecula Valley Charter School or Temecula Valley Unified School District.

The schedule for the existing Temecula Valley Charter School extends from 8:50 AM to 2:50 PM for elementary grades, and from 7:55 AM to 2:50 PM for middle school grades, on Mondays, Tuesdays, Thursdays, and Fridays; school is dismissed early at 1:45 PM for all grades on Wednesdays. However, the calendar and schedule will be subject to change based on the needs of the school or the Temecula Valley Unified School District.

1.3.3 Project Phasing

Site Clearance

Site clearance would include removal of the mobile home in the west-central part of the project site.

Construction

The overall construction schedule is one year, from summer/fall 2017 through summer 2018.

- **Site Preparation and Grading.** School site preparation and grading are expected to take about two months, commencing in summer 2017. The school site is expected to be balanced, with no soil export or import anticipated. A total of 8.5 acres of the school site would be disturbed during project construction.

- **Utility Trenching.** Utility Trenching is anticipated to take approximately one month, August 2017.

- **Building Construction.** Building construction is scheduled for nine months, September 2017 through May 2018.

- **Asphalt Paving, Finishing, and Landscaping.** Asphalt paving, finishing, and landscaping are expected to be completed in one month, May 2018.

- **Architectural Coating.** Architectural coating is anticipated to take three months, March through May 2018.

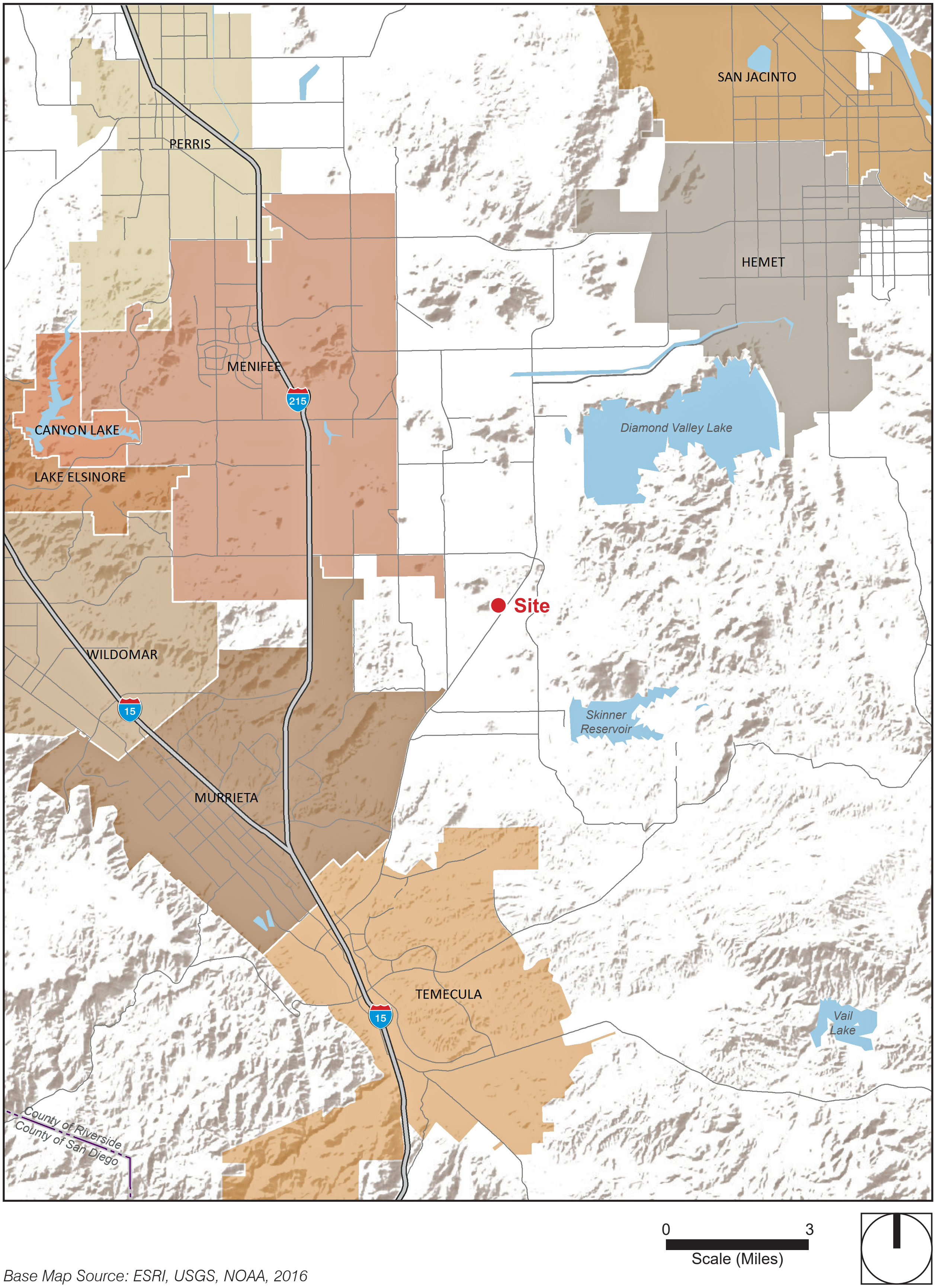
1.4 EXISTING ZONING AND GENERAL PLAN

The existing zoning and Riverside County General Plan designations for the project site are both Rural Residential (R-R); the R-R zone permits development of single-family residences. Schools are permitted in the R-R zoning with a Public Use Permit.

1.5 COUNTY ACTION REQUESTED

- Adoption of the Mitigated Negative Declaration for CEQA clearance
- Approval of Development Plan
- Approval of Public Use Permit (PUP00931)

Figure 1 - Regional Location
1. Introduction

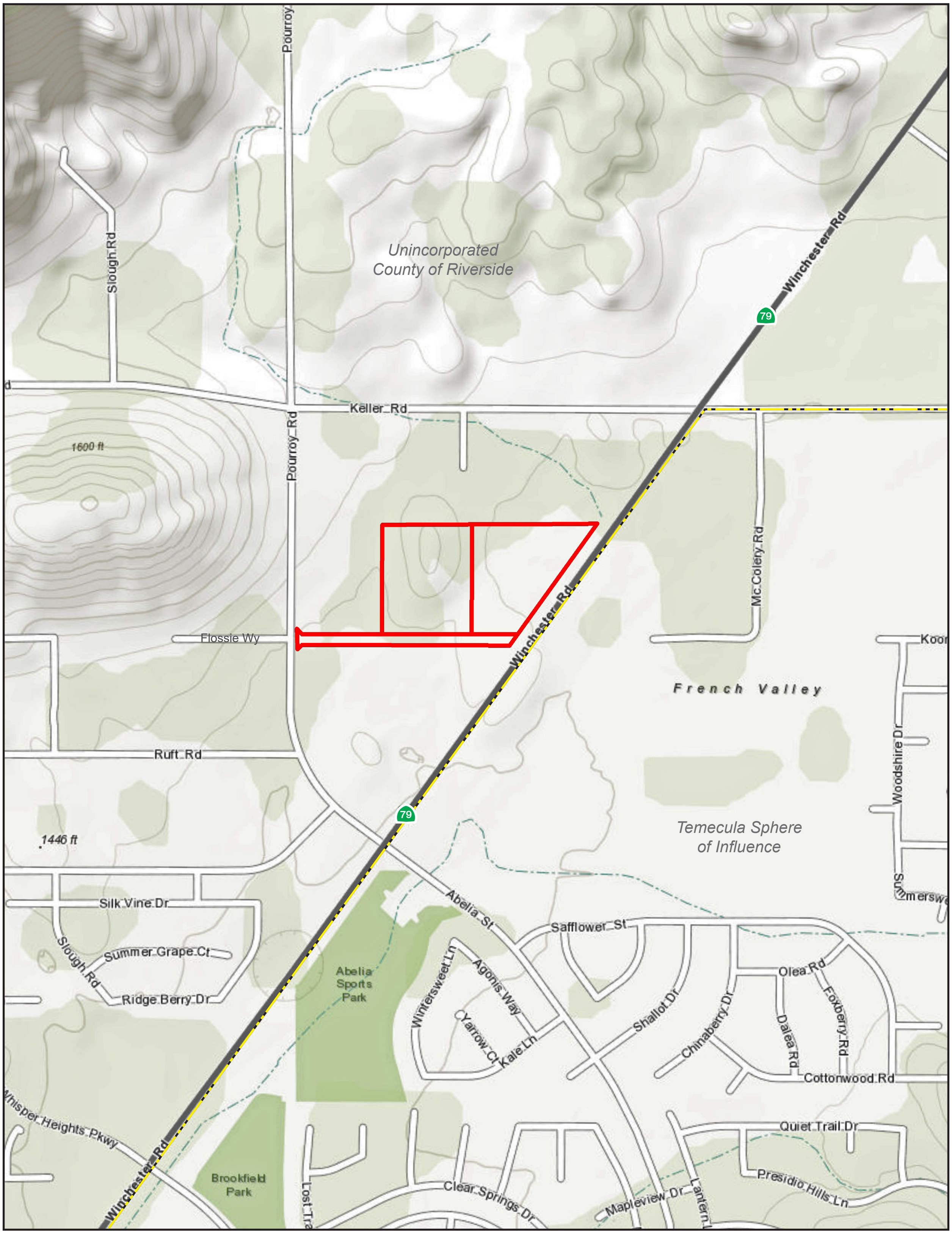


Base Map Source: ESRI, USGS, NOAA, 2016

1. Introduction

This page intentionally left blank.

Figure 2 - Local Vicinity
1. Introduction



Project Boundary   Temecula Sphere of Influence Boundary   0   1,000
Scale (Feet)

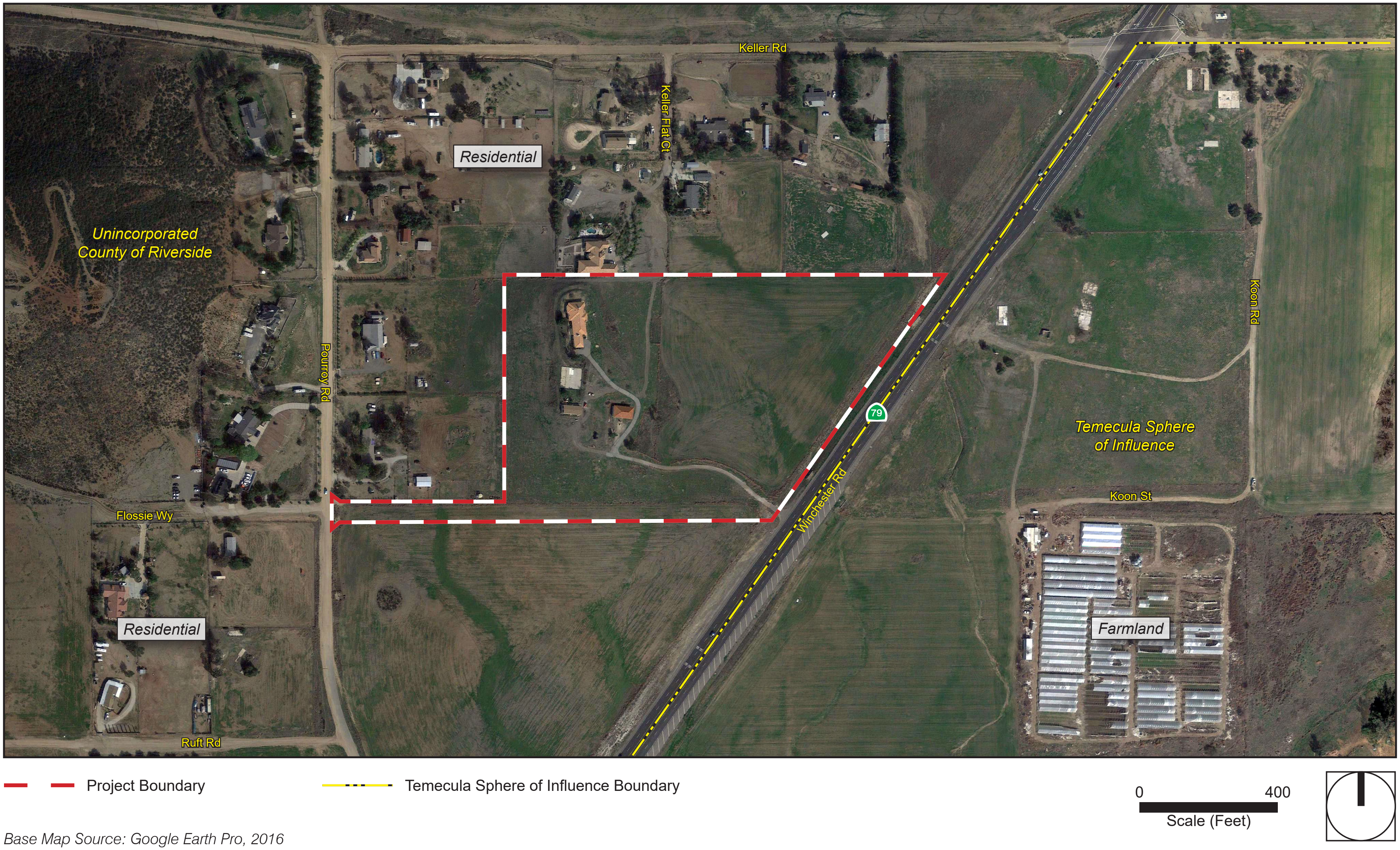
Base Map Source: ESRI, USGS, NOAA, 2016

1. Introduction

This page intentionally left blank.

Figure 3 - Aerial Photograph

1. Introduction



Base Map Source: Google Earth Pro, 2016

1. Introduction

This page intentionally left blank.

Figure 4 - Site Photographs
1. Introduction

View looking northeast from the south part of the project site.

View looking northwest from the east part of the site.

1. Introduction

This page intentionally left blank.

Figure 5 - Site Photographs
1. Introduction

View looking west across the site from the northeast corner of the site.

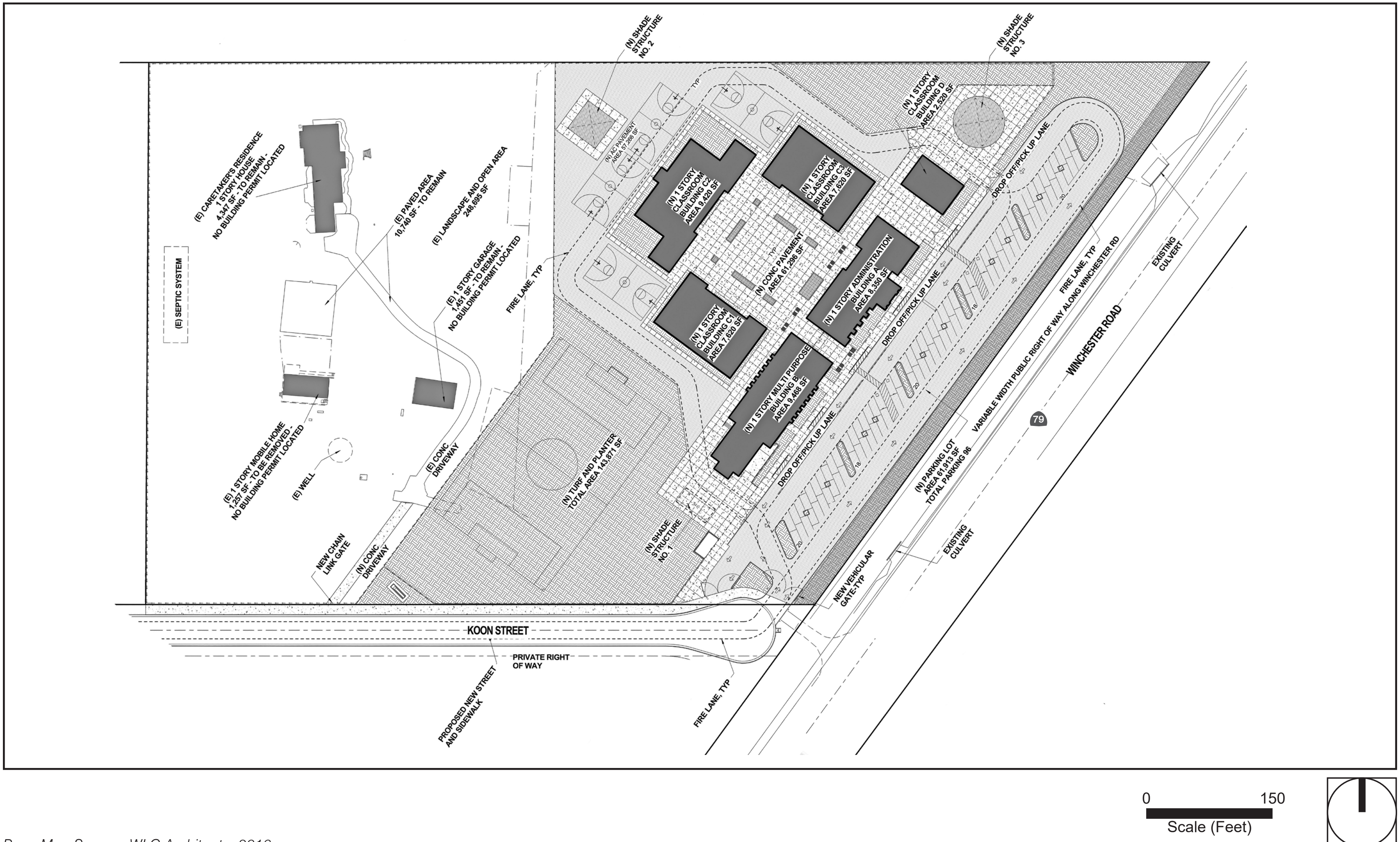
View looking south across the site from the north part of the site

1. Introduction

This page intentionally left blank.

Figure 2 - Site Plan

1. Introduction

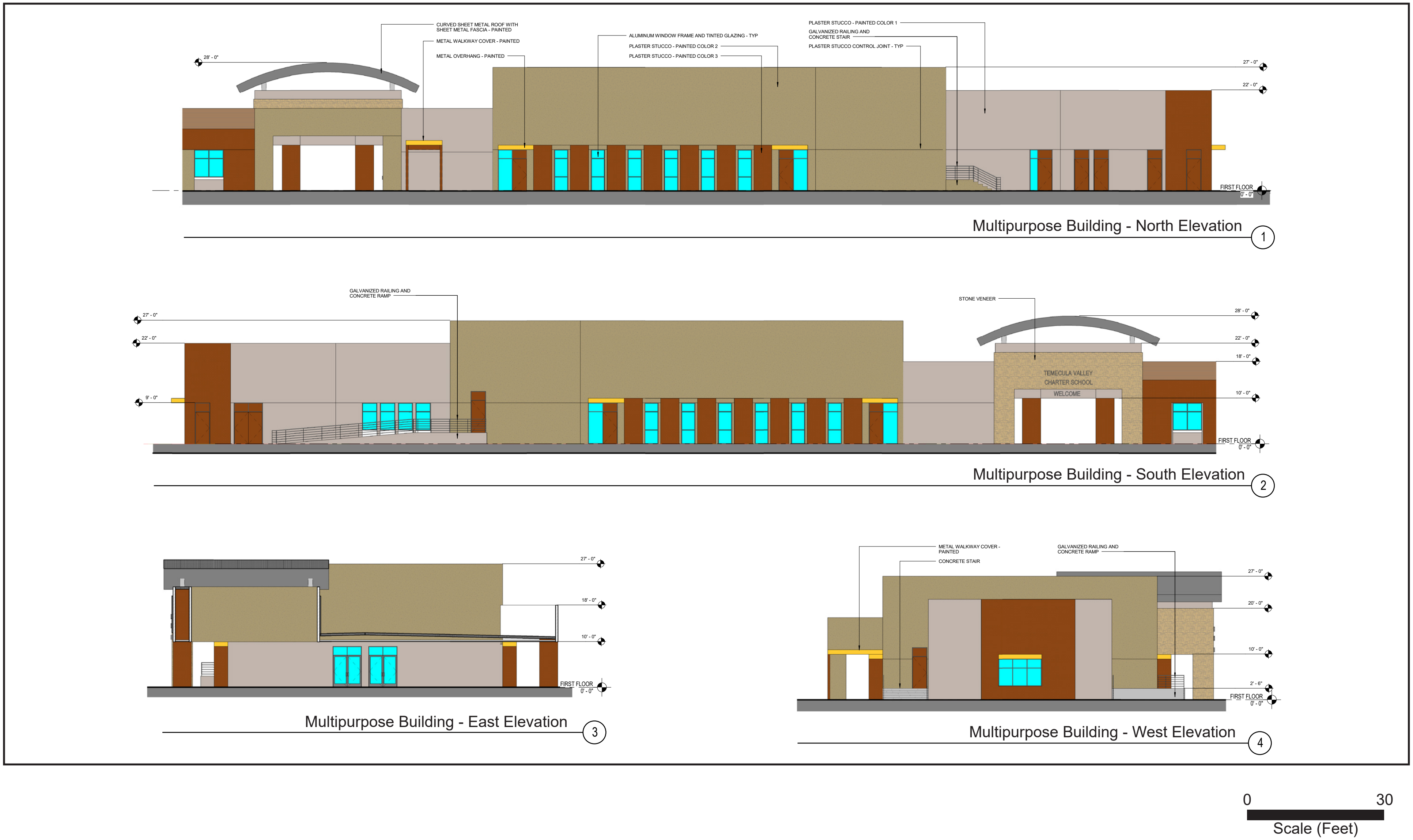


Base Map Source: WLC Architects, 2016

This page intentionally left blank.

Figure 7 - Elevations, Multipurpose Building

1. Introduction



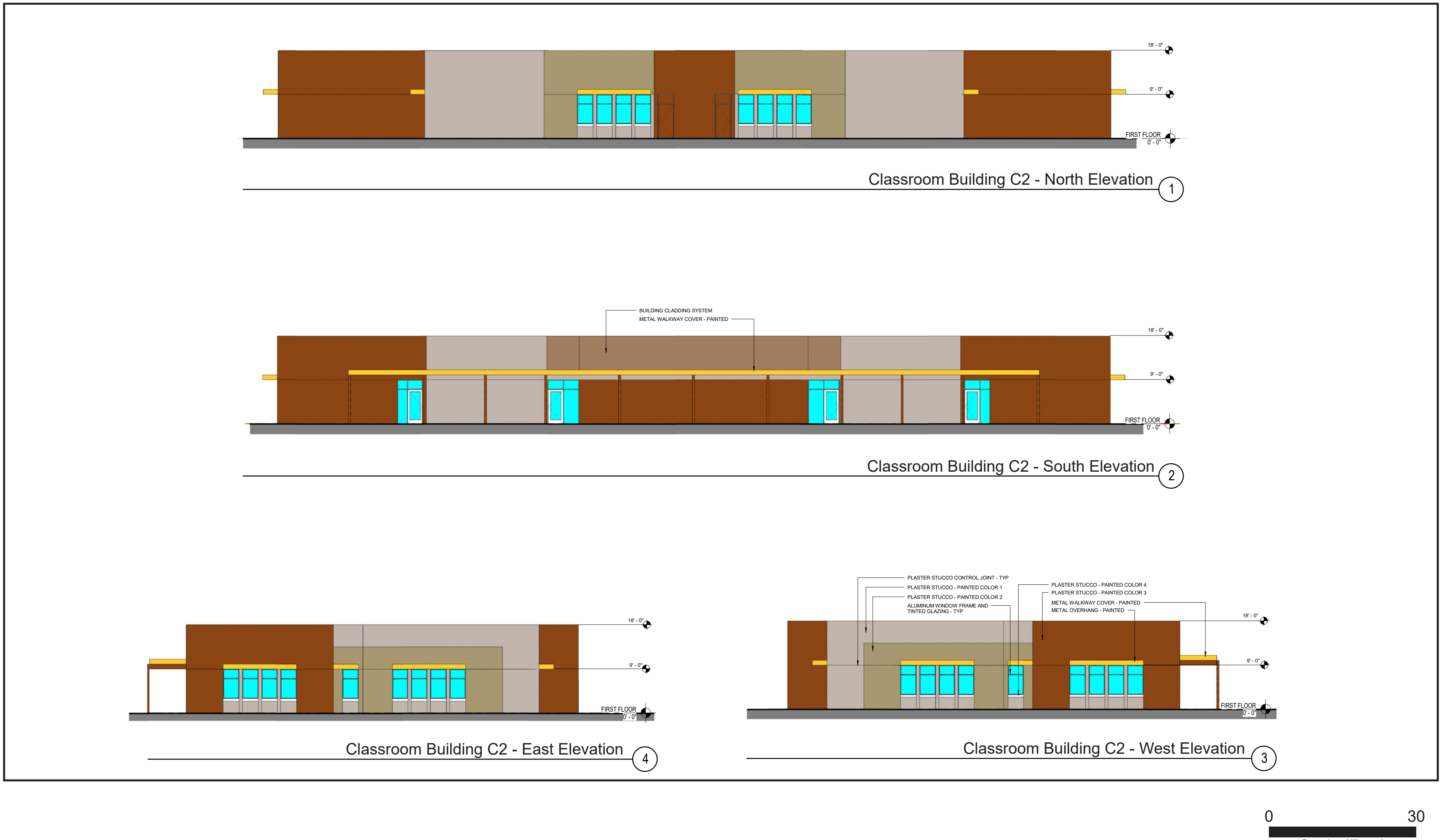
Base Map Source: WLC Architects, 2016

1. Introduction

This page intentionally left blank.

Figure 8 - Elevations, Classroom Building C2

1. Introduction



Base Map Source: WLC Architects, 2016

1. Introduction

This page intentionally left blank.

2. Environmental Checklist

2.1 BACKGROUND

1. **Project Title:** Temecula Valley Charter School

2. **Lead Agency Name and Address:**
   County of Riverside Planning Department
   4080 Lemon Street, 12th Floor
   Riverside, CA 92502

3. **Contact Person and Phone Number:**
   Larry Ross, Principal Planner
   951.955.9294

4. **Project Location:**
   The 14.6-acre project site is in the community of French Valley in western Riverside County. The site is on the west side of SR-79, approximately 780 feet southeast of the intersection of Keller Road and SR-79.

5. **Project Sponsor's Name and Address:**
   Temecula Valley Charter School
   35755 Abelia Street
   Winchester, CA 92596

6. **General Plan Designation:** Rural Residential

7. **Zoning:** Rural Residential (R-R)

8. **Description of Project:**
   The proposed project would be a public charter school for 600 students in grades K-8.

9. **Surrounding Land Uses and Setting:**
   The project site is surrounded by rural residential uses to the west and north; a single-family home abuts the northern site boundary on west. The project site is surrounded by vacant land to the south and by vacant land and agricultural uses to the east across SR-79. Lake Skinner Recreation Area is about 1.7 miles to the southeast, and Diamond Valley Lake is about 3 miles to the northeast. Interstate 215 is about 4.1 miles to the west. Two concrete culverts pass under SR-79 east of the project site, carrying stormwater southeastward under the roadway.

2. Environmental Checklist

10. Other Public Agencies Whose Approval Is Required:

- San Diego Regional Water Quality Control Board

2.2 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact," or "Less than Significant with Mitigation Incorporated" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture / Forestry Resources	☐ Air Quality
☐ Biological Resources	☒ Cultural Resources	☒ Geology / Soils
☐ Greenhouse Gas Emissions	☐ Hazards / Hazardous Materials	☐ Hydrology / Water Quality
☐ Land Use / Planning	☐ Mineral Resources	☐ Noise
☐ Population / Housing	☐ Public Services	☐ Recreation
☐ Transportation / Traffic	☐ Utilities / Service Systems	☐ Mandatory Findings of Significance

2.3 DETERMINATION (TO BE COMPLETED BY THE LEAD AGENCY)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Larry E. Ross | 7-7-17

Signature | *Date*

Larry Ross, Project Planner | Charissa Leach, P.E., Assistant TLMA Director

Printed Name | *For*

2.4 EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors, as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) **Earlier Analyses Used.** Identify and state where they are available for review.

   b) **Impacts Adequately Addressed.** Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) **Mitigation Measures.** For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated. A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

2. Environmental Checklist

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and

   b) the mitigation measure identified, if any, to reduce the impact to less than significant.

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS.				
1. SCENIC RESOURCES. Would the project:				
a) Have a substantial effect upon a scenic highway corridor within which it is located?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and unique or landmark features; obstruct any prominent scenic vista or view open to the public; or result in the creation of an aesthetically offensive site open to public view?			X	
2. MT. PALOMAR OBSERVATORY. Would the project:				
a) Interfere with the nighttime use of the Mt. Palomar Observatory, as protected through Riverside County Ordinance No. 655?			X	
3. OTHER LIGHTING ISSUES. Would the project:				
a) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	
II. AGRICULTURE AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				
4. AGRICULTURE. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract or land within a Riverside County Agricultural Preserve?				X
c) Cause development of non-agricultural uses within 300 feet of agriculturally zoned property (Ordinance No. 625 "Right-to-Farm")?				X

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X
5. FOREST. Would the project:				
a) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				X
b) Result in the loss of forest land or conversion of forest land to non-forest use?				X
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of forest land to non-forest use?				X
III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.				
6. AIR QUALITY IMPACTS. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			X	
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	
d) Expose sensitive receptors to substantial pollutant concentrations?			X	
e) Involve the construction of a sensitive receptor located within one mile of an existing substantial point source emitter?				
f) Create objectionable odors affecting a substantial number of people?			X	
g) Is the boundary of the proposed school site within 500 feet of the edge of the closest traffic lane of a freeway or busy traffic corridor? If yes, would the project create an air quality health risk due to the placement of the School?				X
h) Would the project create an air quality hazard due to the placement of a school within one-quarter mile of: (a) permitted and nonpermitted facilities identified by the jurisdictional air quality control board or air pollution control district; (b) freeways and other busy traffic corridors; (c) large agricultural operations; and/or (d) a rail yard, which might reasonably be anticipated to emit hazardous air emissions, or handle hazardous or acutely hazardous material, substances, or waste?			X	

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES.				
7. WILDLIFE AND VEGETATION. Would the project:				
a) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?			X	
b) Have a substantial adverse effect, either directly or through habitat modifications, on any endangered, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12)?			X	
c) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U. S. Wildlife Service?			X	
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	
e) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?				X
f) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
g) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
V. CULTURAL RESOURCES.				
8. HISTORIC RESOURCES. Would the project:				
a) Alter or destroy an historic site?				X
b) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?		X		
9. ARCHAEOLOGICAL RESOURCES. Would the project:				
a) Alter or destroy an archaeological site?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?		X		
c) Disturb any human remains, including those interred outside of formal cemeteries?			X	
d) Restrict existing religious or sacred uses within the potential impact area?				X

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
10. TRIBAL CULTURAL RESOURCES. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c). of Public Resources Code Section 5024.1 for the purpose of this paragraph, the lead agency shall consider the significance to a California Native tribe.		X		
VI. GEOLOGY AND SOILS. Would the project:				
11. ALQUIST-PRIOLO EARTHQUAKE FAULT ZONE OR COUNTY FAULT HAZARD ZONES				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death				X
b) Be subject to rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?				X
12. LIQUEFACTION POTENTIAL ZONE				
a) Be subject to seismic-related ground failure, including liquefaction?			X	
13. GROUND-SHAKING ZONE				
a) Be subject to strong seismic ground shaking?			X	
14. LANDSLIDE RISK				
a) Be located on a geologic unit or soil that is unstable, or that would become unstable due to the project, and potentially result in on- or off-site landslide, lateral spreading, collapse, or rockfall hazards?			X	
15. GROUND SUBSIDENCE				
a) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in ground subsidence?			X	
16. OTHER GEOLOGIC HAZARDS				
a) Be subject to geologic hazards, such as seiche, mudflow, or volcanic hazard?			X	
17. SLOPES				
a) Change topography or ground surface relief features?			X	
b) Create cut or fill slopes greater than 2:1 or higher than 10 feet?				X
c) Result in grading that affects or negates subsurface sewage disposal systems?				X

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
18. SOILS				
b) Result in substantial soil erosion or the loss of topsoil?			X	
b) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X	
c) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
19. EROSION				
a) Change deposition, siltation, or erosion that may modify the channel of a river or stream or the bed of a lake?			X	
b) Result in any increase in water erosion either on or off site?			X	
20. WIND EROSION AND BLOWSAND FROM PROJECT EITHER ON OR OFF SITE				
a) Be impacted by or result in an increase in wind erosion and blows and, either on or off site?			X	
21. PALEONTOLOGICAL RESOURCES				
a) Directly or indirectly destroy a unique paleontological resource, or site, or unique geologic feature?		X		
VII. GREENHOUSE GAS EMISSIONS. Would the project:				
22. GREENHOUSE GAS EMISSIONS				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	
VIII. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
23. HAZARDS AND HAZARDOUS MATERIALS				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
d) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
e) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?			X	

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
24. AIRPORTS				
a) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
b) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
25. HAZARDOUS FIRE AREA				
A) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			X	
IX. HYDROLOGY AND WATER QUALITY. Would the project:				
26. WATER QUALITY IMPACTS				
a) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in a substantial erosion or siltation on- or off-site.			X	
b) Violate any water quality standards or waste discharge requirements?			X	
c) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	
d) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?			X	
e) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
f) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
g) Otherwise substantially degrade water quality?			X	
h) Include new or retrofitted stormwater Treatment Control Best Management Practices (BMPs) (e.g. water quality treatment basins, constructed treatment wetlands), the operation of which could result in significant environmental effects (e.g. increased vectors or odors)?			X	
27. FLOODPLAINS				
a) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in a substantial erosion or siltation on- or off-site			X	

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Changes in absorption rates or the rate and amount of surface runoff?			X	
c) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
d) Changes in the amount of surface water in any water body?				X
X. LAND USE AND PLANNING. Would the project:				
28. LAND USE				
a) Result in a substantial alteration of the present or planned land use of an area?			X	
b) Affect land use within a city sphere of influence and/or within adjacent city or county boundaries?			X	
29. PLANNING				
a) Be consistent with the site's existing or proposed zoning?				X
b) Be compatible with existing surrounding zoning?				X
c) Be compatible with existing and planned surrounding land uses?				X
d) Be consistent with the land use designations and policies of the General Plan (including those of any applicable Specific Plan)?				X
e) Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)?				X
XI. MINERAL RESOURCES. Would the project:				
30. MINERAL RESOURCES				
a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?			X	
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
c) Be an incompatible land use located adjacent to a State classified or designated area or existing surface mine?				X
d) Expose people or property to hazards from proposed, existing or abandoned quarries or mines?				X
XII. NOISE. Would the project result in:				
31. AIRPORT NOISE				
a) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
b) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
32. RAILROAD NOISE				
a) For a project within 0.25 mile of a railroad track, would the project expose people residing or working in the project area to excessive noise levels?				X
33. HIGHWAY NOISE				
a) Would project-generated traffic cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
34. OTHER NOISE				
a) Would the project include stationary sources of noise generating a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
35. NOISE EFFECTS ON OR BY THE PROJECT				
a) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
b) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
c) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
d) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			X	
XIII. POPULATION AND HOUSING. Would the project:				
36. HOUSING				
a) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?			X	
b) Create a demand for additional housing, particularly housing affordable to households earning 80% or less of the County's median income?			X	
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?			X	
d) Affect a County Redevelopment Project Area?				X
e) Cumulatively exceed official regional or local population projections?			X	
f) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			X	

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
37. FIRE SERVICES			X	
38. SHERIFF SERVICES			X	
39. SCHOOLS				X
40. LIBRARIES				X
41. HEALTH SERVICES				X
XV. RECREATION.				
42. PARKS AND RECREATION				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
b) Would the project include the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated?				X
c) Is the project located within a Community Service Area (CSA) or recreation and park district with a Community Parks and Recreation Plan (Quimby fees)?				X
43. RECREATIONAL TRAILS				
a) Would the project adversely affect a recreational trail or bikeway included in the Riverside County Southwest Area Plan Trails and Bikeway System?				X
XVI. TRANSPORTATION/TRAFFIC. Would the project:				
44. CIRCULATION				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			X	
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			X	
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d) Alter waterborne, rail, or air traffic?				X

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
f) Cause an effect upon, or a need for new or altered maintenance of roads?			X	
g) Cause an effect upon circulation during the project's construction?			X	
h) Result in inadequate emergency access?			X	
i) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				X
45. BIKE TRAILS				
a) Would the project adversely affect a bikeway included in the Riverside County Southwest Area Plan Trails and Bikeway System?				X
XVII. UTILITIES AND SERVICE SYSTEMS. Would the project:				
46. WATER				
a) Require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
d) Have sufficient water supplies available to serve the project from existing entitlements and resources or are new or expanded entitlements needed?			X	
47. SEWER				
a) Require or result in the construction of new waste water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			X	
e) Result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	
48. SOLID WASTE				
a) Is the project served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	
b) Does the project comply with federal, state, and local statutes and regulations related to solid wastes including the CIWMP (County Integrated Waste Management Plan)?				X
49. UTILITIES				
a. Electricity			X	
b. Natural Gas			X	
c. Communication Systems			X	
d. Strom Water Drainage			X	
e. Street Lighting			X	
f) Maintenance of public facilities, including roads?			X	

2. Environmental Checklist

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Other Governmental Services?			X	
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			X	
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)			X	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	

2. Environmental Checklist

This page intentionally left blank.

3. Environmental Analysis

Section 2.4 provided a checklist of environmental impacts. This section provides an evaluation of the impact categories and questions contained in the checklist and identifies mitigation measures, if applicable.

3.1 AESTHETICS

Would the project:

1. SCENIC RESOURCES

a) Have a substantial effect upon a scenic highway corridor within which it is located?

No Impact. The project site is not in a scenic highway corridor. The nearest designated state scenic highway to the project site is part of SR-74 about 15 miles to the northeast (Caltrans 2011). No designated County scenic highways are identified in the Riverside County General Plan Circulation Element; the nearest eligible County scenic highway to the project site is I-215 about 4.1 miles to the west (Riverside County 2015). Project development would not substantially damage scenic resources in a scenic highway. No impact would occur and no mitigation is needed.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings and unique or landmark features; obstruct any prominent scenic vista or view open to the public; or result in the creation of an aesthetically offensive site open to public view?

Less Than Significant Impact.

Scenic Resources and Visual Character

No scenic resources are present onsite. There are several small ornamental landscape trees onsite; however, such trees are common in residential areas and are not considered scenic resources. There are no historic buildings onsite, because the residential structures onsite are not shown on a 1978 historic photograph and therefore are not old enough to be eligible as historic resources (NETR.com 2016). There are no rock outcroppings onsite. The proposed school would change the visual character of the site from the existing vacant land and single-family residence to a school consisting of one-story buildings. Much of the site is currently bare land. Thus, development of the proposed school would not substantially degrade the existing visual character of the site and its surroundings and no impact would occur. No mitigation is needed.

Vistas

Vistas of the San Jacinto Mountains to the east, Palomar Mountain to the south, and San Bernardino Mountains to the north are visible from parts of the project site. The project proposes construction of one-story buildings, including a multi-purpose building that would be about 27 feet high; the remaining buildings would be about 18 feet high. One offsite residence abuts the project site boundary north of the vacant residence. Project development would not block scenic vistas from that offsite residence because it is at the base of the small onsite hill. The next nearest residences to the project site are about 200 feet to the north and 350 feet to the west. Project development would not block vistas from the residence west of the site because such vistas are already blocked by the small onsite hill. Development would also not block vistas from the house about 200 feet north of the project site, because that house is nearly 15 feet higher than the proposed site of the buildings. Impacts would be less than significant and no mitigation is required.

2. MT. PALOMAR OBSERVATORY

a) Interfere with the nighttime use of the Mt. Palomar Observatory, as protected through Riverside County Ordinance No. 655?

Less Than Significant Impact. The project site is in the area where outdoor lighting is regulated under Riverside County Ordinance 655 to minimize interference with astronomical observations at the Mt. Palomar Observatory, which is about 23 miles southeast of the project site. Ordinance 655 sets forth limitations on the types and intensities of light fixtures allowed and requires that many types of outdoor lighting be extinguished between 11:00 PM and sunrise.

Specifically, Ordinance No. 655 identifies Zone "A" as comprising lands within a 15-mile distance of the observatory, while Zone "B" comprises lands located greater than 15 miles, but less than 45 miles from the observatory. The project site is located approximately 22.20 miles northwest of the Mt. Palomar Observatory. Ordinance No. 655 was adopted by the County Board of Supervisors on June 7, 1988, and went into effect on July 7, 1988. The intent of Ordinance No. 655 is to restrict the permitted use of certain light fixtures emitting into the night sky undesirable light rays, which have a detrimental effect on astronomical observation and research. Ordinance No. 655 contains approved materials and methods of installation, definitions, general requirements, requirements for lamp source and shielding, prohibitions and exceptions.

Parking lot lights, walkway lights, and exterior building lights would be aimed and shielded to cast their light downward on parking lots, walkways, and walls; thus, such lights would not cause substantial glare. No normally scheduled school operations would ever occur between 11:00 PM and sunrise, and all lights except for essential security lights would be extinguished during those hours. Safety and security lighting is permitted during that nighttime period. These are typically standard conditions of approval and are not considered unique mitigation pursuant to CEQA. With conformance with Ordinance No. 655, any impacts are expected to be less than significant from implementation of the project. No mitigation would be required.

3. OTHER LIGHTING ISSUES

a) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

Less Than Significant Impact. The proposed project would add exterior and interior building lights, parking lot lights, and walkway lights. No field lighting is proposed. Parking lot lights, walkway lights, and exterior building lights would be aimed and shielded to cast their light downward on parking lots, walkways, and walls; thus, such lights would not cause substantial glare. Building exteriors would be constructed of low-glare materials and would not generate substantial amounts of daytime glare. Impacts would be less than significant and no mitigation is required.

3.2 AGRICULTURE AND FORESTRY RESOURCES

Would the project:

4. AGRICULTURE

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. The eastern parcel of the project site is mapped as Farmland of Local Importance on the California Important Farmland Finder maintained by the Division of Land Resource Protection (DLRP 2016a). Analysis of impacts to mapped important farmland under CEQA is limited to three categories of mapped farmland: Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. No farmland in any of those categories is mapped onsite. No impact would occur and no mitigation is needed.

b) Conflict with existing zoning for agricultural use, or with land subject to a Williamson Act contract or land within a Riverside County Agricultural Preserve?

No Impact. The project site is zoned for rural residential (R-R) use and not for agricultural use. Although the R-R zone permits limited agriculture, including farm animals (up to five animals per acre), analysis of impacts to agriculture under CEQA is focused on intensive commercial agriculture. The site is not zoned for such use. Williamson Act contracts restrict the use of privately owned land to agriculture and compatible open-space uses under contract with local governments; in exchange, the land is taxed based on actual use rather than potential market value. There are no Williamson Act contracts in effect for the project site (DLRP 2016b). No impact would occur and no mitigation is required.

c) Cause development of non-agricultural uses within 300 feet of agriculturally zoned property (Ordinance No. 625 "Right-to-Farm")?

No Impact. No zoning for agricultural use is present within 300 feet of the project site. The project site and parcels within such distance are zoned Rural Residential or Specific Plan (RCIT 2017). No impact would occur and no mitigation is needed.

d) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Less Than Significant Impact. There are several greenhouses about 800 feet east of the project site on land mapped as Unique Farmland (DLRP 2016a). Project development would not interfere with agricultural operations on this farmland, and impacts would be less than significant and no mitigation is required.

3. Environmental Analysis

5. FOREST

a) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. The project site is zoned for rural residential use; it is not zoned for forest land, timberland, or timberland production. No impact would occur and no mitigation is needed.

b) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. There are a few scattered ornamental landscape trees onsite. The trees are not a forest and are not cultivated for forest resources. Project development would not cause a loss of forest land, and no impact would occur and no mitigation is required.

c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of forest land to non-forest use?

No Impact. Project development would not cause an indirect impact on forest land, as substantiated above in Sections 4.a and 4.b. No mitigation is needed.

3.3 AIR QUALITY

The air quality section addresses the impacts of the proposed project on ambient air quality and the exposure of people, especially sensitive individuals, to unhealthful pollutant concentrations. A background discussion on the air quality regulatory setting, meteorological conditions, existing ambient air quality in the vicinity of the project site, and air quality modeling can be found in Appendix B. The health risk assessment conducted for the proposed project can be found in Appendix A.

The primary air pollutants of concern for which ambient air quality standards (AAQS) have been established are ozone (O_3), carbon monoxide (CO), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb). Areas are classified under the federal and California Clean Air Act as either in attainment or nonattainment for each criteria pollutant based on whether the AAQS have been achieved. The South Coast Air Basin (SoCAB), which is managed by the South Coast Air Quality Management District (SCAQMD), is designated nonattainment for O_3, and $PM_{2.5}$ under the California and National AAQS, nonattainment for PM_{10} under the California AAQS, and nonattainment for lead (Los Angeles County only) under the National AAQS (CARB 2015).

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

6. Air Quality Impacts

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. A consistency determination plays an important role in local agency project review by linking local planning and individual projects to the air quality management plan (AQMP). It fulfills the CEQA goal of informing decision makers of the environmental efforts of the project under consideration at an early enough stage to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information as to whether they are contributing to clean air goals in the AQMP. The most recently adopted comprehensive plan is the 2012 AQMP, adopted on December 7, 2012 (see Appendix B to this Initial Study for a description of the 2012 AQMP).

Regional growth projections are used by SCAQMD to forecast future emission levels in the SoCAB. For southern California, these regional growth projections are provided by the Southern California Association of Governments (SCAG) and are partially based on land use designations in city/county general plans. Typically, only large, regionally significant projects have the potential to affect the regional growth projections.

The proposed project involves construction of a charter school facility in the County of Riverside to serve the educational needs of the local community. The proposed project is not a project of statewide, regional, or areawide significant that would require intergovernmental review under Section 15206 of the CEQA Guidelines. Therefore, the project would not have the potential to substantially affect SCAG's demographic projections. Additionally, the regional emissions generated by construction and operation of the proposed project would be less than the SCAQMD emissions thresholds, and SCAQMD would not consider the project a substantial source of air pollutant emissions that would have the potential to affect the attainment designations in the SoCAB. Thus, the project would not affect the regional emissions inventory or conflict with strategies in the AQMP. Impacts are less than significant and no mitigation measures are required.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less Than Significant Impact. The following describes project-related impacts from short-term construction activities and long-term operation of the proposed project.

Short-Term Air Quality Impacts

Construction activities would result in the generation of air pollutants. These emissions would primarily be 1) exhaust emissions from off-road diesel-powered construction equipment; 2) dust generated by demolition, grading, earthmoving, and other construction activities; 3) exhaust emissions from on-road vehicles and 4) off-gas emissions of volatile organic compounds (VOCs) from application of asphalt, paints, and coatings.

Construction activities would occur on the approximately 8.5 acres of the 14.6-acre project site. Construction would involve site preparation, grading, construction of the new school facility, paving, and architectural coating. Construction activities would start in the summer of 2017 and would take approximately 12 months. Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2, based on the project's preliminary construction schedule, phasing, and equipment list

3. Environmental Analysis

provided by the Temecula Valley Charter School (TVCS). TVCS indicates that the interior and exterior coatings applied onsite would be zero-VOC. The construction schedule and equipment mix are based on preliminary engineering and subject to changes during final design and as dictated by field conditions. Results of the construction emission modeling are shown in Table 1. As shown in the table, air pollutant emissions from construction-related activities would be less than their respective SCAQMD regional significance threshold values. Therefore, air quality impacts from project-related construction activities would be less than significant. No mitigation measures are required.

Table 1 Maximum Daily Regional Construction Emissions

	Criteria Air Pollutants (lbs/day)[1,2,3]					
Source	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
2017 Site Preparation	5	52	41	<1	11	7
2017 Rough Grading	6	70	48	<1	7	5
2017 Utility Trenching	<1	4	3	<1	<1	<1
2017 Building Construction	3	28	22	<1	2	2
2018 Building Construction	3	25	21	<1	2	2
2018 Building Construction + Architectural Coating	3	27	23	<1	2	2
2018 Building Construction + Architectural Coating + Asphalt Paving + Finishing/Landscaping	6	46	40	<1	4	3
Maximum Daily Emissions	6	70	48	<1	11	7
SCAQMD Regional Threshold	75	100	550	150	150	55
Exceeds Regional Threshold?	No	No	No	No	No	No

Source: CalEEMod, version 2013.2.2.
Notes: Totals may not equal 100 percent due to rounding.
1 The construction schedule is based on the preliminary information provided by the Applicant. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by SCAQMD of construction equipment and phasing for comparable projects.
2 Includes implementation of fugitive dust control measures required by SCAQMD under Rule 403, including watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

Long-Term Operation-Related Air Quality Impact

Long-term air pollutant emissions generated by the project would be generated by area sources (e.g., landscape fuel use, aerosols, and architectural coatings), mobile sources from vehicle trips, and energy use (natural gas) associated with the proposed new buildings. The primary source of long-term criteria air pollutant emissions generated by the proposed project would be mobile sources. The proposed project would generate 1,488 average daily trips during a weekday. Criteria air pollutant emissions for the proposed project were modeled using CalEEMod.

Table 2 identifies criteria air pollutant emissions from the proposed project. As shown in the table, project-related air pollutant emissions would not exceed the SCAQMD's regional emissions thresholds for operational activities. Overall, long-term operation-related impacts to air quality would be less than significant and no mitigation measures are required.

Table 2 Maximum Daily Regional Operational Phase Emissions

Source	Criteria Air Pollutants (lbs/day)					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Area	2	<1	<1	<1	<1	<1
Energy	<1	<1	<1	<1	<1	<1
Mobile Sources	4	5	47	<1	11	3
Total Emissions	6	5	47	<1	11	3
SCAQMD Regional Threshold	55	55	550	150	150	55
Exceeds Regional Threshold?	No	No	No	No	No	No

Source: CalEEMod Version 2013.2.2. Highest winter or summer emissions are reported. Totals may not equal 100 percent due to rounding.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less Than Significant Impact. The SoCAB is designated nonattainment for O_3 and $PM_{2.5}$ under the California and National AAQS, nonattainment for PM_{10} under the California AAQS, and nonattainment for lead under the National AAQS (CARB 2015). According to SCAQMD methodology, any project that does not exceed or can be mitigated to less than the daily threshold values would not add significantly to a cumulative impact (SCAQMD 1993). Construction and operational activities would not result in emissions in excess of SCAQMD's significant thresholds. Therefore, the project would not result in a cumulatively considerable net increase in criteria pollutants and impacts would be less than significant. No mitigation measures are required.

d) Expose sensitive receptors which are located within 1 mile of the project site to project substantial point source emissions?

Less Than Significant Impact. The proposed project could expose sensitive receptors to elevated pollutant concentrations if it would cause or contribute significantly to elevated pollutant concentration levels. Unlike regional emissions, localized emissions are typically evaluated in terms of air concentration rather than mass so they can be more readily correlated to potential health effects.

Construction LSTs

Localized significance thresholds (LSTs) are based on the California AAQS, which are the most stringent, established to provide a margin of safety in the protection of public health and welfare. They are designated to protect sensitive receptors most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and people engaged in strenuous work or exercise. Construction LSTs are based on the size of the project site, distance to the nearest sensitive receptor, and Source Receptor Area. Receptors proximate to the proposed project site are the residences to the west and northwest.

3. Environmental Analysis

Air pollutant emissions generated by construction activities are anticipated to cause temporary increases in air pollutant concentrations. Table 3 shows the maximum daily construction emissions (pounds per day) generated during onsite construction activities compared with the SCAQMD's LSTs. As shown in the table, the maximum daily NO_x, CO, PM_{10}, and $PM_{2.5}$ construction emissions generated from onsite construction-related activities would be less than their respective SCAQMD LSTs. Therefore, project-related construction activities would not have the potential to expose sensitive receptors to substantial pollutant. The impact would be less than significant and no mitigation measures are required.

Table 3 Localized Construction Emissions

Source	Pollutants(lbs/day)[1,2]			
	NO_X	CO	PM_{10}	$PM_{2.5}$
2017 Utility Trenching	4	3	0.27	0.25
SCAQMD ≤1.00-acre LST	**196**	**1,044**	**10.63**	**3.83**
Exceeds LST?	No	No	No	No
2017 Building Construction	26	18	1.78	1.67
2018 Building Construction	23	18	1.49	1.40
2018 Building Construction + Architectural Coating	25	19	1.64	1.56
SCAQMD 1.31-acre LST	**218**	**1,184**	**12.86**	**4.40**
Exceeds LST?	No	No	No	No
2018 Building Construction + Architectural Coating + Asphalt Paving + Finishing/Landscaping	44	36	2.67	2.50
SCAQMD 1.81-acre LST	**254**	**1,407**	**16.43**	**5.31**
Exceeds LST?	No	No	No	No
2017 Site Preparation	52	39	10.48	6.78
SCAQMD 3.50-acre LST	**338**	**2,038**	**26.58**	**7.66**
Exceeds LST?	No	No	No	No
2017 Rough Grading	70	47	7.08	4.60
SCAQMD 4.00-acre LST	**362**	**2,221**	**29.51**	**8.32**
Exceeds LST?	No	No	No	No

Source: CalEEMod Version 2013.2.2; SCAQMD 2008, 2011.
Notes: In accordance with SCAQMD methodology, only onsite stationary sources and mobile equipment occurring on the proposed project site are included in the analysis. LSTs are based on receptors within 150 feet (46 meters) of the proposed project site in Source Receptor Area (SRA) 26.
1 The construction schedule is based on the preliminary information provided by the Applicant. Where specific information regarding project-related construction activities was not available, construction assumptions were based on CalEEMod defaults, which are based on construction surveys conducted by SCAQMD of construction equipment and phasing for comparable projects.
2 Includes implementation of fugitive dust control measures required by SCAQMD under Rule 403, including watering disturbed areas a minimum of two times per day, reducing speed limit to 15 miles per hour on unpaved surfaces, replacing ground cover quickly, and street sweeping with Rule 1186–compliant sweepers.

Construction Health Risk

SCAQMD currently does not require health risk assessments to be conducted for short-term emissions from construction equipment. Emissions from construction equipment primarily consist of diesel particulate matter (DPM). The Office of Environmental Health Hazards Assessment (OEHHA) has recently adopted new guidance for the preparation of health risk assessments issued in March 2015. OEHHA has developed a cancer risk factor and noncancer chronic reference exposure level for DPM, but these factors are based on continuous exposure over a 30-year time frame. No short-term acute exposure levels have been developed for DPM. The proposed project would be developed in approximately 12 months, which would limit the exposure to onsite and offsite receptors. SCAQMD currently does not require the evaluation of long-term excess cancer risk or chronic health impacts for a short-term project. In addition, construction activities would not exceed LST significance thresholds. For the reasons stated above, it is anticipated that construction emissions would not pose a threat to onsite and offsite receptors at or near the school, and project-related construction health impacts would be less than significant and no mitigation measures are required.

Operation LSTs

Operation of the proposed project would not generate substantial quantities of emission from onsite, stationary sources. Land uses that have the potential to generate substantial stationary sources of emissions that would require a permit from SCAQMD include industrial land uses, such as chemical processing and warehousing operations where substantial truck idling could occur onsite. The proposed project does not fall within these categories of uses. While operation of the proposed project would result in the use of standard onsite mechanical equipment such as heating, ventilation, and air conditioning units in addition to occasional use of landscaping equipment for site maintenance, air pollutant emissions generated from these activities would be nominal (see Table 2). Therefore, localized air quality impacts related to stationary-source emissions would be less than significant and no mitigation measures are required.

Carbon Monoxide Hotspots

Areas of vehicle congestion have the potential to create pockets of CO called hotspots. These pockets have the potential to exceed the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9.0 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations. Hotspots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds.

The SoCAB has been designated attainment under both the national and California AAQS for CO. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited—in order to generate a significant CO impact (BAAQMD 2011). The proposed project would result in approximately 1,488 average daily trips during a weekday and 540 trips during the morning peak hour, which are substantially less than the volumes cited above. Furthermore, the SoCAB has since been designated as attainment under both the national and California AAQS for CO. The project would not have the potential to substantially increase CO hotspots at intersections in the vicinity of the project site. Localized air quality impacts related to mobile-source emissions would be less than significant and no mitigation measures are required.

Health Risk Assessment

Section 21151.8 of the Public Resources Code requires evaluation of air quality hazards for school site acquisition or construction of a new elementary school. The project would expose sensitive receptors to elevated pollutant concentrations if it would place the project in an area with pollutant concentrations above ambient concentration in the SoCAB. Recent air pollution studies have shown an association between proximity to major air pollution sources and a variety of health effects. The project involves siting a school within a quarter-mile of SR-79; therefore, the health risks from mobile sources were evaluated for the proposed project (see Appendix A). The HRA evaluates carcinogenic and non-carcinogenic health risks and risks from toxic air contaminants. Table 4 shows the potential cancer and non-cancer risk for the students and staff at the proposed project site.

Table 4 Health Risk Assessment Results

Source	Cancer Risk (per million)		Chronic Hazard Index	Acute (1-Hour) Hazard Index	8-Hour Hazard Index
	Staff Exposure	Student Exposure			
State Route 79	0.48	1.13	0.003	0.012	0.002
SCAQMD Threshold	10	10	1.0	1.0	1.0
Exceeds Threshold	**No**	**No**	**No**	**No**	**No**

Source: Lakes AERMOD View, 9.1.0, 2015.

As shown in the table, based on a comparison to the carcinogenic and non-carcinogenic thresholds established by OEHHA and SCAQMD, hazardous air emissions generated from the mobile sources within a quarter-mile radius of the site are not anticipated to pose an actual or potential endangerment to students and staff occupying the proposed site, and no mitigation measures are required.

e) Involve the construction of a sensitive receptor located within one mile of an existing substantial point source emitter?

Less than Significant Impact. See the discussion of the Health Risk Assessment in Section 6.d.

f) Create objectionable odors affecting a substantial number of people?

Less Than Significant Impact. The proposed project would not result in objectionable odors. The threshold for odor is if a project creates an odor nuisance pursuant to SCAQMD Rule 402, Nuisance, which states:

> A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. The provisions of this rule shall

not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

The type of facilities that are considered to have objectionable odors include wastewater treatments plants, compost facilities, landfills, solid waste transfer stations, fiberglass manufacturing facilities, paint/coating operations (e.g., auto body shops), dairy farms, petroleum refineries, asphalt batch plants, chemical manufacturing, and food manufacturing facilities. The uses proposed by the project do not fall within the aforementioned land uses. Emissions from construction equipment, such as diesel exhaust and volatile organic compounds from architectural coatings and paving activities, may generate odors. However, these odors would be low in concentration, temporary, and are not expected to affect a substantial number of people. Therefore, odor impacts would be less than significant and no mitigation measures are required.

3.4 BIOLOGICAL RESOURCES

The information in this section is based in part on the following technical studies, which are included as Appendices C1 and C2 to this Initial Study:

- Habitat Assessment, Phil Brylski and Dave Bramlet, May 24, 2017. (Appendix C1)
- Fairy Shrimp Survey, Summitwest Environmental, Inc., May 29, 2017. (Appendix C2)

Would the project:

7. Wildlife and Vegetation

a) **Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?**

Less than Significant Impact. The project site is in the plan area of two habitat conservation plans.

Western Riverside County Multiple Species Habitat Conservation Plan

The Western Riverside County Multiple Species Habitat Conservation Plan (WRC MSHCP) has a plan area of about 1.26 million acres, or 1,970 square miles, extending from the western county boundary to the San Jacinto Mountains. Roughly 506,000 acres are designated reserves, and the plan covers 146 species and 14 natural communities. The WRC MSHCP was approved by the US Fish and Wildlife Service and California Department of Fish and Wildlife (CDFW) in 2004 and is administered by the Western Riverside County Regional Conservation Authority (RCA).

The project site is in criteria cell 5275 (Southwest Area, French Valley-Lower Sedco Hills subunit) of the WRC MSHCP (County of Riverside 2016b). The required studies for the project site included a WRC MSHCP consistency analysis and habitat assessments for burrowing owl, Narrow Endemic Plant Species, Criteria Area Plant Species, and Riparian/Riverine/Vernal Pool Resources. The main project site (APNs 476-010-013 and 476-010-059) is not located within the Narrow Endemic Species Survey Area (NEPSSA) or

3. Environmental Analysis

Criteria Area Species Survey Area (CASSA); however, a portion of the proposed Flossie Way access road is located within the NEPSSA and CASSA.

Stephens' Kangaroo Rat Habitat Conservation Plan

The Stephens' Kangaroo Rat Habitat Conservation Plan (SKRHCP) has a plan area of about 534,000 acres in western Riverside County and was established to protect one listed species, the Stephens' Kangaroo Rat (*Dipodomys stephensi*), listed as federally endangered and state threatened. The SKRHCP includes seven core reserves that totaled about 41,200 acres in 1996. The SKRHCP was approved by the US Fish and Wildlife Service and CDFW in 1990 and is administered by the Riverside County Habitat Conservation Agency. The project site is located within the SKR Fee Area and will be required to pay the required development fee (Riverside County Ordinance 663.10)

Western Riverside County MSHCP Criteria Cell Issues

The project site and Flossie Way access road are in Criteria Cell #5275 within the French Valley - Lower Sedco Hills subunit of the Southwest Area Plan of the western Riverside MSHCP (County of Riverside 2016b). Biological issues and considerations for this subunit are as follows: (1) conserve a large block of habitat generally east of I-215 and south of Scott Road for narrow endemic species; (2) provide connection to the Southwestern Riverside County Multi Species Reserve, (3) conserve clay soils supporting long-spined spine flower, Munz's onion and Palmer's grapplinghook, (4) maintain core and linkage habitat for bobcat, (5) determine presence of potential Core Area for Los Angeles pocket mouse along Warm Springs Creek, (6) maintain core and linkage habitat for Quino checkerspot butterfly, (7) maintain core area for western pond turtle, and (8) maintain core area for Riverside fairy shrimp.

Other goals for this subunit include conserving clay soil areas for narrow endemic plant species that are restricted to these soil types, including the Munz's onion, and habitat for the Quino checkerspot butterfly.

Table 5 lists the checklist information on the project site from the County Conservation Summary Report Generator. The project site is not within with survey requirements for any amphibians, or mammals, but is located within a habitat assessment area for the burrowing owl. The project site is not within an existing or proposed core area.

Table 5 MSHCP Review Summary

Is the project located in Criteria Area or Public/Quasi-Public Land?	Yes
Is the project located in Criteria Area Species Survey Area (CASSA)?	Yes*
Is the project located in Amphibian Species Survey Area?	No
Is the project located in Mammal Species Survey Area?	No
Is the project located adjacent to MSHCP Conservation Areas?	No
Is the project located in Narrow Endemic Plant Species Survey Area (NEPSSA)?	Yes*
Are riverine/riparian/wetland habitats or vernal pools present?	No
Is the project located in Burrowing Owl Survey Area?	Yes

* The main project site (APNs 476-010-059 and 476-010-013) is not within a Criteria Area Species Survey Area (CASSA) or Narrow Endemic Plant Species Survey Area (NEPSSA). The Flossie Way access road area (part of APN 476-010-054) is within a CASSA and NEPSSA.

Criteria Cell Coverage

The project site is located in the north-central part of Cell #5275 in an area that is not proposed for conservation. Clay soils are absent from the two parcels where the school would be built, however a small area of clay soils mapped by NRCS (2016) occurs in part of the 1.78-acre easement for the Flossie Way access road. The MSHCP (County of Riverside 2003b) identifies the conservation objectives of Cell #5275 as follows:

> Conservation within this Cell will contribute to assembly of Proposed Constrained Linkage 18. Conservation within this Cell will focus on riparian scrub, woodland and forest habitat and adjacent agricultural land. Areas conserved within this Cell will be connected to riparian scrub, woodland and forest habitat and agricultural land proposed for conservation in Cell #5376 to the south and to agricultural land proposed for conservation in Cell #5372 to the east. Conservation within this Cell will range from 10% to 20% of the Cell focusing in the southern part of the Cell.

A regionally significant wildlife corridor identified in the MSHCP is Constrained Linkage 18, which is located south of the project site (Figure 5, *Project Site in relation to MSHCP Criteria Cells and Constrained Linkage 18*). Constrained linkage 18 is a narrow strip of riparian habitat along an unnamed drainage that links Paloma Valley (southwest of the project site) and Bachelor Mountain (east of the project site across SR-79). The linkage is constrained by adjoining agricultural uses, which, along with the narrow width of the riparian area, contribute to a large edge effect. The planning species for this linkage area are bobcat and Los Angeles pocket mouse.

The MSHCP describes the linkage as follows:

> Proposed Constrained Linkage 18 consists of an unnamed drainage located in the south-central region of the Plan Area. This Constrained Linkage connects Proposed Core 2 (Antelope Valley) to the west with Proposed Extension of Existing Core 7 (Lake Skinner/Diamond Valley Lake Extension). Existing agricultural use constrains the Linkage, and planned land uses surrounding the Linkage are limited nearly entirely to community Development. The Linkage also has a relatively high proportion of land affected by edge (approximately 250 acres of the total 310 acres) and will also be subject to Edge Effects also due to the widening or extension of several facilities including Washington Street, Briggs Road, and SR-79. Despite these issues, the Linkage nonetheless provides Live-In and movement Habitat for species. Guidelines Pertaining to Urban/Wildlands Interface for the management of edge factors such as lighting, urban runoff, toxics, and domestic predators are presented in Section 6.1 of this document. This Linkage likely provides for movement of common mammals such as bobcat. An adequate wildlife underpass or overpass may need to be implemented to insure movement of species in this area and to reduce the chance of mortality from vehicle collision.

3. Environmental Analysis

MSHCP Implementation Structure

All proposed discretionary development projects within the WRC MSHCP Criteria Area are subject to review under the Habitat Evaluation and Acquisition Negotiation Strategy (HANS) process. The HANS process is used by the County of Riverside to implement portions of the WRC MSHCP by identifying and delineating conservation areas on specific properties. A HANS application was prepared for the proposed project and submitted to the County on January 5, 2017 (HANS 2343). The County determined that no conservation is described for the project site based on the cell criteria analysis. Although no conservation is required, the project is still required to demonstrate compliance with Section 6.0 of the WRC MSHCP, including Sections 6.1.2, 6.1.3, and 6.3.2. Habitat assessments and surveys for Narrow Endemic Plant Species, Criteria Area Species, burrowing owl, and Riparian/Riverine/Vernal Pool resources were required. The HANS case was transmitted to the Western Riverside County Regional Conservation Authority (RCA) for Joint Project Review (JPR) on April 6, 2017 (JPR No. 17-04-11-01). RCA provided comments regarding burrowing owl, narrow endemic plant species, criteria area plant species, and vernal pool species. As a result, the biological consultant provided several revisions based on RCA's comments and a permitted fairy shrimp biologist was hired to evaluate road ruts within the Flossie Way access road. The proposed project is currently going through JPR and was transmitted to the CDFW and USFWS on June 20, 2017 for comment.

Section 6.1.2. Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools

The project site does not contain riparian habitat, open drainages, erosional channels or other features that could contain plant species associated with riparian habitats. A blue-line channel is found on the adjoining parcel to the north of the project site. The Highway 79 Natural Environmental Study (Caltrans 2004) indicated that this blue-line channel extends into the extreme northeastern corner of the project site. However, no channel was observed in this area during the field survey. It appears that the channel has been filled in on the adjacent property and only overland flows currently occur on the project site.

Ephemeral Wetlands and Vernal Pools. Seasonal wetlands, including vernal pools, are communities that could support special status plant or animal species. No seasonal wetlands or evidence of ponding were noted within the main project site (APNs 476-010-059 or 476-010-013) during the field survey or in a review of historical aerial photos available in Google Earth. During March 2, 2017 field surveys, ponding was observed in two road rut features within the proposed Flossie Way access road. According to the project biologists, the ponding likely occurred during a rain event on February 27, 2017. During March 10, 2017 field surveys, the road ruts were dry and no ponding was observed. In order to address RCA's JPR comments, a US Fish and Wildlife Service-permitted fairy shrimp biologist was hired to evaluate the road ruts within the Flossie Way access road right-of-way. The WRC MSHCP Species Survey Requirements (Volume I, Appendix E) allows for a single-season dry or wet season survey to be conducted by a qualified biologist in accordance with accepted protocol. Therefore, only a single season dry survey was conducted. Chuck Black, 10(a)(1)(A) permit number TE835549-7, of Ecological Restoration Service and SummitWest Environmental, Inc. collected and processed dry samples for the determination of presence of fairy shrimp cysts. The project site does not contain suitable soil types to support vernal pool such as soils from the Willow Series (Wg, Wh, Wm, Wn) and there is. No *Branchinecta* or *Streptochepalus* cysts were present in any of the samples from the tire ruts. The negative dry season survey results were deemed sufficient for the County to find the project conditionally consistent with the WRC MSHCP Section 6.1.2. The RCA, CDFW, and USFWS have the ability to comment on the survey methodology used for the project. The fairy shrimp report, dated May 29, 2017, can be found in Appendix C2.

Section 6.1.3. Protection of Narrow Endemic Plant Species

The main project site (APNs 476-010-059 and 476-010-013) is not within a Narrow Endemic Plant Species Survey Area (NEPSSA). However, a portion of the proposed Flossie Way access road (APN 476-010-054) is located within a NEPSSA. A habitat assessment was completed for the following NEPSA species: Munz's onion, San Diego ambrosia, many-stemmed dudleya, spreading navarretia, California orcutt grass, and Wright's trichocoronis. The annual grassland habitat within the NEPSSA and proposed Flossie Way access road is highly disturbed and contains an abundance of ruderal, non-native species. Additionally, suitable soils are not present to support these Narrow Endemic Plant Species. According to the habitat assessment, the proposed Flossie Way access road does not contain suitable habitat to support Narrow Endemic Plant Species. The project is consistent with Section 6.1.3.

Section 6.3.2. Additional Survey Needs and Procedures

The project site and the Flossie Way access road areas are within an area required for habitat assessment for the western burrowing owl (*Athene cunicularia*).

The main project site (APNs 476-010-059 and 476-010-013) is not within a Criteria Area Species Survey Area (CASSA). The proposed Flossie Way access road is within a CASSA for the following plant species: Davidson's saltscale, Parish's brittlescale, thread-leaved brodiaea, smooth tarplant, round-leaved filaree, Coulter's Goldfields, and little mousetail. The annual grassland habitat within the CASSA and proposed Flossie Way access road is highly disturbed and contains an abundance of ruderal, non-native species. Additionally, suitable soils are not present to support these plant species. According to the habitat assessment, the proposed Flossie Way access road does not contain suitable habitat to support Criteria Area Plant Species.

Burrowing Owl

Habitat Assessment

A habitat assessment for burrowing owls was carried out on the project site on November 5, 2016. No western burrowing owls were observed or otherwise detected onsite (i.e., sign or calls) or in adjoining areas during the survey. However, burrows constructed by California ground squirrels were found on the project site that could potentially be used by burrowing owls. Figures 5 and 6 (Biological Features and Burrowing Owl Survey Information) within Appendix C1 show the locations of the ground squirrel burrows.

Focused Survey

A focused burrowing owl survey was conducted on the project site including the proposed Flossie Way access road over four days, March 7 through 10 2017, under mild weather conditions suitable for the survey. An additional survey was conducted on March 30, 2017 to ensure the absence of burrowing owl. The entire site was walked along transects no more than 30 meters (100 feet) apart, and spaced more closely in areas where hilly terrain obscured line of site. A buffer area that extended 500 feet around the site borders was also surveyed, but parts of this were in private property and binocular surveys were used for these buffer areas.

3. Environmental Analysis

Potential burrowing owl burrows were mapped using a GPS unit. No burrowing owls or burrowing owl sign was observed on the project site or in the buffer area during the focused surveys.

Burrowing owls could establish nests on the site or in the buffer prior to project initiation. The burrowing owl is a covered species under the WRC MSHCP that requires additional surveys. The County of Riverside has conditioned the project prior to grading permit issuance for a 30-day pre-construction burrowing owl survey. Potential impacts to the burrowing owl will be mitigated to a less than significant level with adherence to the County of Riverside condition of approval. The project is consistent with Section 6.3.2.

Section 6.1.4. Urban/Wildlands Interface Guidelines

Section 6.1.4 of the MSHCP presents guidelines that reduce indirect impacts to MSHCP conservation areas at the Wildlands/Urban interface. The project site is not in the vicinity of a conservation area and the Urban/Wildlife Interface Guidelines are therefore not applicable.

Reserve Assembly

The project site is located in the northwestern part of Cell #5275 in an area that is not proposed for conservation (see Figure 9. *MSHCP Criteria Cells and Constrained Linkage*). The project site is not located in a designated core area and is located approximately 1,400 feet north of Constrained Linkage 18.

The objectives of Cell #5275 and an analysis of the proposed project's impacts on these are as follows:

1. Contribute to assembly of Proposed Constrained Linkage 18.

Proposed Constrained Linkage 8 is located approximately 1,400 feet south of the project site. The land between the project site and the linkage is in agricultural use and is crossed by SR-79. The proposed project would not impact the assembly or wildlife movement function of Constrained Linkage 18.

2. Focus on coastal sage scrub (CSS), grassland, riparian scrub, woodland and forest habitat.

The project site contains disturbed annual grassland, tilled agricultural fields, small areas of Riversidian sage scrub/grassland ecotone, and developed uses. The proposed project would impact 39 percent of the disturbed annual grassland on the project site, leaving the remaining 61 percent in its existing condition. The Riversidian sage scrub-grassland ecotone found on the project site would not be considered a special status community due to the very low shrub cover found in this grassland.

3. Areas conserved within this Cell will be connected to riparian scrub, woodland and forest habitat and agricultural land proposed for conservation in Cell #5376 to the south and to agricultural land proposed for conservation in Cell #5279 to the east.

Since adoption of the MSHCP, Cell #5376 has been largely developed with residential land uses. The project site occurs in the northwestern corner of Cell #5275, separated from Cell #5279 by SR-79 and the agricultural lands in the northeastern corner of Cell #5275. This cell objective is not furthered by the habitats and location of the project site.

Figure 9 - MSHCP Criteria Cells and Constrained Linkage

Base Map Source: Western Riverside County Regional Conservation Authority, 2016

This page intentionally left blank.

4. Conservation within this Cell will range from 10%-20% of the Cell focusing in the southern portion of the Cell.

The project site is located in the northwestern part of the Cell. This objective is not relevant to the project site. Nonetheless, the proposed project would develop approximately 62 percent of the site, leaving the two residences and surrounding habitats (39 percent of the site) undeveloped.

b) Have a substantial adverse effect, either directly or through habitat modifications, on any endangered, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12)?

Less Than Significant Impact.

Plant Communities and Land Uses

The plant communities and land use categories found on the project site include: agricultural, disturbed annual grassland, Riversidian sage scrub/grassland ecotone—that is, a transition between the two specified communities—graded, and developed. The following section describes each of these communities found on the project site, and the distribution of these communities is noted in Figure 10, *Plant Communities Map*, and total acreage of each community is noted in Table 6. A list of plant species observed during the survey of the project site is shown in the Habitat Assessment included as Appendix C1 of this Initial Study.

Table 6 Acreage of Plant Communities on the Project Site

Plant Community	Acreage
Agricultural	7.33 acres
Disturbed annual grassland	7.23 acres
Riversidian sage scrub/Annual grassland ecotone	0.10 acres
Graded	0.36 acres
Developed	1.24 acres
Total	**16.27 acres**

Source: Brylski and Bramlet 2017.

Agricultural

The western area of the project site is characterized as agricultural, with areas that have been planted in wheat (*Triticum aestivum*), and the field had been disked at the time of the survey. The margins of the field contain pockets of a disturbed annual grassland. Characteristic species consisted of: ripgut brome (*Bromus diandrus*), wild oat (*Avena fatua*), red brome (*Bromus madritensis* ssp. *rubens*), schismus (*Schismus barbatus*), and foxtail barley (*Hordum murinum* ssp. *leporinum*). Forbs commonly found on the margin of this field included: cheeseweed (*Malva parviflora*), Russian thistle (*Salsola tragus*), common fiddleneck (*Amsinckia intermedia*), hare's ear cabbage (*Sisymbrium orientale*), rattlesnake weed (*Euphorbia albomarginata*), Persian knotweed (*Polygonum argyrocoleon*), curly dock (*Rumex crispus*), and jimson weed (*Datura wrightii*).[1]

[1] Forbs are flowering plants lacking woody stems, other than grasses.

3. Environmental Analysis

Disturbed Annual Grassland

A disturbed annual grassland is the characteristic community in the remaining areas of the project site. Characteristic grasses in this community include: ripgut brome, red brome, wild oat, foxtail barley, rattail fescue (*Festuca myuros*), and schismus. Forbs consisted of: Russian thistle, common fiddleneck, summer mustard (*Hirschfeldia incana*), tocalote (*Centaurea melitensis*), London rocket (*Sisymbrium irio*), rattlesnake weed, red-stemmed filaree (*Erodium cicutarium*), dove weed (*Croton setiger*), vinegar weed (*Trichostma lanceolatum*), and jimson weed. A few shrubs including common sand aster (*Corethrogyne filaginifolia*), coastal isocoma (*Isocoma menziesii*), and interior California buckwheat (*Eriogonum fasciculatum* var. *foliolosum*) were uncommonly found in these grasslands.

Rockier sites on the project site often had large, open patches dominated by Russian thistle. Other disturbed areas along SR-79 had a grassland with patches of tocalote, telegraph weed (*Heterotheca grandiflora*), annual sunflower (*Helianthus annuus*), Persian knotweed, common horseweed (*Conyza canadensis*), summer cypress (*Kochia scoparia*), prickly lettuce (*Lactuca serriola*), serrate-leaved saltbush (*Atriplex suberecta*), London rocket, and summer mustard.

Riversidian Sage Scrub-Grassland Ecotone

A few of the larger patches of interior California buckwheat were mapped as a Riversidian sage scrub/grassland ecotone. These sites have only a very scattered shrub cover and were generally dominated by the annual grasses and forbs. Other shrub species occasionally found in these ecotonal areas consisted of common sand aster, coastal isocoma, and California sagebrush (*Artemisia california*). Generally, the sites were characterized by a cover of ripgut brome, wild oat, red brome, common fiddleneck, Russian thistle, tocalote, finger-leaved morning glory (*Calystegia macrostegia*), summer mustard, and dove weed.

Graded

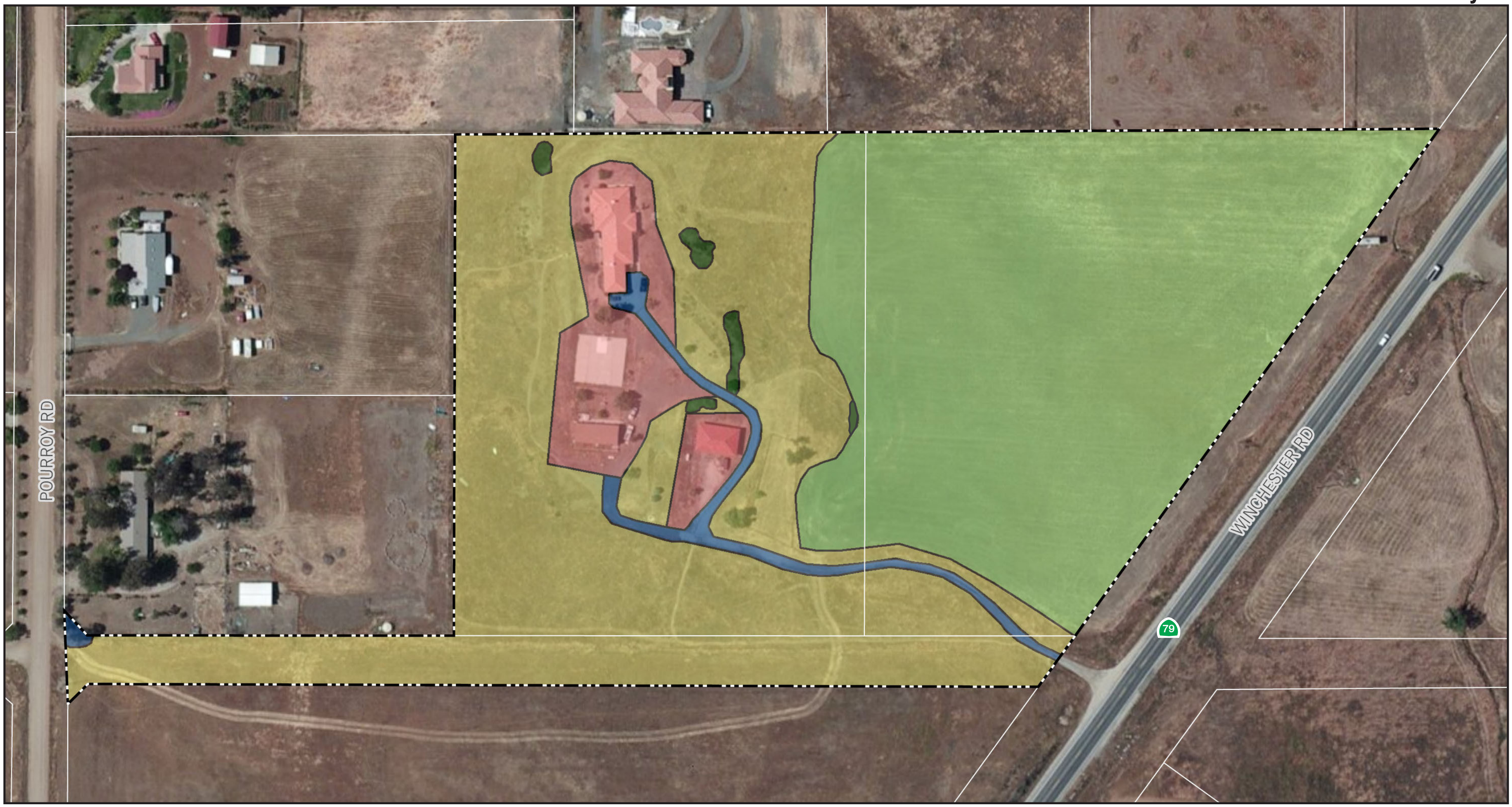
The access road to the existing residences was mapped as graded, consisting of a hard-packed earthen road and other disturbed unvegetated areas.

Developed

The area around the existing residences and garage was mapped as developed. This area includes the graded area around these structures, a concrete basketball court, and the existing driveways. This area includes a number of ornamental species planted around or near these structures. Some of these included Aleppo pines (*Pinus halepensis*), Shamel ash (*Fraxinus udehi*), olive (*Olea europea*), silver dollar gum (*Eucalyptus polyanthemos*), pecan (*Carya illinoinensis*), queen palms (*Syagrus romanzoffiana*), and other plantings.

Figure 10 - Plant Communities Map

3. Environmental Analysis



Plant Community

- Disturbed Annual Grassland
- Agricultural
- Graded
- Developed
- Project Boundary
- Riversidian Sage Scrub/Annual Grassland

0 200
Scale (Feet)

Base Map Source: Google Earth Pro, 2016

3. Environmental Analysis

This page intentionally left blank.

Habitat Conservation Plans

Habitat conservation plans and impacts thereto are discussed above in Section 7.a.

Special Status Plant Species and Habitats

Special status plant species include those listed by the state or federal governments as endangered, threatened, or rare and those that are candidates for future listing. They also encompass species determined by CDFW to meet the CEQA (Section 15380) criteria for "rare and endangered" even though they have not been officially listed by any agency (CDFW 2016a). Finally, the list considers species noted by the California Native Plant Society (CNPS 2016) or the County of Riverside as "rare or endangered" or of limited distribution and requiring consideration in CEQA or planning studies in the region (Riverside County 2003a), or as species of special concern by local botanists in the region (Roberts et al. 2004, 2007).

The special status plant species that could potentially occur on the property were obtained from the RareFind Data Base (CDFW 2016a), list of special status plant species (CDFW 2016b), and the CNPS online rare plant inventory (CNPS 2016). In addition, the collection records of the special status species known from the study region were used to determine the known localities of these species (Consortium 2016).

This study considered the plant species within the Western Riverside HCP planning process (Riverside County 2003a; Dudek 2003), especially the narrow endemic plant species and criteria area plant species in Survey Area 4. The known distributions of these species were carefully reviewed to determine the localities of these species near the project site.

Communities of special interest are considered to be "depleted" habitats of special interest to the CDFW (2010), the County of Riverside (2003a), or potentially regulated by the US Army Corps of Engineers, CDFW, Regional Water Quality Control Board, or other agencies. It would also include the criteria areas of the Western Riverside HCP, which are the potential reserve areas for this habitat conservation plan (Riverside County 2003a).

Special Status Plant Species

Known or expected localities of each special status plant species identified as occurring in the project region, as well as the habitat preference and the potential for each species to occur onsite, are described in Table 7. The species listed in Table 7 are described in more detail in the Habitat Assessment (see Appendix C1).

3. Environmental Analysis

Table 7 Special Status Plant Species Potentially Occurring on the Project Site

Species	Federal/ State	CNPS/ MSHCP Other	Known or Expected Localities	Comments
Abronia villosa var. aurita Chaparral sand verbena		CRPR 1B.1, NCS	Domenigoni-Diamond Valley, Winchester, Murrieta Creek, Temescal Valley, San Jacinto River, South of Hemet, Vail Lake, Gavilan Hills, Banning Bench, San Jacinto Mtns	Found in open sandy washes, sandy openings in coastal sage scrub. Blooms from January to September. Not anticipated on the project site.
Allium munzii Munz's onion	FT, SE	CRPR 1B.1, CS, NEPS	Paloma Valley, Lake Skinner, Skunk Hollow, Paloma Valley, N. Domenigoni Hills, Temescal Valley, Gavilan Hills	Generally found in dense clay soils, but also on gabbronic substrates. Blooms from March to May. Not anticipated on the project site.
Ambrosia pumila San Diego ambrosia	FE	CRPR 1B.1, CS, NEPS	Skunk Hollow, south of Skunk Hollow, Nichols Road (Elsinore Area), Temescal Valley	Found in annual grasslands. Blooms from April to October. Does not occur on the project site.
California macrophylla Large-leaf filaree		CRPR 1B.1, CS, ASNP, CAS	Bachelor Mtn, Gavilan Hills, hills between Murrieta & Menifee Valley, Murrieta, Temescal Valley, Murrieta region & the Lake Elsinore region	Found in clay soil grasslands. Blooms from March to May. Not anticipated on the project site.
Calochortus weedii var. intermedius Intermediate mariposa lily		CRPR 1B.2, CCS	Murrieta, French Valley, Crown Valley, Vail Lake, Corona, Santa Ana Mtns	Found in coastal sage scrub or chaparral. Blooms from May to July. Not anticipated on the project site.
Centromadia pungens ssp. laevis Smooth tarplant		CRPR 1B.1, CS, ASNP, CAPS, RR/VP	French-Paloma Valleys, Murrieta Creek, Temecula Creek, Warm Springs Creek, Lake Elsinore region, San Jacinto River-Perris, Lakeview, SJWA, Upper Salt Creek, Diamond Valley, Tucalota Creek, San Jacinto Valley, Santa Ana River	Found in alkali meadows or grasslands. Also found on the margin of riparian habitats in the region. Blooms from April to September. Not anticipates on the project site.
Chorizanthe parryi var. parryi Parry's spineflower		CRPR 1B.1, CCS	French-Paloma Valleys, Lake Skinner, Sedco Hills, Menifee region, Bundy Canyon, Crown Valley, N. Domenigoni Hills, Lake Elsinore region, W. Hemet Hills, Gavilan Hills, Box Springs Mtn, Lakeview Mtns	Found principally in alluvial fans and openings of coastal sage scrub. Blooms from April to June. Not anticipated on the project site.
Chorizanthe polygonoides ssp. longispina Long-spined spineflower		CRPR 1B.2, CS	Lake Skinner region, Menifee Valley, Warm Springs Creek, Murrieta region, Temecula region, Bundy Cyn, Skunk Hollow, Garner Valley, W. Hemet Area, Gavilan Hills, Temescal Cyn, Alberhill, Santa Rosa Plateau	Found on clay soils or eroded loams in annual grasslands. This species is found scattered on clayish substrates throughout the Perris Basin. Blooms from April to July. Not anticipated on the project site.
Convolvulus simulans Small-flowered morning glory		CRPR 4.2, CS	Paloma Valley, Lake Skinner region, French Valley, Skunk Hollow, Temescal Cyn, Gavilan Hills, Vail Lake	Found on clay soils in clay grasslands, generally on heavy clays. Blooms from March to July. Observed on Flossie Road ROW.
Deinandra paniculata Paniculate tar plant		CRPR 4.2, NCS	French-Paloma Valleys, Murrieta-Temecula-Lake Elsinore region, Menifee Valley, Perris Valley region, San Jacinto Valley, Moreno Valley, Gavilan Hills	Found in annual grasslands. Blooms from March to November, Observed on the project site.

Table 7 Special Status Plant Species Potentially Occurring on the Project Site

Species	Federal/ State	CNPS/ MSHCP Other	Known or Expected Localities	Comments
Harpagonella palmeri Palmer's grappling hook		CRPR 4.2, CS	French Valley, Lake Skinner, Murrieta, Menifee Valley, Bundy Cyn, Temecula, Gavilan Hills, Alberhill, Skunk Hollow, Temescal Cyn, W. Hemet Hills, Vail Lake	Found in clay soil grasslands. Blooms from March to May. Not anticipated on the project site.
Juglans californica California black walnut		CRPR 4.2, CS, RR/VP	French Valley, Paloma Valley Murrieta Creek, Lake Skinner region, Riverside, Santa Ana River, Moreno Valley, Jurupa Hills	Found on margins of alluvial washes, margins of riparian woodland, oak woodland, and coastal sage scrub-chaparral. Blooms form March to August. Does not occur on the project site.
Lepidium virginicum var. robinsonii Robinson's pepper grass		CRPR 1B.2, NCS	French Valley, Lake Skinner-Crown Valley, N. Domenigoni Hills, W.Hemet Hills, Murrieta-Menifee Valley, Vail Lake, Gavilan Hills, Perris Valley, Sedco Hills, Box Springs Mtns	Found uncommonly scattered throughout the Perris Basin, San Bernardino Basin. This peppergrass blooms from Jan. to March and can be difficult to identify after this period. Not anticipated on the project site.
Microseris douglasii ssp. Platycarpha Small-flowered microseris		CRPR 4.2, CCS	French Valley, Paloma Valley, Lake Skinner region, Menifee Valley, Warm Springs Creek, Gavilan Hills, Lake Elsinore region, W. Hemet Hills, Temescal Cyn, Perris Basin, Santa Rosa Plateau	Found on clay soil grasslands. Blooms from March to May. Not anticipated on the project site.

Federal Designations:

FE = Listed by the Federal government as an endangered species.
FT = Listed by the Federal government as a threatened species.

State Designations:

CE = Listed as endangered by the State of California.
CT = Listed by the State of California as a threatened species.

California Native Plant Society (CNPS) California Rare Plant Rank (CRPR):

1A = Plants presumed extinct in California.
1B = Plants considered rare, threatened or endangered in California and elsewhere.
2 = Plants rare, threatened or endangered in California but more common elsewhere.
3 = Plants about which we need more information - A review list.
4 = Plants of limited distribution - A watch list.

CNPS Threat Code Extensions

.1 = Seriously endangered in California.
.2 = Fairly endangered in California.
.3 = Not very endangered in California.

Western Riverside MSHCP

Cs = Plant species covered w/in the MSHCP
Ccs = Plant species conditionally covered w/in the MSHCP; coverage conditional on the plan meeting species specific objectives.
Ncs = Plant species not covered w/ in the MSHCP
NEPS = Plant species on the list of Narrow endemic plant species.
ASNP = Plant species on the list of Additional Survey needs and procedures list.
RR/VP = Plant species on the Riparian/Riverine & Vernal pool list.
CAPS = Plant species included on the list of Criteria Area Species

3. Environmental Analysis

Special Status Habitats

The project site lacks any special status habitats known to occur in the region. Riversidian sage scrub is a special status community, due to the number of declining wildlife and plant species associated with this scrub community. However, the Riversidian sage scrub-grassland ecotone found on the property would not be considered a special status community due to the very low shrub cover found in this grassland.

The Western Riverside HCP would consider drainages and riparian communities as special status habitats, due to the limited distribution of these communities and the number of special status species found in riparian habitats. In addition, the Western Riverside HCP does not cover federal or state permits for waters or wetlands within its area.

Jurisdictional Waters and Wetlands

Regulatory Protections for Waters and Wetlands

- US Army Corps of Engineers' Clean Water Act Section 404 permit for dredge and fill of materials into Waters of the United States includes drainages considered waters of the US and areas meeting the three-part criteria (hydrology, hydric soils, and wetland vegetation) for wetlands that may occur within the area of Waters of the US or adjacent to these Waters:

- San Diego Regional Water Quality Control Board (RWQB) regulates potential discharges of fill material in Waters of the State or isolated wetland, not regulated by the Army Corps, under the Porter Cologne Act (California Water Code Sections 13000 et seq.).

- California Department of Fish and Wildlife, under sections 1600 to 1616 of the California Fish and Game Code, regulates the obstruction, diversion, or alteration to any natural channel, bed, or bank of any river, stream (creek), or lake. This includes the riparian vegetation supported by these waterways, lakes, or reservoirs.

The project site does not contain any riparian habitat, open drainages, erosional channels, or other features that could contain plant species associated with riparian habitats. A blue-line channel was found on the property north of the project site. No channel was noted on the project site south of this channel during the 2016 field survey. Currently, it appears that the channel has been filled in on the adjacent property, and only overland flows occur on the project site.

An area along the southeast site boundary, approximately 0.24 acre, is mapped as a ponding area on the Environmental Constraints Sheet for the project site prepared by Diversified Engineering in 1983.

Seasonal wetlands, including vernal pools, are communities that could support special status plant or animal species. In addition, the Western Riverside HCP does not cover these wetlands or the potential permits required to disturb these habitats. No seasonal wetlands or evidence of ponding were noted on the property during the field survey or on the older Google Earth aerial photographs reviewed for this study.

Impacts

Habitat Impacts

The proposed development of the Temecula Valley Charter School would remove a total of: 7.1 acres of agricultural land, 6.04 acres of disturbed annual grassland, 0.12 acres of a Riversidian sage scrub/Annual grassland ecotone, and 0.2 acre of a graded mapping unit. In addition, the development of the Flossie Way right-of-way for campus access would result in an additional loss of 0.5 acre of disturbed annual grassland. Impacts due to the development of the campus would result in an incremental loss of grassland and agricultural habitats and would be adverse, but not significant.

Impacts on Sensitive Habitats

No impacts would occur, as no such habitats were identified onsite.

Direct Impacts on Sensitive Species

Sensitive Plant Species

There are no impacts to narrow endemic or criteria area plant species or special status plant communities, since these were not observed on the project site. The project site was determined to not contain potential habitat for six narrow endemic plant species during a habitat evaluation on March 2, 2017 due to the lack of suitable soils (deep clays); continued disturbance; and the lack of seasonal wetlands, such as vernal pools, that are the potential habitat for these species.

The proposed development would also result in the loss of some 141 individual paniculate tarplant plants on the school site and Koon Street right-of-way. Impacts would be adverse but not significant, due to the current status of this species, high abundance of these plants in the Perris Basin, and relatively low number of plants that would be removed. No mitigation is needed.

Burrowing Owl

No burrowing owl or their sign was found on the site or in a 500-foot-wide buffer area surrounding the site during a focused survey on March 7 through 10, 2017.

Burrowing owls could establish nests on the site or in the buffer prior to project initiation. The burrowing owl is a covered species under the MSHCP that requires additional surveys. The County of Riverside has conditioned the project prior to grading permit issuance for a 30-day pre-construction burrowing owl survey. Potential impacts to the burrowing owl will be mitigated to a less than significant level with adherence to the County of Riverside condition of approval.

c) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U. S. Wildlife Service?

Less than Significant Impact. Impacts would be less than significant with adherence to Riverside County Conditions of Approval for a pre-construction burrowing owl surveys prior to grading permit issuance, as substantiated above in Section 7.b. No mitigation is required.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less than Significant impact. The project site is in a rural residential and agricultural area of French Valley. The immediate neighborhood consists of rural residences and farmland. Extensive high density residential development is approximately 1,400 feet to the south. The open areas of Bachelor Mountain and the foothills around Diamond Valley Lake Reservoir are as close as one mile east of the project site. The project site is mostly vacant with two residences and plant communities dominated by grassland and agricultural lands with no riparian habitats. SR-79 borders the project site to the east.

Landscape features in rural landscapes that support important wildlife movement functions include aquatic and riparian habitats and ridgelines, particularly when they are in proximity to a known wildlife movement corridor. None of these features occur on the project site or adjoining areas. The project site probably supports local home range movement by common wildlife but does not contain a wildlife corridor or significantly contribute to wildlife movement. There are two culverts outside the eastern site border beneath SR-79 but there are no channels associated with these culverts. Medium-sized carnivores such as coyote and skunk could cross SR-79 through the culverts or on the highway surface during the night-time. The proposed project and would not impact existing paths for local wildlife movement. The proposed project would increase use of the agricultural lands on the project site and increase traffic in the vicinity. These changes would occur largely during the day-time and would not significantly impact local wildlife movement.

Birds and their nests are protected by the Migratory Bird Treaty Act (MBTA) and California Department of Fish and Wildlife (CDFW) Codes. Since the project site supports suitable nesting bird habitat, removal of vegetation or any other potential nesting bird habitat disturbances shall be conducted outside of the avian nesting season. Nesting bird season is February 1st through August 31st. If habitat or structures that support nesting birds must be cleared during the nesting season, a preconstruction nesting bird survey shall be conducted. The County of Riverside has conditioned the project prior to grading permit issuance for a pre-construction nesting bird survey. Impacts will be less than significant with adherence to Riverside County conditions of approval.

An important wildlife corridor occurs in the project region: the Proposed Constrained Linkage 18 is a narrow strip of riparian habitat along an unnamed drainage that links Paloma Valley (southwest of the project site) and the Bachelor Mountain area (east of the project site across SR-79). This linkage is approximately 1,400 feet south of the project site. The southern part of the linkage is adjoined by high density residential development. The planning species for this linkage area are bobcat and Los Angeles pocket mouse. The project site is distant from proposed Constrained Linkage 18 and is separated from it by SR-79. The proposed project would not impact wildlife movement in this regional corridor. Impacts would be less than significant.

Based on the preceding, impacts would be less than significant and no mitigation is required.

e) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No Impact. The project site lacks special status habitats. The Riversidian sage scrub-grassland ecotone found on the project site would not be considered a special status community due to the very low shrub cover found in this grassland. The project site does not contain riparian habitat, open drainages, erosional channels or other features that could contain plant species associated with riparian habitats.

As discussed in 7.a. herein, no seasonal wetlands or evidence of ponding were noted within the main project site (APNs 476-010-059 or 476-010-013) during the field survey or in a review of historical aerial photos available in Google Earth. During March 2, 2017 field surveys, ponding was observed in two road rut features within the Flossie Way access road right-of-way. Chuck Black, 10(a)(1)(A) permit number TE835549-7, of Ecological Restoration Service collected and processed dry samples for the determination of presence of fairy shrimp cysts. No *Branchinecta* or *Streptochepalus* cysts were present in any of the samples from the tire ruts. The fairy shrimp report, dated May 29, 2017, can be found in Appendix C2.

No impact would occur and no mitigation is needed.

f) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. The project site does not contain any blue line streams, seasonal wetlands, or other jurisdictional waters. The proposed project would not impact wetlands or other jurisdictional waters.

As discussed in 7.a. herein, no seasonal wetlands or evidence of ponding were noted within the main project site (APNs 476-010-059 or 476-010-013) during the field survey or in a review of historical aerial photos available in Google Earth. During March 2, 2017 field surveys, ponding was observed in two road rut features within the Flossie Way access road right-of-way. Chuck Black, 10(a)(1)(A) permit number TE835549-7, of Ecological Restoration Service collected and processed dry samples for the determination of presence of fairy shrimp cysts. No *Branchinecta* or *Streptochepalus* cysts were present in any of the samples from the tire ruts. The fairy shrimp report, dated May 29, 2017, can be found in Appendix C2. No impacts will occur. No mitigation measures are needed.

g) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact. The preservation policies of the County's Multiple Open Space Element of the General Plan rely strongly on implementation of the MSHCP for achieving biological conservation objectives. The proposed project is consistent with the provisions of the Riverside County MSHCP, and is consistent with the General Plan in this respect. No oak trees are located on the project site. Therefore, the Riverside County Oak Tree Management Guidelines are not applicable. No impact would occur and no mitigation is needed.

3.5 CULTURAL RESOURCES

The information in this section is based partly on the Phase I Cultural Resources Investigation for the Temecula Valley Charter School by McKenna et al., dated November 7, 2016. This report is kept confidential and is available at the County of Riverside Planning Department to archaeologists, Native American representatives, and planners.

8. Historic Resources

a) Alter or destroy an historic site?

No Impact. The project site was not identified as a historic site in the Cultural Resources Investigation, and no impact would occur.

b) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?

Less Than Significant Impact With Mitigation Incorporated. Section 15064.5 defines historic resources as resources listed or determined to be eligible for listing by the State Historical Resources Commission, a local register of historical resources, or the lead agency. Generally, a resource is considered "historically significant" if it meets one of the following criteria:

i) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

ii) Is associated with the lives of persons important in our past;

iii) Embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important creative individual, or possesses high artistic values;

iv) Has yielded, or may be likely to yield, information important in prehistory or history.

Historic Background

The Temecula Valley was within the jurisdiction of Mission San Luis Rey, and had become the principal grain producer for the mission by 1818. French Valley began to be settled in the late 1860s. The project site was part of a homestead established by Ralph Cassady in 1892. The current alignment of SR-79 was established along the eastern site boundary in the mid-1960s.

Historic Resources

No historically significant resources were identified on the site by the Cultural Resources Investigation. A single-family residential complex—consisting of a detached single-family house, a prefabricated house, and a detached three-car garage—was developed in the western part of the site beginning in 1979. A modern one-story single-family house is atop the hill in the northwest part of the site. A metal scale, thought to be post–World War II in age and of the type used to measure surface friction of cars (possibly race cars), extends vertically out of the ground in the south part of the site. A concrete cistern is in a fenced animal enclosure in the central part of the site. Aerial photographs depicted two structures on the eastern site boundary fronting SR-79, but the structures were not found during an intensive foot survey of the site.

Project Impacts

Project development would involve soil disturbance on about 8.5 acres of the site plus about 0.65 acres of off-site roadways. There is a very low potential for the presence of buried historic archaeological resources onsite, but this impact is potentially significant. Implementation of Mitigation Measure CUL-1 would reduce this impact to less than significant.

Findings of Fact

Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect.

Mitigation Measure

CUL-1 Before the beginning of earth-moving activities, Temecula Valley Charter School shall retain a Riverside County–certified historical archaeological consultant to be available on-call during earth-moving activities. If resources are uncovered, the remaining earth-moving activities on the property should be subjected to full-time monitoring. If resources identified as Native American in origin are uncovered, a Native American (Luiseño) monitor should be added. If resources are identified, the historic archaeological monitoring program should be initiated and continued until the earth-moving activities are completed. The historic archaeological consultant (consultant) and the Native American monitor, if applicable, shall have the authority to halt earth-moving activities within 50 feet of a discovery. The consultant shall recover, identify, and determine the significance of any resources discovered. Resources shall be curated at the facilities of the Western Science Center in Hemet, but the resources of Native American origin may be retained by the Luiseño Tribe. After the completion of all monitoring work, the consultant shall prepare a report describing the resources found for submission to the Riverside County Planning Department.

3. Environmental Analysis

9. Archaeological Resources

a) Alter or destroy an archaeological site?

No Impact. No prehistoric archaeological resources were identified onsite during the intensive foot survey of the site. Letters inquiring about cultural resources of concern on or near the site were sent to representatives of several Native American tribes as part of the Cultural Resources Investigation; three responses were received, none of which mentioned concerns about cultural resources on or near the site.[2] Six prehistoric archaeological resources have been identified by previous cultural resources investigations within one mile of the project site: four isolates, one prehistoric artifact scatter, and one destroyed pictograph site.[3] The site is considered low to moderately sensitive for prehistoric archaeological resources. No impact would occur.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Less Than Significant Impact With Mitigation Incorporated.

Cultural Background

The project site borders the traditional and ethnographic boundaries of the Luiseño Native American population. The Luiseño are described as hunters and gatherers who also lived in semisedentary villages, practiced a complex form of territoriality and exploitation, and are known throughout Southern California for their rock art. The Luiseño practiced a relatively complex social organization based on lineages and clans. Individual clans occupied village sites and used individualized territories. The Luiseño subsisted on seasonal game—deer and a variety of small animals—and plants (acorns and herb and grass seeds).

A general cultural chronology for inland southern California is as follows:

- 11,000–8,000 years before present (ybp): Pleistocene/Early Holocene (Early Man) Period
- 8,000–5,500 ybp: San Dieguito Period
- 5,500–1,500 ybp: Millingstone/La Jolla-Pauma/Archaic/Encinitas Period
- 1,500–300 ybp: Late Prehistoric/Luiseño Period

No Early Man sites are known from the project region. The San Dieguito tradition is characterized by large domed scrapers, leaf-shaped knives and projectile points, stemmed projectile points, chipped stone crescentics, and hammerstones. The La Jolla Complex is recognized by the presence of millingstone assemblages and shell middens. The Late Prehistoric has been equated with the presence of cremations, bedrock mortars, millingstones, small triangular projectile points with concave bases, bone awls, stone pendants, *Olivella* shell beads, and quartz crystals.[4]

---

2 Separate consultation letters respecting tribal cultural resources were sent by the Riverside County Planning Department.
3 An isolate is fewer than 3 isolated artifacts; and does not contain enough associated artifacts to form an archaeological site. A pictograph is rock art painted on stone (compare to *petroglyph*, which is carved into stone).
4 *Olivella* is a genus of marine snails.

Archaeological Resources

No archaeological resources were identified onsite, as described in Section 9.a.

Project Impacts

Project development would involve soil disturbance on about 9.15 acres including the 8.5-acre school site and about 0.65 acres of off-site roadways. There is a low to moderate potential for the presence of buried prehistoric archaeological resources onsite. This impact is potentially significant. Implementation of Mitigation Measure CUL-2 would reduce this impact to less than significant.

Findings of Fact

Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect.

Mitigation Measure

CUL-2 Prior to the issuance of grading permits, the developer/permit applicant shall enter into an agreement with and retain a Native American Monitor from the appropriate tribe.

The Native American Monitor shall be on-site during all initial ground disturbing activities and excavation of each portion of the project site including clearing, grubbing, tree removals, grading and trenching. In conjunction with the Archaeological Monitor, the Native American Monitor shall have the authority to temporarily divert, redirect or halt the ground disturbance activities to allow identification, evaluation, and potential recovery of cultural resources.

The developer/permit applicant shall submit a fully executed copy of the contract to the County Archaeologist to ensure compliance with this condition of approval. Upon verification, the Archaeologist shall clear this condition.

This agreement shall not modify any condition of approval or mitigation measure.

c) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact. California Health and Safety Code Section 7050.5 requires that in the event that human remains are discovered within the project site, disturbance of the site shall halt and remain halted until the coroner has conducted an investigation into the circumstances, manner, and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative. If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes or has reason to believe the human remains to be those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission. The project would comply with existing law, and potential impacts to human remains would be less than significant.

d) Restrict existing religious or sacred uses within the potential impact area?

No Impact. No religious or sacred uses on or near the site were identified in the cultural resources investigation or in responses by Native American tribal representatives. No impact would occur.

10. Tribal Cultural Resources

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c). of Public Resources Code Section 5024.1 for the purpose of this paragraph, the lead agency shall consider the significance to a California Native tribe.

Less than Significant Impact with Mitigation Incorporated.

Tribal Consultation

Notifications about this project were sent to Native American groups who had requested to be noticed pursuant to AB 52. These include the Pechanga Cultural Resources Department, Soboba Band of Luiseño Indians, Ramona Band of Cahuilla Indians, Colorado River Indian Tribes and the Rincon Band of Luiseño Indians. Requests for consultation were received from Pechanga and Soboba. The remaining tribes did not request consultation on this project. Pechanga and Soboba did not identify any Tribal Cultural Resources in the project area. Pechanga and Soboba expressed concern that subsurface resources may be present and requested that a native Monitor be present during grading activities. Consultation was concluded with Soboba on April 19, 2017 and with Pechanga on April 19, 2017.

Project Impacts

Project development would involve soil disturbance on about 8.5 acres of the site plus about 0.65 acres of off-site roadways. There is a potential for the presence of buried tribal cultural resources onsite, and this impact is potentially significant. Implementation of Mitigation Measure CUL-2 would reduce this impact to less than significant.

Findings of Fact

Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect.

Mitigation Measure

Mitigation Measure CUL-2 applies to this impact.

3.6 GEOLOGY AND SOILS

The information in this section is based partly on the following technical studies:

- *Geotechnical Investigation, Proposed Charter School Site*. by Inland Foundation Engineering, dated September 9, 2016. A complete copy of this report is included as Appendix D of this Initial Study.
- *Paleontological Technical Study: Temecula Valley Charter School Project, Riverside County, California.* Paleo Solutions, February 24, 2017. A complete copy of this report is included as Appendix E of this Initial Study.

Would the project:

11. Alquist-Priolo Earthquake Fault Zone or County Fault Hazard Zones

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death?

No impact. See the analysis in Section 11.b below.

b) Be subject to rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

No Impact. The Alquist-Priolo Earthquake Fault Zoning Act was passed to prevent construction of buildings used for human occupancy on the surface of active faults, in order to minimize the hazard of surface rupture of a fault to people and buildings. Before cities and counties can permit development within Alquist-Priolo Earthquake Fault Zones, geologic investigations are required to show that the sites are not threatened by surface rupture from future earthquakes. Active earthquake faults are faults where surface rupture has occurred within the last 11,000 years. There are no Alquist-Priolo Earthquake Fault Zones in or next to the project site. In addition, the site does not lie within a fault zone established by the County of Riverside. The closest active faults are the Elsinore-Temecula Fault (7.4 miles away), the Elsinore-Glen Ivy Fault (13.8 miles away), and the San Jacinto-San Jacinto Valley and San Jacinto-Anza Faults (15.0 miles away) from the site (LGC, 2016b). Therefore, the potential for active fault rupture at the site is considered very low and no direct seismically-induced rupture impacts would occur.

Project development would not place people or structures at risk from surface rupture of a known active fault, and no impact would occur. No mitigation is needed.

3. Environmental Analysis

12. Liquefaction Potential Zone

a) Be subject to seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Liquefaction refers to lose, saturated sand or silt deposits that behave as a liquid and lose their load-supporting capability when strongly shaken. Loose granular soils and silts that are saturated by relatively shallow groundwater are susceptible to liquefaction. The potential for liquefaction and seismically induced settlement onsite is negligible due to the presence of medium dense to dense older alluvial soils underlain by relatively shallow metamorphic bedrock. Impacts would be less than significant and no mitigation is needed.

13. Ground-shaking Zone

a) Be subject to strong seismic ground shaking?

Less Than Significant Impact. Seismic design parameters for the proposed project were calculated in the Geotechnical Investigation Report pursuant to 2013 California Building Code requirements.

Structures for human occupancy must be designed to meet or exceed California Building Code (CBC) standards for earthquake resistance. The CBC contains provisions for earthquake safety based on factors including occupancy type, the types of soil and rock onsite, and the strength of ground motion with a specified probability at the site. The geotechnical investigation for the project would calculate seismic design parameters, pursuant to CBC requirements, that must be used in the design of the proposed building. The CBC is updated on a three-year cycle; the 2016 CBC is scheduled to take effect on January 1 2017. Project development would not subject people or structures to substantial hazards from ground shaking, and impacts would be less than significant. No mitigation is required.

14. Landslide Risk

a) Be located on a geologic unit or soil that is unstable, or that would become unstable due to the project, and potentially result in on- or off-site landslide, lateral spreading, collapse, or rockfall hazards?

Less Than Significant Impact.

Landslide and Rockfall

The potential for earthquake-induced landslides is considered very low due to the relatively low-lying topography of the site and adjacent areas. Impacts would be less than significant and no mitigation is needed.

Lateral Spreading

Lateral spreading is the downslope movement of surface sediment due to liquefaction in a subsurface layer. Hazards from lateral spreading would be minimized by compliance with any recommendations in the geotechnical investigation report for minimizing liquefaction hazards. Impacts would be less than significant and no mitigation is needed.

Collapse

Collapsible soils shrink upon being wetted and/or being subject to a load. One test of subsurface site soil indicated a moderate potential for soil collapse ("saturation collapse"). The Geotechnical Investigation (see Initial Study Appendix D) recommends removal of existing site soils to at least 24 inches below existing grade, or where testing indicates a relative compaction of at least 85 percent in undisturbed native soils, whichever is deeper, and replacement with compacted, moistened soils. The Geotechnical Investigation Report recommends a foundation consisting of shallow spread footings with a slab-on-grade floor. Compliance with recommendations of the Geotechnical Investigation Report would reduce hazards from collapsible soils to a less than significant impact. No mitigation is required.

15. Ground Subsidence

a) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in ground subsidence?

Less than Significant Impact. The major cause of ground subsidence is the excessive withdrawal of groundwater. Ground subsidence does not appear to affect the site. Impacts would be less than significant and no mitigation is needed.

16. Other Geologic Hazards

a) Be subject to geologic hazards, such as seiche, mudflow, or volcanic hazard?

Less than Significant Impact.

Seiche

A seiche is a surface wave created when an inland water body is shaken, usually by an earthquake. There are no surface water bodies close enough to the project site to pose a flood hazard to the site due to a seiche, and no impact would occur.

Mudflow

A mudflow is a landslide composed of saturated rock debris and soil with a consistency of wet cement. The hill onsite is too small to generate a mudflow that would pose a substantial flood hazard to people or structures onsite. There are no other slopes close enough to the project site to pose a mudflow hazard to the site. No impact would occur.

Volcanic Hazard

No volcano hazard areas in Riverside County are mapped on the US Geological Survey's California Volcano Observatory. The two nearest such areas to the project site are the Lavic Lake Volcanic Field in San Bernardino County, about 87 miles to the northeast; and Salton Buttes Lava Dome in Imperial County about 92 miles to the east (USGS 2016). No impact would occur and no mitigation is required.

3. Environmental Analysis

17. Slopes

a) Change topography or ground surface relief features?

Less than Significant Impact. The hill in the west part of the site would remain. The school would be built mostly in the east half of the site which slopes very slightly to the east. Impacts would be less than significant, and no mitigation is needed.

b) Create cut or fill slopes greater than 2:1 or higher than 10 feet?

No Impact. The project grading plan does not include cut or fill slopes greater than 2:1 (horizontal:vertical), or higher than 10 feet. No impact would occur, and no mitigation is required.

c) Result in grading that affects or negates subsurface sewage disposal systems?

No Impact. The proposed grading would accommodate installation of sewer laterals, and no impact would occur. No mitigation is needed.

18. Soils

a) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. Project construction would disturb soil on 10 acres of the 14.6-acre site. Construction projects of one acre or more are regulated under the Statewide General Construction Permit, Order No. 2012-0006-DWQ, issued by the State Water Resources Control Board in 2012. Projects obtain coverage by developing and implementing a Stormwater Pollution Prevention Plan estimating sediment risk from construction activities to receiving waters, and specifying best management practices (BMPs) that would be used by the project to minimize pollution of stormwater. Categories of BMPs used in Stormwater Pollution Prevention Plans are described below in Table 8.

Table 8 Construction Best Management Practices

Category	Purpose	Examples
Erosion Controls and Wind Erosion Controls	Cover and/or bind soil surface, to prevent soil particles from being detached and transported by water or wind	Mulch, geotextiles, mats, hydroseeding, earth dikes, swales
Sediment Controls	Filter out soil particles that have been detached and transported in water.	Barriers such as straw bales, sandbags, fiber rolls, and gravel bag berms; desilting basin; cleaning measures such as street sweeping
Tracking Controls	Minimize the tracking of soil offsite by vehicles	Stabilized construction roadways and construction entrances/exits; entrance/outlet tire wash.

Table 8 Construction Best Management Practices

Category	Purpose	Examples
Non-storm Water Management Controls	Prohibit discharge of materials other than stormwater, such as discharges from the cleaning, maintenance, and fueling of vehicles and equipment. Conduct various construction operations, including paving, grinding, and concrete curing and finishing, in ways that minimize non-stormwater discharges and contamination of any such discharges.	BMPs specifying methods for: paving and grinding operations; cleaning, fueling, and maintenance of vehicles and equipment; concrete curing; concrete finishing.
Waste Management and Controls (i.e., good housekeeping practices)	Management of materials and wastes to avoid contamination of stormwater.	Spill prevention and control, stockpile management, and management of solid wastes and hazardous wastes.

Source: CASQA 2003.

Project design and operation would be required to comply with the Municipal Stormwater Permit ("MS4 Permit") issued by the San Diego RWQCB in May 2013 (Order No. R9-2013-0001). The project would be classified as a Priority Project under the MS4 Permit because it would develop over 10,000 square feet of impervious surfaces. The project would be required to design and implement structural BMPs for minimizing stormwater pollution, including low-impact development (LID) BMPs, and could be required to design and implement hydromodification BMPs.

LID is a stormwater management and land development strategy that combines a hydrologically functional site design with pollution prevention measures to compensate for land development impacts on hydrology and water quality. LID techniques mimic the predevelopment site hydrology by using site design techniques that store, infiltrate, evapotranspire, bio-filter, or detain runoff close to its source. LID requirements for priority development projects in the portion of the Santa Margarita Watershed in Riverside County are detailed in the water quality management plan for the Santa Margarita Region of Riverside County issued by the Riverside County Flood Control and Water Conservation District, effective July 11, 2014.

Hydromodification is the management of post-project runoff flows and durations so that they are maintained to the levels of the pre-project condition.

After compliance with requirements of the MS4 Permit, the project would not cause substantial erosion or siltation, and impacts would be less than significant. No mitigation is needed.

b) Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007), creating substantial risks to life or property?

Less Than Significant Impact. Expansive soils shrink or swell as the moisture content decreases or increases; the shrinking or swelling can shift, crack, or break structures built on such soils. Two samples of subsurface site soils yielded expansion indices of 66 and 25, indicating medium and low expansion potentials, respectively. Detailed recommendations for concrete slab-on-grade foundations on expansive soils are provided in the Geotechnical Investigation Report, in compliance with the California Building Code and

Riverside County Ordinance. Project design and construction would comply with such recommendations, and impacts would be less than significant. No mitigation is needed.

c) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The Eastern Municipal Water District provides sewer service to the community of French Valley. Project development would include construction of sewers connecting to existing sewer mains, and the project would not involve use of septic tanks or other alternative wastewater disposal systems. No impact would occur and no mitigation is required.

19. Erosion

a) Change deposition, siltation, or erosion that may modify the channel of a river or stream or the bed of a lake?

Less than Significant Impact. Project development would include implementation of construction and operational BMPs described above in Section 18.a. Thus, development would not change siltation or erosion so as to change a river or stream channel or a lakebed. Impacts would be less than significant and no mitigation is required.

b) Result in any increase in water erosion either on or off site?

Less than Significant Impact. Project erosion impacts would be less than significant, as substantiated above in Section 18.a.

20. Wind Erosion and Blowsand from project either on or off site.

a) Be impacted by or result in an increase in wind erosion and blowsand, either on or off site?

Less than Significant Impact. The construction BMPs that would be implemented by the project include wind erosion BMPs. At completion, the entire campus would be developed with buildings, landscaping, and paved areas including parking lots, driveways, walkways, and hardcourts. Thus, the finished campus would not contain bare soil susceptible to wind erosion. Impacts would be less than significant and no mitigation is required.

21. Paleontological Resources

A paleontological study of the project site was completed by Paleo Solutions on February 24, 2017; a complete copy of this report is included as Appendix E of this Initial Study.

a) Directly or indirectly destroy a unique paleontological resource, or site, or unique geologic feature?

Less than Significant Impact with Mitigation Incorporated.

Paleontological Resources

Literature and Records Searches

The paleontological study included searches of several geologic maps and scientific papers, and a records search by the Western Science Center in Hemet. The Records Search did not identify fossil localities within one mile of the project site. The following is a discussion of the literature search and records search results for western Riverside County including an assessment of paleontological sensitivity of onsite rocks and soils. The project site is underlain by four types of rock, sediment, and soil:

Mesozoic Igneous and Sedimentary Rocks

Mesozoic-age igneous rocks (gabbro [Kgb], granodiorite [Kgd], and metamorphic rock (phyllite [Mzp]). The Mesozoic Era extends from about 251 to 65.5 million years before present (mybp). Phyllite is mapped within the Project area in the central, northwest corner, and southeast corner. Phyllite bedrock underlies the Quaternary alluvial sediments in the Project area between one and ten feet below the current ground surface. Additionally, gabbro (Kgb) is mapped west of the Project area, and granodiorite (Kgd) is mapped as two small slivers southwest of the Project area (Figure 3). Igneous rocks formed deep within the Earth's surface at high temperature and high pressure and lack fossil resources. Metamorphic rocks have been deformed by heat and pressure and will usually be devoid of recognizable fossil remains. Igneous and metamorphic rocks are therefore considered to have very low paleontological potential (Class 1) using the Potential Fossil Yield Classification (PFYC) system and low sensitivity per Riverside County guidelines.

Pleistocene Very Old Alluvial Deposits

Pleistocene very old alluvial valley deposits (Qvova) comprise fluvial sediments deposited on broad canyon floors by ancient river and stream systems. The Pleistocene Epoch extends from about 2.59 mybp to approximately 11,700 years before present (ybp).

Older alluvial sediments are heavily dissected and consist of reddish-brown, clay, silt, sand and gravel. Pleistocene very old alluvial deposits are mapped on the majority of the western Project area as well as the northeast corner.

Taxonomically diverse and locally abundant Pleistocene animals and plants have been collected from older alluvial deposits similar to those mapped in the Project area throughout southern California and include mammoth, mastodon, camel, horse, bison, giant ground sloth, peccary, cheetah, lion, saber tooth cat, capybara, dire wolf, and numerous taxa of smaller mammals. Pleistocene very old alluvial deposits have moderate paleontological potential (Class 3) using the PFYC system and high (A) sensitivity per Riverside County guidelines.[5]

Pleistocene older alluvium has produced numerous Pleistocene-age vertebrate fossils in the Project vicinity as well as elsewhere in Riverside County. Most notable is the massive fossil collection recovered during excavation for Diamond Valley Lake northeast of the Project area. These sediments have yielded tens of

[5] The Potential Fossil Yield Classification system is a five-point scale from very low potential to contain paleontological resources (Class 1) to very high potential (Class 5). Riverside County assigns four categories of paleontological sensitivity: High (with two subcategories, High A and High B); Low, and Undetermined.

3. Environmental Analysis

thousands of fossils corresponding to the late Irvingtonian and early Rancholabrean North American Land Mammal Ages.[6] The Diamond Valley Lake Local Fauna (DVLLF) is the largest open, non-asphaltic late Pleistocene fossil assemblage known in the southwestern United States. The assemblage comprises 2,646 localities and includes nearly 100,000 identifiable fossils representing more than 105 vertebrate, invertebrate, and plant taxa. Vertebrate fossils are generally well-preserved and relatively complete and provide important data on the relative abundance and diversity of species through time at the given geographical location. A complete list of DVLLF taxa is provided in Table 3 of the Paleontological Study included as Appendix E to this Initial Study.

Furthermore, the Pauba Formation, which is geologically correlative with Pleistocene older alluvium, has produced numerous specimens of well-preserved fossil vertebrates of late Pleistocene age during excavations for a nearby housing development project in Temecula, Riverside County. These fossils were discovered during monitoring in 2004 and included scientifically significant specimens from six different taxa: *Mammuthus columbi* (mammoth), *Equus* spp. (horse), *Bison antiquus* (bison), cf. Camelidae (camel family), Rodentia (rodent family), and Serpentes (snake).

Quaternary Young Alluvial Deposits

Quaternary young alluvial deposits (Qa, Qyaa) are Holocene-age (10,000 years ago – Recent) and are composed of gravel, sand, and clay that comprise valleys and alluvial fans. Quaternary deposits are poorly consolidated and represent sedimentation from current and former major rivers and streams. The alluvium is covered with greyish colored soil. Quaternary valley alluvium (Qa) is mapped in the northeast corner of the Project area, and alluvial channel deposits (Qyaa) are mapped southeast of the Project area.

Fossils are generally unknown from Holocene-age surficial deposits, due to their young age. Reworked fossils from older deposits may be present, but would not meet significance criteria as the fossils would lack critical contextual information. However, they may overlie older, paleontologically sensitive deposits at depth. Therefore, the Quaternary alluvium deposits are designated as having low paleontological sensitivity (Class 2) above four feet depth and are designated as having unknown paleontological potential (Class U) below four feet depth using the PFYC system. These deposits have a high (B) sensitivity per Riverside County guidelines.

Artificial Fill

Artificial fill (af) comprises recent deposits of previously disturbed sediments emplaced by construction operations and are found in areas where recent construction has taken place. Colors are highly variable and sediments are mottled in appearance. Although these materials may contain fossil resources, they have been removed from their original locations and lack significance. Artificial fill is not mapped in the Project area; however, the apparent preexisting surface disturbance in the vicinity suggests the presence of these materials comprising some of the surface of the Project area. Artificial fill (af) has low paleontological potential (Class 2) using the PFYC system and high (B) sensitivity per Riverside County guidelines.

[6] The Irvingtonian and Rancholabrean ages are components of a chronology for fossil North American land mammals. The Irvingtonian Age extend from about 1.8 mybp to 240,000 ybp; the Rancholabrean extends from about 240,000 to 11,000 ybp.

Field Survey Results

No fossils were observed onsite during a field survey conducted February 2, 2017.

Impacts

Project development would include ground disturbance on the entire 8.5-acre school site, plus about 0.66 acres of Koon Street and Pourroy Road. Surface grading or shallow excavations entirely within Holocene young alluvial deposits in the project area are unlikely to uncover significant fossil vertebrate remains. However, older deposits may be present immediately below a thin veneer of Holocene soils or alluvium. The geotechnical boring logs show Quaternary (Holocene and Pleistocene) sediments one foot beneath the ground surface and extending to a maximum depth of ten feet. Excavations in the Project area that extend down into very old sedimentary deposits may well impact scientifically important paleontological resources. Excavations into Mesozoic phyllite, expected to be encountered starting at relatively shallow depths of one to ten feet below the current ground surface, will not impact scientifically significant fossils, although the overlying sediments may contain resources. Therefore, grading and other earthmoving activities may potentially result in significant direct impacts to paleontological resources throughout the entirety of the Project area.

Findings of Fact

Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect.

Mitigation Measure

Construction excavations which disturb Pleistocene-age sediments shall be monitored by a professional paleontologist in order to reduce potential adverse impacts on scientifically important paleontological resources to a less than significant level. Prior to construction, the project applicant shall retain a professional paleontologist. The paleontologist shall prepare a paleontological resources monitoring plan (PRMP) before the beginning of ground-disturbing activities. The PRMP shall provide detailed recommended monitoring locations; a description of a worker training program; detailed procedures for monitoring, fossil recovery, laboratory analysis, and museum curation; a curation agreement with the Western Science Center or another accredited repository; and notification procedures in the event of a fossil discovery by a paleontological monitor or other project personnel. Because the Project area is nearly devoid of exposed sediments, the approximate ages (Holocene or Pleistocene) of the Quaternary deposits underlying the Project area could not be determined from the field survey. Additionally, the subterranean sediment descriptions provided in the geotechnical report are inconclusive for determining Holocene or Pleistocene ages. Therefore, it is recommended that excavations in all locations of the Project area be initially monitored for the presence of paleontologically sensitive sediments. If it is determined that only Holocene-age alluvium (PFYC Class 2) or Mesozoic-age phyllite (PFYC Class 1) is impacted, monitoring will be reduced or halted. Any potential fossils that are unearthed during construction should be evaluated by a professional paleontologist as described in the PRMP.

Unique Geological Resources

There are no unique geological features onsite. French Valley is one of the valleys in the San Jacinto Basin, a broad area of valleys interspersed with hills bounded by the San Jacinto and Santa Rosa Mountains to the northeast and the Santa Ana Mountains to the southwest. The northwest part of the project site is a hill with an elevation of about 1,470 feet above mean sea level; the remainder of the site has a slight east slope, and the elevation at the southeast corner of the site is about 1,412 feet above mean sea level. The site is underlain by very old (middle to early Pleistocene) alluvial valley deposits and Mesozoic metamorphic bedrock (phillite) (Inland Foundation Engineering 2016). No impact would occur and no mitigation is required.

3.7 GREENHOUSE GAS EMISSIONS

22. Greenhouse Gas Emissions

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as greenhouse gases (GHGs), into the atmosphere. The primary source of these GHG is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHGs—water vapor, carbon dioxide (CO_2), methane (CH_4), and ozone (O_3)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHG identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydro fluorocarbons, per fluorocarbons, and chlorofluorocarbons.[7, 8]

This section analyzes the project's contribution to global climate change impacts in California through an analysis of project-related GHG emissions. Information on manufacture of cement, steel, and other "life cycle" emissions that would occur as a result of the project are not applicable and are not included in the analysis.[9] Black carbon emissions are not included in the GHG analysis because CARB does not include this pollutant in the state's AB 32 inventory and treats this short-lived climate pollutant separately (CARB 2016). [10]

---

7 Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant, but part of the feedback loop rather than a primary cause of change.

8 Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of PM emitted from burning fuels. Reducing black carbon emissions globally can have immediate economic, climate, and public health benefits. California has been an international leader in reducing emissions of black carbon, with close to 95 percent control expected by 2020 due to existing programs that target reducing PM from diesel engines and burning activities (CARB 2014). However, state and national GHG inventories do not yet include black carbon due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon.

9 Life cycle emissions include indirect emissions associated with materials manufacture. However, these indirect emissions involve numerous parties, each of which is responsible for GHG emissions of their particular activity. The California Resources Agency, in adopting the CEQA Guidelines Amendments on GHG emissions found that lifecycle analyses was not warranted for project-specific CEQA analysis in most situations, for a variety of reasons, including lack of control over some sources, and the possibility of double-counting emissions (see Final Statement of Reasons for Regulatory Action, December 2009). Because the amount of materials consumed during the operation or construction of the proposed project is not known, the origin of the raw materials purchased is not known, and manufacturing information for those raw materials are also not known, calculation of life cycle emissions would be speculative. A life-cycle analysis is not warranted (OPR 2008).

10 Particulate matter emissions, which include black carbon, are analyzed in Section 3.2, *Air Quality*. Black carbon emissions have sharply declined due to efforts to reduce on-road and off-road vehicle emissions, especially diesel particulate matter. The State's existing air quality policies will virtually eliminate black carbon emissions from on-road diesel engines within 10 years (CARB 2016).

A background discussion on the GHG regulatory setting and GHG modeling can be found in Appendix B to this Initial Study.

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. Global climate change is not confined to a particular project area and is generally accepted as the consequence of global industrialization over the last 200 years. A typical project, even a very large one, does not generate enough greenhouse gas emissions on its own to influence global climate change significantly; hence, the issue of global climate change is, by definition, a cumulative environmental impact.

The proposed project would generate GHG emissions from vehicle trips generated by the project, energy use (indirectly from purchased electricity use and directly through fuel consumed for building heating) and area sources (e.g., equipment used on-site, consumer products, coatings), water/wastewater generation, and waste disposal. Annual GHG emissions were calculated for construction and operation of the project. Annual average construction emissions were amortized over 30 years and included in the emissions inventory to account for GHG emissions from the construction phase of the project. For the purpose of this GHG analysis, it has been conservatively assumed that the project would generate an increase in vehicle mile traveled (VMT), water use, and solid waste generation due to an overall increase in school facility capacity. Project-related GHG emissions are shown in Table 9. As shown in the table, the proposed project at buildout would generate 1,267 metric tons of carbon dioxide–equivalent ($MTCO_2e$) emissions per year. The total net increase of GHG emissions on-site from the project would not exceed the SCAQMD's bright-line threshold of 3,000 $MTCO_2e$,[11] and the proposed project's cumulative contribution to GHG emissions is less than significant. No mitigation measures are required.

11 This threshold is based on a combined threshold of 3,000 MTCO2e for all land use types, proposed by SCAQMD's Working Group based on a survey of the GHG emissions inventory of CEQA projects. Approximately 90 percent of CEQA projects' GHG emissions inventories exceed 3,000 MTCO2e, which is based on a potential threshold approach cited in CAPCOA's white paper, "CEQA and Climate Change."

3. Environmental Analysis

Table 9 Project-Related GHG Emissions

Source	$MTCO_2e$/year	Percent of Project Total
Area	<1	<1%
Energy[1]	135	11%
Mobile	1,084	86%
Waste	26	2%
Water	7	1%
Amortized Construction Emissions[2]	15	1%
Total Emissions	**1,267**	**100%**
SCAQMD's Bright-Line Threshold	3,000	NA
Exceeds Bright-Line Threshold	No	NA

Source: CalEEMod Version 2013.2.2.
$MTCO_2e$: metric tons of carbon dioxide-equivalent
Note: Percent changes from each source may not total to 100 percent due to rounding.
1 Assumes implementation of the 2013 California Green Building Standards Code (CALGreen) and 2016 Building and Energy Efficiency Standards. The 2016 Building and Energy Efficiency Standards are 33.5 percent more energy efficient than the 2008 Standards for non-residential buildings.
2 Construction emissions are amortized over a 30-year project lifetime per recommended SCAQMD methodology.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact. Applicable plans adopted for the purpose of reducing GHG emissions include the California Air Resources Board's (CARB) Scoping Plan, the Southern California Association of Governments' Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), and the County of Riverside's Climate Action Plan (CAP). A consistency analysis with these plans is presented below.

CARB Scoping Plan

CARB's Scoping Plan is California's GHG reduction strategy to achieve the state's GHG emissions reduction target established by Assembly Bill (AB) 32, which is to return to 1990 emission levels by year 2020. The CARB Scoping Plan is applicable to state agencies and is not directly applicable to cities/counties and individual projects. Nonetheless, the Scoping Plan has been the primary tool that is used to develop performance-based and efficiency-based CEQA criteria and GHG reduction targets for climate action planning efforts.

Since adoption of the 2008 Scoping Plan, state agencies have adopted programs identified in the plan, and the legislature has passed additional legislation to achieve the GHG reduction targets. Statewide strategies to reduce GHG emissions include the Low Carbon Fuel Standard (LCFS), California Appliance Energy Efficiency regulations, California Renewable Energy Portfolio standard, changes in the Corporate Average Fuel Economy (CAFE) standards, and other early action measures as necessary to ensure the state is on target to achieve the GHG emissions reduction goals of AB 32. Also, new buildings are required to comply with the 2016 Building and Energy Efficiency Standards and 2013 California Green Building Code (CALGreen). The state is currently preparing the *2030 Target Scoping Plan Update* to address the new 2030 interim target to achieve a 40 percent reduction below 1990 levels by 2030, established by Senate Bill 32 (SB 32). While measures in the Scoping Plan apply to state agencies and not the proposed project, the project's GHG emissions would be reduced from compliance with statewide measures that have been adopted since AB 32 was adopted.

SCAG's Regional Transportation Plan/Sustainable Communities Strategy

In addition to AB 32, the California legislature passed Senate Bill (SB) 375 to connect regional transportation planning to land use decisions made at a local level. SB 375 requires the metropolitan planning organizations to prepare a Sustainable Communities Strategy (SCS) in their regional transportation plans to achieve the per capita GHG reduction targets. For the SCAG region, the SCS was adopted in April 2016 (SCAG 2016). The SCS does not require that local general plans, specific plans, or zoning be consistent with the SCS, but provides incentives for consistency for governments and developers. The proposed project would provide for the educational needs of the community to meet the existing and projected demand for school services. Additionally, the proposed project would be constructed on an infill site and would not require extension of infrastructure in greenfield areas. The proposed project would not interfere with SCAG's ability to implement the regional strategies outlined in the RTP/SCS.

Riverside County Climate Action Plan

The County of Riverside adopted a CAP in December of 2015. The CAP identifies and evaluates feasible and effective policies to reduce GHG emissions in order to meet state, federal, and international targets. The CAP's Appendix F indicates that the development review process procedures for evaluating GHG impacts and determining significance for CEQA purposes will be streamlined by: 1) applying an emissions level that is determined to be less than significant for small projects, and 2) utilizing the Screening Tables to mitigate project GHG emissions that exceed the threshold level. A threshold level above 3,000 $MTCO_2e$ per year is used to identify projects that require the use of Screening Tables or a project-specific technical analysis to quantify and mitigate project emissions. The 3,000 $MTCO_2e$ per year value is used by the County to define small projects that are considered less than significant, when combined with the following modest efficiency measures, and do not need to use the Screening Tables or alternative GHG mitigation analysis (Riverside 2015):

- **Energy efficiency of at least 5 percent greater than 2010 Title 24 requirements:** Non-residential projects constructed after January 1, 2017 are 33.5 percent more energy efficiency than the 2008 Building and Energy Efficiency Standards (which were included in the 2010 CALGreen). Therefore, the proposed project complies with this efficiency measure.

- **Water conservation measures that matches the California Green Building Code in effect as of January 2011:** The proposed project would comply with the county's Water Efficient Landscape Ordinance (WELO) and water efficiency measures identified in the current version of CALGreen. Therefore, the proposed project would comply with this efficiency measure.

Since the proposed project would not exceed the threshold of 3,000 $MTCO_2e$ per year and would comply with the efficiency measures, it is considered less than significant and do not need to use the Screening Tables or alternative GHG mitigation analysis. Therefore, the proposed project is consistent with the CAP and the statewide GHG emissions goals of AB 32. No impact would occur and no mitigation measures are required.

3.8 HAZARDS AND HAZARDOUS MATERIALS

23. Hazards and Hazardous Materials

The information in this Section is based partly on the Phase I Environmental Site Assessment of 31455 Winchester Road, by EMG, dated June 6, 2016; a complete copy of this report is included as Appendix F of this Initial Study.

a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?

Less Than Significant Impact. Project construction would involve use of hazardous materials, including fuels, greases, lubricants, cleansers, paints, and pesticides. The use, storage, transport, and disposal of hazardous materials during project construction would be required to comply with existing regulations of several agencies, including the Department of Toxic Substances Control (DTSC), the US Environmental Protection Agency, Occupational Safety & Health Administration, Caltrans, County of Riverside Department of Environmental Health, and Riverside County Fire Department (RCFD). Compliance with applicable laws and regulations governing the use, storage, and transportation of hazardous materials would ensure that all potentially hazardous materials are used and handled in an appropriate manner and would minimize the potential for safety impacts to occur. Additionally, the proposed project would be constructed with strict adherence to all emergency response plan requirements set forth by the County of Riverside and RCFD.

Project operation would involve the use of small amounts of hazardous materials, such as cleansers, pesticides, and paints, for cleaning and maintenance purposes. Use of hazardous materials during project operation would comply with the same regulations that would pertain to use of such materials during project construction. Project construction and operation would not cause significant hazards to the public or the environment through routine use of hazardous materials, and impacts would be less than significant. No mitigation is needed.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact. During project construction, the construction contractor would maintain equipment and supplies onsite for containing and cleaning a hazardous materials spill and would train construction workers in such containing and cleaning. The construction contractor would notify the Riverside County Department of Environmental Health immediately in the event of a hazardous material release that onsite workers could not safely contain and clean.

During project operation, hazardous materials would be used in small amounts and in conformance with regulations of agencies listed above in Section 3.8.a. The use of hazardous materials during project operation and project construction would not cause substantial hazards arising from accidental release of hazardous materials, and impacts would be less than significant. No mitigation is required.

c) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. The emergency response plan in effect in unincorporated Riverside County is the Emergency Operations Plan approved by the Riverside County Board of Supervisors in 2006. Staging of vehicles, equipment, and construction materials during project construction would comply with requirements of the Riverside County Sheriff's Department and Riverside County Road Maintenance Division regarding maintaining emergency access on public roadways. Project construction and operation would not interfere with implementation of the Emergency Operations Plan, and no impact would occur. No mitigation is required.

d) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. There are no existing schools within 0.25 mile of the project site, and no impact would occur. No mitigation is needed.

e) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less than Significant Impact. No hazardous materials sites were identified on or within one mile of the project site during an environmental database review conducted on May 19, 2016 as part of the Phase I Environmental Site Assessment (ESA) for the project site (EMG 2016). The ESA identified past agricultural use onsite. However, based on aerial photographs, such past use of the site is considered to have been grazing land or tended grass, not irrigated cropland. The DTSC requires environmental assessment for pesticide residues on land previously used as irrigated cropland. The past use of the site does not trigger the DTSC requirement. Project development would not create hazards arising from a listed hazardous materials site on the project site, and no impact would occur. No mitigation is needed.

24. Airports

a) Result in an inconsistency with an Airport Master Plan?

No Impact. The project site is not within the airport land use plan or within two nautical miles of a public-use airport. The nearest public-use airport to the site is French Valley Airport, about 3.3 miles to the southwest. No impact would occur and no mitigation is required.

b) Require review by the Airport Land Use Commission?

No Impact. The project site is not within the airport land use plan, and project development would not require review by the Riverside County Airport Land Use Commission. No impact would occur and no mitigation is needed.

c) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles or a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The project site is not within the airport land use plan or within two nautical miles of a public-use airport. The nearest public-use airport to the site is French Valley Airport, about 3.3 miles to the southwest. The site is not in areas surrounding French Valley Airport where land uses are regulated to minimize hazards from aircraft crashes to persons on the ground, and not in areas where heights of structures are limited to prevent obstructions to air navigation. Project development would not cause airport-related hazards to persons onsite, and no impact would occur. No mitigation is required.

d) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. There are no private airstrips or heliports within one nautical mile of the project site, and no impact would occur. No mitigation is needed.

25. Hazardous Fire Area

a) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Less Than Significant Impact. The nearest fire hazard zone to the project site is a Very High Fire Hazard Severity Zone about 700 feet to the west mapped by the California Department of Forestry and Fire Protection (CAL FIRE 2009).[12] The RCFD provides fire protection to the community of French Valley, including the project site. The two nearest fire stations to the project site are Station 83 at French Valley Airport, about 3.3 miles to the southwest, and Station 34 in the community of Winchester, about 5.3 miles to the north. RCFD has automatic aid agreements with the cities of Hemet and Murrieta and the Pechanga Band of Luiseno Mission Indians, and a mutual aid agreement with March Air Force Base (Management Partners 2009).[13] Project development would not expose people or structures to substantial wildland fire hazards, and impacts would be less than significant. No mitigation is needed.

3.9 HYDROLOGY AND WATER QUALITY

The information in this section is based on the preliminary Water Quality Management Plan prepared for the Proposed Project; a complete copy of this report is available for review at the County of Riverside Planning Department.

Would the project:

[12] This map—which was prepared in 2009—also shows a Very High Fire Hazard Severity Zone on two parcels about 150 feet north of the west end of the site; however, those two parcels consist of rural residential uses, some ornamental vegetation, and bare land, and the classification does not appear to reflect current conditions.

[13] Automatic aid is assistance dispatched automatically by contractual agreement between two communities or fire districts. Mutual aid, by comparison, is arranged case by case.

26. Water Quality Impacts

The project site is in the Santa Margarita Watershed and the Warm Springs Valley Subwatershed, which are within the jurisdiction of the San Diego Regional Water Quality Control Board (RWQCB). There are two existing natural drainage channels that flow in a northwest to southeast direction that cross the site. The drainage channel to the north receives runoff from the properties to the north of Keller Road and the site; it flows into two 8-foot by 4-foot culverts in the northeast corner of the proposed school site that convey flow beneath SR-79. Proposed development of the Keller Crossing Specific Plan, which is just north of Keller Road and the school site, would include a 24-inch storm drain along Keller Road that connects to the natural drainage channel and would prevent off-site runoff from entering the school site. The other natural drainage channel cuts across the middle of the school site in a northwest to southeast direction and discharges to a 72-inch culvert beneath SR-79. This natural drainage channel would be altered with construction of the school site. After stormwater drainage flows under SR-79, it continues south and enters Warm Springs Creek, which flows south to Murrieta Creek and eventually discharges into the Santa Margarita River and the Pacific Ocean. There is currently no regional storm drain facilities in the immediate vicinity of the project site.

a) **Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in a substantial erosion or siltation on- or off-site.**

Less Than Significant Impact. The majority of the potential erosion and siltation impacts would occur during the construction phase (e.g., grading, clearing, excavating, and cut and fill activities) of the proposed project. During construction, the project site would be cleared of vegetation in preparation for grading, which would expose loose soil to potential wind and water erosion. If not controlled, the transport of these materials to local waterways would temporarily increase suspended sediment concentrations and release pollutants attached to sediment particles into the waterways. As previously stated, the project would be required to submit PRDs and a SWPPP to the State Water Resources Control Board for approval prior to the commencement of construction activities. The SWPPP would describe the BMPs to be implemented during project construction to minimize the potential for erosion and siltation.

Project development would include the installation of storm drains in the building complex and parking lot that would be mostly in the eastern half of the site. The drainage pattern would remain essentially the same, with stormwater flow directed to the culverts that pass under SR-79. However, the natural drainage channel that currently bisects the site would be altered with the proposed development.

The operational phase of the project development would contain a number of features to reduce the impact of erosion and siltation, including site design, source control, and treatment control BMPs. These features would be described in the site-specific WQMP; hydromodification BMPs that mimic pre-development flow rates and volumes would also be included, if needed. Implementation of the construction and operational BMPs would minimize erosion and siltation, and impacts would be less than significant. No mitigation is required.

3. Environmental Analysis

b) Violate any water quality standards or waste discharge requirements?

Less Than Significant Impact.

Project Construction

Clearing, grading, excavation, and construction activities associated with the proposed project have the potential to impact water quality through soil erosion and increasing the amount of silt and debris carried in runoff. Additionally, the use of construction materials such as fuels, solvents, and paints may present a risk to surface water quality. Finally, the refueling and parking of construction vehicles and other equipment on-site during construction may result in oil, grease, or related pollutant leaks and spills that may discharge into the storm drain system.

To minimize these potential impacts, the project would be required to comply with the NPDES Construction General Permit (CGP) as well as prepare a Stormwater Pollution Prevention Plan (SWPPP) that requires the incorporation of BMPs to control sedimentation, erosion, and hazardous materials contamination of runoff during construction. The GCP also requires that prior to the start of construction activities, the project applicant must file Permit Registration Documents (PRDs) with the State Water Resources Control Board, which includes a Notice of Intent (NOI), risk assessment, site map, annual fee, signed certification statement, SWPPP, and post-construction water balance calculations. Since the project site consists of approximately 8.5 acres, a SWPPP would be required, as described in more detail in Section 3.6.b.

With submittal of the PRDs and implementation of the SWPPP and its associated BMPs throughout the construction phase of the proposed project, anticipated and expected pollutants of concern would be minimized during construction, and construction water quality impacts would be less than significant.

Project Operation

Once the project has been constructed, urban runoff could include a variety of contaminants that could impact water quality. Runoff from buildings and parking lots typically contains oils, grease, fuel, antifreeze, byproducts of combustion (such as lead, cadmium, nickel, and other metals), fertilizers, herbicides, pesticides, and other pollutants. Precipitation at the beginning of the rainy season may result in an initial stormwater runoff (first flush) with high pollutant concentrations.

As discussed in Section 3.6.b, a project-specific water quality management plan (WQMP) would be submitted to Riverside County for review and approval prior to the issuance of grading plans. The WQMP would describe site design/source control BMPs and treatment control BMPs that would be used to reduce or avoid potential water quality impacts to the maximum extent practicable, and reduce the discharge of pollutants in post-development runoff to the standards of the best available technology economically achievable and the best conventional pollutant control technology. The project would be considered a "priority development project" since it would create and/or replace 10,000 square feet or more of impervious surface. Volumetric treatment control BMPs would mitigate (infiltrate and/or treat) a specific volume of runoff from the project site, based on the 85th percentile, 24-hour runoff event. Flow-based treatment control BMPs would mitigate a specific flow rate of runoff based on the 0.2 inch/hour rainfall intensity. The treatment BMPs would be designed in accordance with the detailed design procedures and spreadsheets provided in Riverside County's *Design Handbook for Low Impact Development Best Management Practices* (2011).

Potential hydromodification impacts would also be analyzed in the WQMP, using the Santa Margarita Region Hydrology Manual to demonstrate compliance with the hydrologic performance standard of the Santa Margarita Region Hydromodification Plan. The hydrologic performance standard consists of matching or reducing the flow duration curve of post-development conditions to that of pre-existing, naturally occurring conditions for significant flow events (i.e., 10 percent of the 2-year runoff event up to the 10-year runoff event). The project would also need to comply with the sediment supply performance standard, which consists of maintaining the pre-project bed sediment supply to the channel receiving runoff from the project site. The WQMP would address the use of structural BMPs or hydrologic control BMPs to control the post-construction runoff hydrograph from the site and apply site design principles or sediment supply BMPs to preserve the delivery of bed sediment load to the receiving waters. With proper design, the BMPs would reduce and possibly eliminate any potential hydromodification requirements.

The project would also need to prepare an operation and maintenance plan that specifies the maintenance requirements and inspection schedule for the treatment BMPs as well as ownership and maintenance responsibilities. With the implementation of these LID and BMP features as well as compliance with state, county, and local regulations, the proposed project would have a less than significant impact on water quality during the operational phase. No mitigation is needed.

c) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Less Than Significant Impact. The project site is within the northern portion of the Temecula Valley Groundwater Basin. Project development would increase impervious surfaces on the site, thus reducing the area available for infiltration of stormwater into soil. However, the project would implement LID BMPs mimicking the pre-development site hydrology using site design techniques that store, infiltrate, evapotranspire, bio-filter, or detain runoff. Thus, the impact on groundwater recharge would be minimal.

The project would result in an increased water demand but would not involve the extraction or installation of any groundwater wells on the property. The project would be served by the Eastern Municipal Water District (EMWD), which purchases the majority of its water supply as imported surface water from the State Water Project and the Colorado River Aqueduct. EMWD's local supplies include groundwater, desalinated groundwater, and recycled water. Groundwater is pumped from the Hemet/San Jacinto and West San Jacinto areas of the San Jacinto Groundwater Basin. Therefore, the groundwater wells that are owned and operated by EMWD are not in the Temecula Valley Groundwater Basin, and the potentially small reduction in groundwater recharge at the site with an increase in impervious surfaces would not impact EMWD's groundwater supply wells. In addition, EMWD's 2015 Urban Water Management Plan indicates that they have sufficient water supplies to meet demands in their service area in normal, single-dry year, and multiple-dry-year conditions through the 2020-2040 period (RMC 2016).

Therefore, the project would not impact groundwater supplies, and with the implementation of LID measures that promote infiltration, the potential groundwater impact would be less than significant.

d) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?

Less Than Significant Impact. All storm drain facilities would be designed in accordance with Riverside County Flood Control and Water Conservation District design standards to provide protection from a 100-year storm event. County flood control policy requires that the rate of stormwater runoff discharged from a project site not be increased as a result of development. The final size and location of all the required drainage systems and water quality features would be determined and described in the site-specific WQMP and hydrology study. Although the treatment control BMPs have not yet been designed, they would most likely consist of bioretention basins that would attenuate peak flows and mimic pre-development runoff conditions so that the capacity of the channels to which runoff is discharged is not exceeded.

Storm drain design in compliance with county design standards and implementation of BMPs that minimize increases in runoff would minimize the potential for stormwater runoff from the site to exceed the capacity of existing or planned storm drainage systems. Therefore, impacts would be less than significant.

The project would not create substantial additional sources of polluted runoff. During the construction phase, the project would be required to prepare a SWPPP, thus limiting the discharge of pollutants from the site. During operation, the project would implement LID and BMP measures that minimize the amount of stormwater runoff and associated pollutants.

e) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No Impact. The northern one-third of the site is in Flood Zone X mapped by the Federal Emergency Management Agency, that is, outside of 100-year and 500-year flood zones. Flood zones have not been mapped on the remainder of the site (FEMA 2016). The proposed project would not develop housing. No impact would occur.

f) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

No Impact. No 100-year or 500-year flood zones are mapped on or next to the site, and no impact would occur.

g) Otherwise substantially degrade water quality?

Less Than Significant Impact. As discussed in detail in Section 3.6.b and Section 3.9.a, BMPs would be implemented across the project site during both construction and operation of the project. These BMPs would control and prevent the release of sediment, debris, and other pollutants into the storm drain system and downstream receiving water bodies. Implementation of BMPs during construction would be in accordance with the provisions of the SWPPP, which would minimize the release of sediment, soil, and other pollutants. Operational BMPs would meet the MS4 Permit requirements and Santa Margarita Region WQMP requirements, which include the incorporation of site design, source control, and treatment control measures to treat and control runoff before it enters the storm drain system. With implementation of these BMPs, the potential impact on water quality would be less than significant.

h) Include new or retrofitted stormwater Treatment Control Best Management Practices (BMPs) (e.g. water quality treatment basins, constructed treatment wetlands), the operation of which could result in significant environmental effects (e.g. increased vectors or odors)?

Less than Significant Impact. As discussed in detail in Section 3.9.a, BMPs would be implemented across the project site during operation of the project. These BMPs would control and prevent the release of pollutants into the storm drain system and downstream receiving water bodies. Operational BMPs would meet the MS4 Permit requirements and Santa Margarita Region WQMP requirements, which include the incorporation of site design, source control, and treatment control measures to treat and control runoff before it enters the storm drain system. The WQMP includes an assessment of the feasibility of utilizing infiltration BMPs and BMPs that are solely reliant on retention practices. To avoid the negative effects that result from excessive ponding when an infiltration BMP is utilized, the 2014 Water Quality Management Plan for the Santa Margarita Region of Riverside County requires that the tested pre-development infiltration rates must be greater than 1.6 inches per hour. Per the Infiltration Report prepared for the project by Inland Foundation Engineering, Inc., the required minimum infiltration rate is not met. Infiltration BMPs are not proposed for this project. Impacts would be less than significant and no mitigation is required.

27. Floodplains

a) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Less Than Significant Impact. The project would result in an increase in the amount of impervious surfaces as compared to existing conditions, which could result in a higher volume of stormwater exiting the site. However, TVCS would install treatment control BMPs, per the requirements of the MS4 Permit and Santa Margarita Region WQMP, which would reduce peak flows and infiltrate some of the stormwater into the ground. Volumetric treatment control BMPs would mitigate (infiltrate and/or treat) a specific volume of runoff from the site, based on the 85th percentile, 24-hour runoff event. Flow-based treatment control BMPs would mitigate a specific flow rate of runoff based on the 0.2 inch/hour rainfall intensity. The treatment BMPs would be designed in accordance with the detailed design procedures and spreadsheets provided in Riverside County's *Design Handbook for Low Impact Development Best Management Practices* (2011). Proposed hydromodification impacts would also be analyzed in the WQMP, using the Santa Margarita Region Hydrology Manual to demonstrate compliance with the hydrologic performance standard of the Santa Margarita Region Hydromodification Plan.

Prior to the start of grading and construction activities, a project-specific WQMP would be prepared that describes in detail the existing hydrology and drainage conditions, projected peak flows, characteristics of stormwater runoff water quality, and proposed BMPs. The report would document the proper size and location of all BMPs in accordance with MS4 and county stormwater requirements. In addition, the Riverside

County Flood Control and Water Conservation District design standards require that the rate of stormwater runoff discharged from a project site not be increased as a result of development.

With proper design, the BMPs would reduce any potential for flooding and stormwater runoff hydrographs would mimic pre-development conditions. Thus, the potential for significant increases in stormwater runoff would be minimized and potential flooding impacts would be less than significant. No mitigation is needed.

b) Changes in absorption rates or the rate and amount of surface runoff?

Less than Significant Impact. The overall area of the parcels where the project will be constructed is approximately 14.6 acres. The project will be constructed over approximately 8.6 acres. The remaining 6 acres will not be impacted by the proposed development. The project would result in an increase in the amount of impervious surfaces as compared to existing conditions, which could result in increased stormwater volume exiting the site. The project incorporates site design, source control, and treatment control BMPs to address stormwater runoff. The existing drainage patterns for the site will not be modified as a result of the project. A majority of the runoff from the site will occur over impervious surfaces that will discharge into the existing off-site storm drain system. Other flows will drain into proposed playfield areas that will mimic the existing condition and allow for onsite retention.

c) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

No Impact. The project site is not in a dam inundation area or in an area protected from 100-year floods by levees. No impact would occur and no mitigation is needed.

d) Changes in the amount of surface water in any water body?

No Impact. Project development would not change the amount of surface water in any water body. No impact would occur and no mitigation is needed.

3.10 LAND USE AND PLANNING

Would the project:

28. Land Use

a) Result in a substantial alteration of the present or planned land use of an area?

Less than Significant Impact. Project development would substantially change the land use onsite, from vacant and residential to a charter school for 600 students. The existing zoning and General Plan designations for the project site are both Rural Residential (R-R); the R-R General Plan designation permits development of single-family residences with minimum density of one dwelling unit per five acres. Schools are permitted by Riverside County in any zone with a Public Use Permit. Schools are expected and necessary community facilities within residential land use designations. Thus, the development of schools in the affected part of

French Valley was foreseen when the area was designated R-R. Impacts would be less than significant and no mitigation is required.

b) Affect land use within a city sphere of influence and/or within adjacent city or county boundaries?

Less than Significant Impact. The project site is in the Sphere of Influence (SOI) of the City of Murrieta (Murrieta 2014). The City of Murrieta's General Plan Land Use Map (2011) uses Riverside County land use designations for land in the City's SOI (Murrieta 2011). The site is zoned Rural Residential (RR) by the City of Murrieta, permitting single-family residences on lot sizes of at least 2.5 acres per residence. Schools are permitted in the RR zoning district with a Conditional Use Permit. As with the proposed land use relative to the Riverside County zoning, schools are expected and necessary community facilities within residential zones; and the development of schools in the affected part of French Valley was foreseen when the area was zoned RR. Development of the proposed school would not have a substantial adverse effect on land use regulation in the City of Murrieta's SOI, and impacts would be less than significant. No mitigation is needed.

29. Planning

a) Be consistent with the site's existing or proposed zoning?

No Impact. The existing zoning and General Plan designations for the project site are both Rural Residential (R-R); the R-R Zone permits development of single-family residences with a maximum density of two units per acre. Schools are permitted by Riverside County in any zone with a Public Use Permit. Project development would not conflict with zoning or General Plan designations for the site, and no impact would occur. No mitigation is required.

b) Be compatible with existing surrounding zoning?

No Impact. Surrounding parcels are zoned: RR to the northeast, north, and west; C-1/C-P (General Commercial) to the south; and, southeast opposite SR-79, SP (Winchester 1800 Specific Plan; the part of the Specific Plan area opposite SR-79 is designated for Medium-High Density Residential Use in the Specific Plan).[14] Development of the proposed school would be compatible with surrounding zoning, and no adverse impact would occur. No mitigation is needed.

c) Be compatible with existing and planned surrounding land uses?

No Impact. Existing surrounding land uses are rural residential uses to the west and north; a single-family home abuts the northern site boundary on west. The project site is surrounded by vacant land to the south and by vacant land and agricultural uses to the east across SR-79. Planned land uses as reflected in Riverside County zoning designations are described above in Section 29.b. The proposed school would be compatible with both existing and planned land use designations, and no adverse impact would occur. No mitigation is required.

---

[14] RBF. 2007. Winchester 1800 Specific Plan Land Use Plan. http://planning.rctlma.org/Portals/0/splans/sp_document/sp286/sp286_lum.pdf.

3. Environmental Analysis

d) Be consistent with the land use designations and policies of the General Plan (including those of any applicable Specific Plan)?

No Impact. The project site is not in a Specific Plan area. The proposed school would be consistent with the Riverside County General Plan land use designation for the site, as described above in Section 29.a.

Riverside County sets forth policies pertaining to development of transportation infrastructure and to trip generation compared to roadway capacity in the Highway 79 Policy Area, an unincorporated area in southwestern Riverside County within the Southwest Area Plan of the County's General Plan.

Policy 1 states

> Accelerate the construction of transportation infrastructure in the Highway 79 Policy Area. The County shall require that all new development projects demonstrate adequate transportation infrastructure capacity to accommodate the added traffic growth. The County shall coordinate with cities adjacent to the policy area to accelerate the usable revenue flow of existing funding programs, thus assuring that transportation infrastructure is in place when needed.

Project consistency: Project development would include the following roadway improvements:

- Construct Flossie Way at its ultimate width as a local road per County of Riverside design standards with a right-of-way of 60 feet, including a sidewalk on the eastern side of the road along the school property, between the project's western boundary and the project's access driveway.
- The intersection of Flossie Way/Koon Street/Pourroy Road shall form a 4-leg intersection with Flossie Way.

Policy 2 states

> Establish a program in the Highway 79 Policy Area to ensure that overall trip generation does not exceed system capacity and that the system operation continues to meet Level of Service standards. In general, the program would establish guidelines to be incorporated into individual Traffic Impact Analysis that would monitor overall trip generation from residential development to ensure that overall within the Highway 79 Policy Area development projects produce traffic generation at a level that is 9% less than the trips projected from the General Plan traffic model residential land use designations. Individually, projects could exceed the General Plan traffic model trip generation level, provided it can be demonstrated that sufficient reductions have occurred on other projects in order to meet Level of Service standards.

Project consistency: the proposed project is not a residential project and therefore Policy 2 is inapplicable.

The proposed project would be consistent with applicable Highway 79 Policy Area policies. No impact would occur and no mitigation is needed.

e) Disrupt or divide the physical arrangement of an established community (including a low-income or minority community)?

No Impact. The project site is surrounded by rural residential uses, vacant land, and agricultural uses. There is no residential community next to the site that would be divided by the proposed school; in addition, the site is private property and no access way linking residential areas passes through the site. No impact would occur and no mitigation is required.

3.11 MINERAL RESOURCES

30. Mineral Resources

a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?

Less Than Significant Impact. No Mineral Land Classification mapping on the northern part of the project site has been conducted by the California Geological Survey (CGS). The southern part of the site is mapped Mineral Resource Zone 3 (MRZ-3) by the CGS, indicating that the area contains mineral resources of undetermined significance (CGS 2014b, 2014c). The nearest mine to the project site mapped on the Mines Online database by the Office of Mine Reclamation is the East Benton Pit, an active sand and gravel mine about 6.5 miles to the southeast (OMR 2016). Project development would not cause a loss of availability of known mineral resources valuable to the region and the state, and impacts would be less than significant.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. The project site is not designated as a mining site in the Riverside County General Plan. Project development would not cause a loss of availability of a mining site designated in the Riverside County General Plan, and no impact would occur.

c) Be an incompatible land use located adjacent to a State classified or designated area or existing surface mine?

No Impact. The project site is not adjacent to a Mineral Resource Sector – that is, is an area currently permitted for mining and where land uses are compatible with mining – designated by the California Geological Survey (CGS 2014d). The nearest mine is 6.5 miles from the site. No impact would occur and no mitigation is required.

d) Expose people or property to hazards from proposed, existing or abandoned quarries or mines?

No Impact. No existing or former mines on or next to the site were identified in the Phase I ESA for the project.

3.12 NOISE

Noise is defined as unwanted sound and is known to have several adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Based on these known adverse effects of noise, the federal, state, and city governments have established criteria to protect public health and safety and to prevent the disruption of certain human activities, such as classroom instruction, communication, or sleep. Additional information on noise and vibration fundamentals, existing regulations, and pertinent technical standards, project-specific background information, construction effects calculation worksheets, and project-generated traffic operations noise modeling results are contained in the Appendix G of this Initial Study.

Existing Conditions

The proposed buildout of the Temecula Valley Charter School is to be located in the census-designated-place of French Valley in unincorporated Riverside County. The proposed project site is on the west side of SR-79 between Keller Road and Pourroy Road. The site encompasses approximately 15 acres and is mostly undeveloped except for residential uses in the western part of the project site. This residential area consists of two single-family residences, one garage, and two above-ground water tanks. The garage in the south-central part of the site, and the mobile home are to be demolished at commencement of the project, and the vacant single-family residence in the northwestern part of the site would be left as is.

The major existing noise source on the proposed project site is traffic along SR-79. Other noise sources include nearby airports/heliports and residences in the vicinity of the project (e.g., people talking and general property maintenance).

Sensitive Receptors

The proposed project site is on a busy thoroughfare. It is surrounded by rural residences to the west and north, vacant land to the south, and a mix of vacant and agricultural land to the east (beyond SR-79). The nearest offsite residence is a single-family home just north of the western part of the site. There are also multiple single-family residences between 200 and 500 feet north of the proposed project site and approximately 350 feet west of the proposed project site. This residential land surrounding the project site is considered rural residential—i.e., fewer than 20 residences within a 1,000-foot radius around the project site.

Would the project result in:

31. Airport Noise

a) **For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

No Impact. There are no public-use airports within two miles of the project site. The closest facility, French Valley Airport, is 4 miles southwest of proposed project site (AirNav 2016). Project development would not expose people onsite to excessive airport-related noise levels. Therefore, no impact would occur and no mitigation measures are necessary.

b) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. Pines Airpark Airport is a private airport that is approximately 2 miles to the northwest of the proposed project site (AirNav 2016). Operations at this private aircraft facility may at times be audible at the site, but the relatively limited and sporadic use of this airport for corporate travel or other limited uses, coupled with the distance between it and the project site, would result in negligible amounts of community noise at the campus. Therefore, development of the project would not expose people onsite to excessive noise levels from aircraft approaching or departing this airport, and no impact would occur. No mitigation is required.

32. Railroad Noise

a) For a project within 0.25 mile of a railroad track, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The nearest railroad track to the project site is a BNSF Railway track in the City of Perris about 12 miles to the northwest (FRA 2017). Project development would not generate railroad noise, and no impact would occur. No mitigation is needed.

33. Highway Noise

a) Would project-generated traffic cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

No Impact.

Applicable Standards

County of Riverside Noise Standards

The proposed project site is in the unincorporated, census-designated-place of French Valley. Since this project site is outside of the jurisdiction of any city's municipal code, this project will use the Riverside County Noise Element and County Code.

The County of Riverside noise regulations are implemented and enforced through the County Code and are intended to establish county-wide standards to regulate noise. Section 9.52.101 of the Riverside County Noise Regulation states, "These regulations are not intended to establish thresholds of significance for the purpose of any analysis required by the CEQA and no such thresholds are hereby established." Due to this clause, the applicable noise regulations used for this study will be taken from the County of Riverside Noise Element.

Beyond the basic noise level regulations, County Code section 15.04.020 contains standards and limits that deal with construction noise. Details of these criteria and related impacts are discussed under 3.12(d), below.

3. Environmental Analysis

County of Riverside Noise Element

The noise element is in Chapter 7 of the Riverside County General Plan. The noise element provides a systematic approach to identifying and appraising noise problems in the community, quantifying existing and projected noise levels, addressing excessive noise exposure, and planning for the regulation of noise. It established quantified land use compatibility guidelines that coincide with the State of California Community Noise and Land Use Compatibility Guidelines and lists a number of policies related to noise compatibility. Policy N 1.3 discourages schools or residential land uses in areas in excess of 65 CNEL. Any land use that is exposed to noise levels higher than 65 CNEL will require noise attenuation measures. Policy N 2.2 requires a qualified acoustical specialist to prepare acoustical studies for proposed noise-sensitive projects in noise-impacted areas in order to mitigate existing noise.

However, it is important to note that with the recent California Supreme Court decision regarding the assessment of the environment's impacts on proposed projects (*CBIA v BAAQMD*, issued December 17, 2015),[15] it is generally no longer the purview of the CEQA process to evaluate the impact of existing environmental conditions onto any given project. For noise, the application of this ruling means that the analysis of traffic, rail, and aircraft noise effects at the project site—in terms of land use compatibility—is no longer part of CEQA. Therefore, exterior noise effects from nearby roadways relative to land use compatibility of the project is no longer a topic for impact evaluation under CEQA, and no statement of impact significance is germane.

Stationary Noise Sources

Policy N 2.3 includes standards that present maximum allowable noise levels for stationary sources. Exterior and interior noise must be mitigated to the levels listed in Table 10 to the extent feasible.

Table 10 Stationary Source Land Use Noise Standards

Land Use (Residential)	Interior Standards (dB)	Exterior Standards (dB)
10:00 p.m. to 7:00 a.m.	40 L_{eq} (10 minute)	45 L_{eq} (10 minute)
7:00 a.m. to 10:00 p.m.	55 L_{eq} (10 minute)	65 L_{max} (10 minute)

Source: County of Riverside General Plan, Chapter 7, Noise Element.
Note: These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health.

Mobile Noise Sources

The Riverside County Noise Element contains qualitative policies and mitigation measures for vehicular noise sources. Relevant policies are:

- **N 9.3.** Require development that generates increased traffic and subsequent increases in the ambient noise level adjacent to noise-sensitive land uses to provide for appropriate mitigation measures.
- **N 9.6.** Require that all future exterior noise forecasts use Level of Service C, and be based on designed road capacity or 20-year projection of development (whichever is less) for future noise forecasts.

[15] *California Building Industry Association v. Bay Area Air Quality Management District* (2015, 62 Cal. 4th 369).

- **N 9.7.** Require that field noise monitoring be performed prior to siting to any sensitive land uses along arterial roadways. Noise level measurements should be of at least 10 minutes in duration and should include simultaneous vehicle counts so that more accurate vehicle ratios may be used in modeling ambient noise levels.

In lieu of applicable quantitative standards for mobile noise sources, the following standards were used for the purpose of this analysis. With respect to projected increases, noise impacts can be broken down into three categories. The first is "audible" impacts, which refer to increases in noise level that are perceptible to humans. Audible increases in general community noise levels generally refer to a change of 3 dB or more since this level has been found to be the threshold of perceptibility in exterior environments. The second category, "potentially audible" impacts, refers to a change in noise level between 1 and 3 dB. This range of noise levels was found to be noticeable to sensitive people in laboratory environments. The last category includes changes in noise level of less than 1 dB that are typically "inaudible" to the human ear except under quiet conditions in controlled environments. Only "audible" changes in noise levels at sensitive receptor locations (i.e., 3 dB or more) are considered potentially significant. Note that to create a 3 dB increase in traffic-generated noise levels, a doubling of traffic flows (i.e., 10,000 vehicles per day to 20,000 per day) would be needed.

Project-Related Roadway Noise

A - Generally Acceptable (project noise impacts)

The proposed project is expected to add a maximum of approximately 600 students and 40 staff to the project site at ultimate buildout. The expected increase in traffic due to new enrollment was used in the traffic study that analyzed potential impacts due to traffic increases. These expected traffic conditions were used in the traffic noise calculations shown in Table 10.

Traffic noise analysis was conducted by PlaceWorks on the major roadways in the vicinity of the project area. Based on the FHWA-RD77-108 roadway noise calculation method (FHWA 1978), noise levels at segments of SR-79, Pourroy Road, and other nearby roadways were analyzed with respect to existing traffic conditions and to traffic conditions estimated at full buildout of the project in 2018. These values were compared, and a noise level increase of 3 dB or more would signify a potential impact.

In order to assess the potential for mobile-source noise impacts, it is necessary to determine the noise currently generated by vehicles traveling through the project area. Average daily traffic volumes were based on the daily traffic volumes provided by PlaceWorks. Modeling indicated that average noise levels along arterial segments currently range from approximately 40 dBA to 73 dBA CNEL at a distance of 50 feet from the centerline of the road. Noise levels for existing conditions along analyzed roadways are presented in Table 11.

3. Environmental Analysis

Table 11 Existing and Future Noise Level Estimates

Roadway	Segment	CNEL at 50 feet (dBA)			Project Contribution (dB)	Potential Impact?
		Existing	2018 With Project	Overall Increase (dB)		
Winchester Rd (SR-79)	N of Keller Rd	73.4	74.5	1.1	0.0	No
Winchester Rd (SR-79)	S of Keller Rd	73.4	76.5	3.1	0.0	No
Keller Road	E of Winchester Rd	40.5	53.0	12.5	0.2	No
Keller Road	W of Winchester Rd	40.0	62.4	22.4	0.0	No
Winchester Rd (SR-79)	N of Pourroy Rd	73.4	76.5	3.0	0.0	No
Winchester Rd (SR-79)	S of Pourroy Rd	73.8	77.4	3.6	0.1	No
Pourroy Road	E of Winchester Rd	61.5	66.1	4.6	0.1	No
Abelia Street	W of Winchester Rd	56.8	70.3	13.5	0.2	No
Winchester Rd (SR-79)	N of Pourroy Rd	74.0	77.5	3.5	0.1	No
Winchester Rd (SR-79)	S of Pourroy Rd	74.3	76.9	2.6	0.0	No
Whisper Heights	E of Winchester Rd	58.8	63.6	4.8	0.1	No
Pourroy Road	W of Winchester Rd	58.3	59.0	0.7	0.0	No
Winchester Rd (SR-79)	N of Skyview Rd	74.1	76.9	2.8	0.0	No
Winchester Rd (SR-79)	S of Skyview Rd	74.2	76.6	2.4	0.0	No
Jean Nicholas Road	E of Winchester Rd	49.5	50.0	0.5	0.0	No
Skyview Road	W of Winchester Rd	61.1	64.4	3.3	0.0	No
Winchester Rd (SR-79)	N of Thompson Rd	74.2	76.5	2.3	0.0	No
Winchester Rd (SR-79)	S of Thompson Rd	76.0	77.2	1.3	0.0	No
Max Gillis Blvd	E of Winchester Rd	66.8	69.0	2.2	0.0	No
Thompson Road	W of Winchester Rd	69.6	71.4	1.9	0.0	No
Winchester Rd (SR-79)	N of Benton Rd	76.0	77.1	1.2	0.0	No
Winchester Rd (SR-79)	S of Benton Rd	75.9	76.7	0.8	0.0	No
Benton Road	E of Winchester Rd	69.9	71.2	1.3	0.0	No
Pat Road	S of Pourroy Rd	55.9	58.1	2.2	0.7	No
Pourroy Road	E of Pat Road Rd	54.5	67.0	12.5	0.2	No
Pourroy Road	W of Pat Road Rd	47.6	69.7	22.1	0.3	No
Elliot Road	N of Jean Nicholas Rd	57.5	59.1	1.7	0.2	No
Jean Nicholas Road	E of Elliot Rd	63.4	67.6	4.2	0.0	No
Jean Nicholas Road	W of Elliot Rd	64.6	68.4	3.8	0.0	No
Pourroy Road	N of Skyview Rd	65.2	71.1	5.9	0.1	No
Pourroy Road	S of Skyview Rd	64.7	70.3	5.6	0.1	No
Skyview Road	W of Pourroy Rd	60.5	64.0	3.5	0.0	No
Pourroy Road	N of Thompson Rd	65.6	69.1	3.5	0.1	No
Pourroy Road	S of Thompson Rd	66.3	68.9	2.6	0.0	No
Thompson Road	E of Pourroy Rd	49.0	49.8	0.9	0.0	No
Thompson Road	W of Pourroy Rd	62.6	65.1	2.5	0.0	No

Source: Noise and Vibration Analysis, Appendix G to this Initial Study.
Levels calculated by FHWA-RD77-108 calculation method.

Segments would experience negligible long-term traffic noise increases due to project implementation. There are major overall increases between existing conditions and future conditions, but these are due to ambient growth and the cumulative contributions of other projects in the area. Based on this traffic noise analysis, the worst-case roadway noise increase due to project implementation would result from traffic increases on Pat Road, south of Pourroy Road. Even so, this traffic increase is expected to result in a roadway noise increase of 0.7 dB. All increases in noise levels at road segments in the vicinity of the project site, including on Pat Road, would fall below the threshold of human perceptibility. Thus, it is not anticipated that implementation of the proposed project would result in audible increases in traffic-related noise along the surrounding roadways. Exposure of persons to noise levels in excess of established thresholds from project-related roadway noise would be less than significant.

Noise Compatibility

B – Conditionally Acceptable

It is also important to note that the facades of the project buildings that would face SR-79 are expected to experience traffic-generated noise levels of approximately 69 dBA CNEL.[16] This predicted result is within the "conditionally acceptable" classification in the county noise element for school land uses.[17] As mentioned above and per the *CBIA v BAAQMD* ruling, land use compatibility is no longer a CEQA issue. Nonetheless, this ostensible incompatibility would need to be addressed prior to the issuance of building permits for the project. No significant impact under CEQA would occur, and no mitigation is required.

34. Other Noise

a) **Would the project include stationary sources of noise generating a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?**

No Impact. The project does not propose a land use that would generate substantial noise that could affect people on and near the site, such as an industrial facility or outdoor music venue.

Heating, ventilation, and air conditioning equipment on top of the proposed classroom buildings would be placed within appropriate sound enclosures or parapets so that their operations would not be notably different than existing conditions in and around the proposed area of improvements and would not exceed the county's exterior noise standards. Noise from such stationary sources would be regulated through the Riverside County Noise Element. No significant permanent noise increases due to project-related activities would occur, and no mitigation measures are necessary.

---

[16] That is, the second line item in the table for Winchester Road, south of Keller Road, shows a predicted future level of 76.5 dBA CNEL. With line-source spreading loss attenuation from the 50-foot reference distance to the envisioned school buildings, this level would be reduced to approximately 69 dBA CNEL.

[17] "Conditionally acceptable" means that a detailed acoustical study for sound insulation features is needed for county and state design approvals.

3. Environmental Analysis

35. Noise Effects on or by the Project

a) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less than Significant Impact. Project traffic noise impacts relative to existing ambient noise levels would be less than significant, as substantiated above in Section 33.a. Project development would not cause a considerable noise impact from stationary sources, as substantiated above in Section 34.a.

b) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less than Significant Impact.

Pertinent Construction Noise Standards

To limit construction noise on sensitive receptors, the Riverside County Code includes permitted hours of construction in Section 15.04.020, General Regulations. Construction noise is exempt from county noise regulations when construction activities take place between the hours of 6 AM and 6 PM. Exceptions to these standards are allowed only with the written consent of the building official.

The Riverside County Noise Element contains qualitative policies and mitigation procedures for temporary construction. These policies are:

- **N 13.1.** Minimize the impacts of construction noise on adjacent uses within acceptable practices.
- **N 13.2.** Ensure that construction activities are regulated to establish hours of operation to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas.
- **N 13.3.** Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses by requiring the developer to submit a construction-related noise mitigation plan to the County for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

    a. Temporary noise attenuation fences;
    b. Preferential location of equipment; and
    c. Use of current noise suppression technology and equipment.

- **N 13.4.** Require that all construction equipment utilizes noise reduction features (e.g. mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

Impact Analysis:

Two types of short-term noise impacts could occur during construction: (1) mobile-source noise from transport of workers, material deliveries, and debris and soil haul and (2) stationary-source noise from use of construction equipment. Existing uses surrounding the project site would be exposed to construction noise. This school is a new development, so there would be no classes taking place at the proposed school site during the entire construction period. Therefore, there would be no onsite sensitive receptors during construction and no noise control measures are necessary.

Construction Vehicles

The transport of workers and equipment to the construction site would incrementally increase noise levels along site access roadways. Typically for this type of project, the mass grading soil haul phase would generate the highest traffic increases from construction vehicles (i.e., haul-in/haul-out truck trips, worker commuting, and other deliveries). Since the project site has been previously graded, the site is expected to be balanced, and no soil export or import is expected to be needed. Thus, any vehicle trips due to construction activities (e.g. for the aggregate of workers, vendors, deliveries, etc.) would be marginal compared to vehicle flows along SR-79 (which has average daily traffic of approximately 19,640).[18] This would result in an inaudible noise increase at sensitive receptors,[19] and would, therefore, have a less than significant impact on noise receptors along the truck routes.

While individual construction vehicle pass-bys may create momentary noise levels of up to approximately 85 dBA (L_{max}) at 50 feet from the vehicle, these occurrences—although potentially audible for a few seconds—would generally be infrequent. Due to the infrequency of events, their relatively short-lived durations, and their commonality with existing truck pass-bys, construction vehicle movement noise would be less than significant.

Construction Equipment

Noise generated during construction is also based on the type of equipment used, the location of the equipment relative to sensitive receptors, and the timing and duration of the noise-generating activities. Each stage of construction involves the use of different kinds of construction equipment and, therefore, has its own distinct noise characteristics. Noise levels from construction activities are dominated by the loudest piece of construction equipment. The dominant noise source is typically the engine, although work-piece noise (such as dropping of materials) can also be noticeable. Noise levels from project-related construction activities were calculated from the simultaneous use of all applicable construction equipment at spatially averaged distances (i.e., from the center of the general construction area) to the property line of the closest residences. At the time of this analysis, the specific equipment list for each construction phase was unavailable. In lieu of such details, construction equipment lists and phasing for a typical project of this size were used in the analyses.

[18] Per information in the Traffic Impact Analysis for Temecula Valley Charter School prepared by PlaceWorks, 2016, in Appendix H.

[19] Audible increases in general community noise levels usually refer to a change of 3 dB or more since this level has been found to be the threshold of perceptibility in exterior environments.

3. Environmental Analysis

Construction activities would increase noise levels on and near the project site above existing levels. Noise produced from construction equipment items is commonly held to decrease at a rate of at least 6 dB per doubling of distance—conservatively ignoring other attenuation effects from air absorption, ground effects, and/or shielding/scattering effects.[20] For example, a dozer that generates 85 dBA at 50 feet would measure 79 dBA at 100 feet, 73 dBA at 200 feet, 67 dBA at 400 feet, and 61 dBA at 800 feet.

The area in the vicinity of the project site consists of rural-residential uses. The closest sensitive residential uses to the project site are the single-family residence approximately 380 feet to the north of the proposed project site, another single-family residence approximately 480 feet to the north, and a single-family residence approximately 900 feet to the west of the proposed project. The center of the project site was used as the best representation of spatially averaged activities throughout the construction zones. Although construction may occur across the entire site, the center of the project best represents the potential average construction-related noise levels to the various sensitive receptors during the overall construction portion of the project. Moreover, the existing building demolition and the erection of the proposed project are primarily located toward the center of the 14.6-acre site, thus providing some setback from the surrounding land uses.

Total project construction is projected to last approximately 12 months, with site preparation and grading lasting approximately 2 months. The associated, aggregate sound levels—grouped by construction activity—are summarized in Table 12.

Table 12 Project-Related Construction Noise Levels

Construction Activity Phase	Sound Level at Various Distances from Construction Activities, dBA L_{eq}		
	Residence North of Project Site (380 ft.)	Residence North of Project Site (480 ft.)	Residence West of Project Site (800 ft.)
Site Preparation	67	65	60
Grading	70	68	63
Utility Trenching	58	56	51
Construction	65	63	59
Paving	63	61	57
Architectural Coating	56	54	50

Notes: Calculations performed with the FHWA RCNM calculation method; included in Appendix G.

As shown in this table, the nearest off-campus receptors would be the residential uses that are approximately 380 feet to the north of the proposed project area. At this distance, composite construction noise would be reduced to a conservatively estimated level of approximately 70 dBA L_{eq} (due to distance attenuation alone). Since construction activities would be limited to relatively small equipment (i.e., bulldozers, grading tractors, dump trucks, loaders, back hoes, pavers, and a crane) and would take place during the county's allowable hours of construction, construction noise impacts would be less than significant and no mitigation measures are necessary.

[20] As sound energy travels outward from the source, spreading loss accounts for a 6 dB decrease in noise level. Soft ground and atmospheric absorption effects can decrease this by an additional 1.5 dB.

c) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less Than Significant Impact. Applicable noise standards, project roadway noise impacts, and project highway noise compatibility are all addressed above in Section 33, Highway Noise. Project stationary noise impacts are addressed above in Section 34, Other Noise. Project roadway noise and stationary noise impacts would both be less than significant with no mitigation required; noise compatibility is no longer a CEQA issue and therefore no impact determination is made.

d) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?

Less than Significant Impact.

Applicable Standards

Pertinent Vibration Standards

The Riverside County Noise Element includes policies that restrict vibration. Policy N 16.1 restricts the placement of sensitive land uses in proximity to vibration-producing land uses. As stated in policy N 16.2, residential areas and schools are considered land uses sensitive to vibration. The project site is not exposed to perceptible groundborne vibrations because there are no notable sources of vibrational energy in the vicinity of the project site (such as industrial uses or heavy-freight railways). Note that according to Caltrans's general experience, traffic-generated vibrations are almost never associated with damage to structures near the highway (Caltrans 2002). Proposed buildings would be approximately 150 feet from the roadway and beyond the range of potential roadway vibration impacts. Construction-generated vibrations, however, can exceed the point of architectural damage.

In lieu of applicable quantitative vibration standards, the standards adopted by the Federal Transit Administration (FTA) to evaluate vibration from construction equipment are used. According to the FTA's Noise and Vibration Impact Guidelines (2006), vibrations generated by project-related construction activities exceeding 0.2 peak particle velocity (PPV) in inches per second (in/sec) would be strong enough to cause vibration-induced architectural damage to typical wood-framed buildings. Residents in nearby structures may experience vibration-induced annoyance when project-related construction activities exceed the FTA's daytime vibration criteria of 78 VdB (vibration decibel).

Further, the County Code includes permitted hours of construction in Section 15.04.020, General Regulations. Construction noise is exempt from county noise regulations according to the following portion of code: **Whenever a construction site is within one-quarter of a mile of an occupied residence or residences, no construction activities shall be undertaken between the hours of 6 p.m. and 6 a.m.** Exceptions to these standards shall be allowed only with the written consent of the building official. The generation of construction noise other than as permitted in this section, shall be a violation of this title, and the building official or his or her designee shall have the authority to undertake enforcement actions in accordance with the procedures, remedies and penalties for violations as provided for in Riverside County Ordinance No. 725 (Chapter 1.16 of this code), which is incorporated into this chapter by reference.

3. Environmental Analysis

Impact Analysis

Operations Vibration Impacts

The operation of the proposed project would not include any long-term vibration sources. Thus, no significant vibration effects from operations sources would occur and no mitigation measures are required.

Construction Vibration Impacts

Construction operations can generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures, but can achieve the audible and perceptible ranges in buildings close to the construction site. Table 12 lists vibration levels for typical construction equipment (not all of which is expected to be used at the proposed project site).

As shown in Table 13, vibration generated by certain, vibration-intensive construction equipment has the potential to be substantial (i.e., exceeding the FTA criteria for structural damage) if those particular items are employed at any given construction site and in proximity to sensitive receptors. However, groundborne vibration is almost never annoying to people who are outdoors, so it is usually evaluated in terms of indoor receivers, along with the associated distances to receptor structures (FTA 2006).

Table 13 Vibration Levels for Typical Construction Equipment

Equipment		Approximate Velocity Level at 25 Feet (VdB)	Approximate RMS[1] Velocity at 25 Feet (in/sec)
Pile Driver (impact) Upper Range		112	1.518
Pile Driver (impact) Lower Range		104	0.644
Pile Driver (sonic) Upper Range		105	0.734
Pile Driver (sonic) Lower Range		93	0.170
Large Bulldozer		87	0.089
Caisson Drilling		87	0.089
Jackhammer		79	0.035
Small Bulldozer		58	0.003
Loaded Trucks		86	0.076
Criteria	*FTA – Human Annoyance (Residential Daytime)*	*78*	—
	FTA – Human Annoyance (Residential Nighttime)	*72*	
	FTA – Human Annoyance (Office)	*84*	
	FTA – Structural Damage (Residential)	—	*0.20*
	FTA – Structural Damage (Office)		*0.30*

Source: FTA 2006.
[1] RMS velocity calculated from vibration level (VdB) using the reference of 1 microinch/second.

For the specifics of the proposed project, the construction would entail grading the existing undeveloped land and constructing new campus buildings, play fields, and parking lots. The use of high-vibration equipment, such as pile drivers or vibratory rollers, is not anticipated. The campus site has been previously graded and a balanced soil volume is expected. Thus, relatively little heavy earthwork would be required during the excavation sub-phase to create the desired pads for the new buildings. This would mean that relatively little use of vibration-inducing construction equipment such as excavators, bulldozers, graders, jackhammers, and loaders/backhoes would be needed. Following the mass excavation phase, construction equipment for the building erection phase would primarily employ items that would not generate substantial levels of vibration, such as forklifts, cranes, and haul trucks. Construction activities are proposed to commence in late summer of 2017 and would be completed in one general phase lasting 12 months. The site preparation and grading portions of the construction (most vibration intensive activities) are anticipated to take place over approximately the first 2 months of construction. This school is a new development, so no classes would be taking place at the proposed school site during the entire construction period. There would be no on-campus sensitive receptors to be affected during construction, and no vibration control measures would be necessary.

Vibration-Induced Architectural Damage

The threshold at which there is a risk of architectural damage to typical wood-framed buildings is 0.20 in/sec or 0.30 in/sec for engineered concrete and masonry buildings (FTA 2006). Building damage is not normally a factor unless the project requires blasting and/or pile driving. No blasting, pile driving, or hard rock ripping/crushing activities are anticipated for the proposed project. Small construction equipment generates vibration levels less than 0.1 PPV in/sec at 25 feet away (FTA 2006).

Table 14 shows the peak particle velocities of some common construction equipment and (loaded) haul trucks. Such items would be expected to be employed at the proposed project site. Since architectural damage from construction vibration sources can be a one-time event and since such damage is dependent on the soil type, ground strata, and receptor building construction, vibration damage distances are measured from the nearest likely location at the construction site to the façade of the nearest receptor building.

Table 14 Architectural Damage Vibration Levels from Construction Equipment

Equipment	Peak Particle Velocity in inches per second: Residence to north of project site (150 ft.) with limit of 0.20	Residence to north of project site (250 ft.) with limit of 0.20	Residence to west of project site (500 ft.) with limit of 0.20
Vibratory Roller	0.014	0.007	0.002
Large Bulldozer	0.006	0.003	0.001
Excavator, Backhoe[1]	0.006	0.003	0.001
Loaded Trucks	0.005	0.002	0.001
Jackhammer	0.002	0.001	<0.001
Small Bulldozer	<0.001	<0.001	<0.001

Source: FTA 2006.
Bold numbers indicate values that exceed FTA architectural damage criteria.
[1] These items are not on the original FTA list, but are conservatively taken to be comparable to a Large Bulldozer for vibration emissions.

3. Environmental Analysis

As shown in Table 12, project-related construction activities would not result in vibration levels at nearby structures that exceed the FTA's pertinent criteria for vibration-induced architectural damage (i.e., 0.20 PPV in/sec for residential land uses or 0.30 for commercial/office land uses). Therefore, construction activities are not expected to result in vibration-induced damage and impacts would be less than significant. No mitigation measures are needed.

Vibration Annoyance

Some construction activities may be perceptible at the nearest off-site receptors due to their proximity. However, vibration-related construction activities would occur in the daytime when residential land uses are least susceptible to vibration (as many people would be away from their residences during the day).

According to the FTA, the level where vibration becomes annoying is 78 VdB for residential uses and 84 VdB for commercial/office uses (FTA 2006). Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Construction activities are typically distributed throughout the project site, and the highest vibration levels would only occur for a very limited duration when equipment is working in close proximity. Therefore, distances to the nearest receptors are measured from the center of the construction site to represent the average vibration level.

The nearest sensitive receptors are the single-family residences to the north (approximately 380 feet and 480 feet from the center of construction) and the single-family residence to the west (approximately 900 feet from the center of construction). Table 15 shows the vibration levels from typical earthmoving construction equipment at the nearest receptors.

Table 15 Average Annoyance Vibration Levels from Construction Equipment

Equipment	Residence to north of project site (380 ft.) with limit of 78 VdB	Residence to north of project site (480 ft.) with limit of 78 VdB	Residence to west of project site (900 ft.) with limit of 78 VdB
Vibratory Roller	59	56	49
Large Bulldozer	52	49	42
Caisson Drilling	52	49	42
Excavator, Backhoe[1]	52	49	42
Loaded Trucks	51	48	41
Jackhammer	44	41	34
Small Bulldozer	23	20	13

Source: FTA 2006.
Bold numbers indicate values that exceed Newport Beach annoyance criteria (per the 2006 General Plan EIR methodology).
[1] These items are not on the original FTA list, but are conservatively taken to be comparable to a Large Bulldozer regarding vibration emissions.

Construction-generated vibration levels would not exceed 78 VdB at any nearby sensitive residential receptors, and therefore would not exceed the threshold for human annoyance. Construction-generated vibration levels would not exceed the 84 VdB threshold for annoyance at any nearby commercial/office receptors. Generally, heavy equipment would only operate at the project boundary for brief periods.[21] As

[21] Estimated to be approximately 10 to 20 percent of the overall construction duration.

heavy construction equipment moves around the project site, average vibration levels at the nearest structures would diminish with increasing distance between structures. Impacts related to construction vibration annoyance would not be significant and mitigation is not necessary.

3.13 POPULATION AND HOUSING

Would the project:

36. Housing

a) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Less Than Significant Impact. A mobile home in the western half of the site would be removed by project development. A vacant single-family house is atop the small hill in the northwest part of the site; the small hill is not part of the school site, and project development would not displace the house. There were an estimated 7,514 housing units, consisting of 7,115 occupied units and 399 vacant units (the vacancy rate was 5.3 percent), in 2014 in the community of French Valley based on US Census Bureau American Community Survey 5-year estimates (USCB 2016). The average household size in French Valley in the aforesaid estimate was 3.9 persons. Thus, project development is estimated to displace four persons. There is sufficient housing in the region to absorb one household that would be displaced by project development, and development would not require construction of replacement housing elsewhere. Impacts would be less than significant and no mitigation is needed.

b) Create a demand for additional housing, particularly housing affordable to households earning 80% or less of the County's median income?

Less than Significant Impact. Project development would displace one household from the mobile home onsite. There is sufficient housing in the region to absorb one household, and project development would not require construction of replacement housing.

The project would not develop housing and thus would not directly add residents to the community of French Valley. Project operation would generate about 40 jobs. The unemployment rate in Riverside County in June 2016 was estimated at 6.7 percent (EDD 2016). Thus, project-generated employment is expected to be absorbed from the regional labor force and is not anticipated to attract substantial numbers of workers from out of the region. Impacts would be less than significant and no mitigation is needed.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Less than Significant Impact. One mobile home in the western half of the site would be displaced by project development. (USCB 2016). The average household size in French Valley in the aforesaid American Community Survey estimate was 3.9 persons (USCB 2016). Thus, project development is estimated to displace four persons. There is sufficient housing in the region to absorb one household that would be displaced by project development, and development would not require construction of replacement housing elsewhere. Impacts would be less than significant and no mitigation is needed.

d) Affect a County Redevelopment Project Area?

No Impact. The project site is not in or next to a County Redevelopment Area. The Riverside County Redevelopment Agency was dissolved by the County Board of Supervisors in 2012, pursuant to State law; and designated the Riverside County Economic Development Agency as successor agency. the Riverside County (Riverside County 2017). No impact would occur and no mitigation is required.

e) Cumulatively exceed official regional or local population projections?

Less than Significant Impact. The 2018 Cumulative Plus Project conditions analyzed in the Traffic Impact Analysis for the proposed project considered four cumulative projects consisting of two commercial projects, one mixed use, and one residential project. No future-year population estimate for the Community of French Valley is available. The Western Riverside Council of Governments (WRCOG) forecasts that the population of western Riverside County – that is, from the San Jacinto and Santa Rosa mountains west to the County boundary – will increase by about 608,000, or 28 percent – from approximately 2,140,500 in 2020 to 2,749,200 in 2035 (WRCOG 2013). Population growth by the four cumulative projects would be a very small fraction of all forecast population growth in western Riverside County. Impacts would be less than significant, and no mitigation is required.

f) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less Than Significant Impact. The project would not develop housing and thus would not directly add residents to the community of French Valley. Project operation would generate about 40 jobs. The unemployment rate in Riverside County in June 2016 was estimated at 6.7 percent (EDD 2016). Thus, project-generated employment is expected to be absorbed from the regional labor force and is not anticipated to attract substantial numbers of workers from out of the region. Impacts would be less than significant.

3.14 PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

37. Fire Services

a) Fire protection?

Less Than Significant Impact. The Riverside County Fire Department provides fire protection and emergency medical service to the community of French Valley, including the project site. The two nearest fire stations to the project site are Station 83 at French Valley Airport, about 3.3 miles to the southwest, and Station 34 in the community of Winchester, about 5.3 miles to the north (RCFD 2016). RCFD has automatic aid agreements with the cities of Hemet and Murrieta and the Pechanga Band of Luiseno Mission Indians, and a mutual aid agreement with March Air Force Base (Management Partners 2009).[22]

Project construction and operation would generate a very slight increase in demands for fire protection and emergency medical services. Such a slight increase would not require RCFD to build new or expanded fire stations. Projects developed in unincorporated Riverside County pay development impact fees, including fees for development of fire stations, to Riverside County; such fees would help offset impacts of the proposed project.

It is expected that RCFD will add future fire stations in southwest Riverside County as required to serve planned growth. The RCFD Strategic Planning Division plans future fire stations. RCFD is funded mostly through the county general fund and development impact fees. The population of all unincorporated areas of Riverside County is forecast to increase from about 359,000 to 499,200, or about 39 percent, between 2012 and 2040. The total population of the cities of Murrieta and Menifee, which are contiguous with the community of French Valley, and Temecula, about 1.2 miles south of French Valley, is forecast to increase from about 291,300 to about 388,300, or about 33 percent, over the same period (SCAG 2016). Impacts would be less than significant and no mitigation is needed.

38. Sheriff Services

b) Police protection?

Less Than Significant Impact. The Riverside County Sheriff's Department (RCSD) provides police protection to the community of French Valley. The nearest RCSD station to the project site is the Southwest Station at 30755-A Auld Road in the City of Murrieta, about 3.3 miles to the south. Project development would cause a very slight increase in demands for police protection. RCSD is funded mostly through the county general fund and development impact fees. Projects developed in unincorporated Riverside County pay development impact fees to Riverside County, including fees for development of criminal justice public facilities; such fees would help offset impacts of the proposed project. Project development would not require construction of new or expanded police facilities, and impacts would be less than significant. No mitigation is needed.

39. Schools

c) Schools?

No Impact. Project development would have a favorable impact on school facilities, and no adverse impact would occur. No mitigation is required.

[22] Automatic aid is assistance dispatched automatically by contractual agreement between two communities or fire districts. Mutual aid, by contrast, is arranged case by case.

40. Libraries

No Impact. The two nearest libraries to the project site are the Murrieta Public Library in the City of Murrieta and the Paloma Valley Library in the City of Menifee; the latter facility is part of the Riverside County Library System (CPL 2017). The proposed school would include a library and thus would not require students use off-campus libraries. Demand for libraries is generated by the population within the libraries' service areas. Project development would not add residents to the community of French Valley and would not generate demand for libraries. No adverse impact would occur and no mitigation is required.

41. Health Services

No Impact. The nearest health facility to the project site mapped on the Healthcare Atlas maintained by the Office of Statewide Health Planning and Development (OSHPD) is the Loma Linda University Medical Center-Murrieta in the City of Murrieta (OSHPD 2017). Project development would not adversely affect health services in the project region, and no impact would occur. No mitigation is needed.

3.15 RECREATION

42. Parks and Recreation

a) **Would the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?**

No Impact. The project proposes development of on-site athletic facilities; impacts of development of such facilities would be part of impacts of the whole project analyzed throughout Chapter 3 of this Initial Study. No additional impact would occur and no mitigation is needed.

b) **Would the project include the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated?**

No Impact. The proposed school would include athletic facilities—a multipurpose room with indoor basketball/volleyball court and a soccer field—for use of students. Project development would not require students to use off-campus recreational facilities, and no impact would occur.

c) **Is the project located within a Community Service Area (CSA) or recreation and park district with a Community Parks and Recreation Plan (Quimby fees)?**

No Impact. The project site is in the Valley-Wide Recreation and Parks District (VWRPD). The nearest VWRPD facility to the project site is Abelia Sports Park about 0.3 mile to the south. The VWRPD requires dedication of parkland by development projects. The school would be required to pay fees in lieu of parkland dedication to the VWRPD (Domenigoni 2017). Project development would not adversely affect VWRPD facilities or services, or conflict with requirements for parkland dedication and/or fees under the Quimby Act (California Government Code Section 66477). No mitigation is required.

43. Recreational Trails

a) **Would the project adversely affect a recreational trail or bikeway included in the Riverside County Southwest Area Plan Trails and Bikeway System?**

No Impact. The two nearest trails to the project site mapped in the Riverside County General Plan Southwest Area Plan are a Regional Trail [Urban/Suburban] on a segment of SR-79 including the site frontage; and a Community Trail on Pourroy Road (RCPD 2015). Project development would not interfere with either of those trails, and no impact would occur. No mitigation is needed.

3.16 TRANSPORTATION/TRAFFIC

The information in this section is based in part on the Transportation Impact Analysis for Temecula Valley Charter School completed by PlaceWorks in April 2017; a complete copy of this report is included as Appendix H to this Initial Study.

44. Circulation

a) **Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?**

Less Than Significant Impact.

Existing Conditions

Roadways

The study area was determined based on the anticipated attendance area, a review of the circulation network, the number of trips generated by the project, and consultation with County transportation staff. All roadway classifications are from the County of Riverside General Plan Circulation Element.

Winchester Road (State Route 79): This north-south roadway currently is four lanes in the study area and is classified as an Expressway. The posted speed limit varies from 55 to 65 miles per hour in the study area.

Keller Road: This east-west roadway is currently unpaved in the study area and is classified as a Secondary Roadway.

Pourroy Road/Abelia Street: This roadway is Pourroy Road to the west of SR-79 and Abelia Street to the east of SR-79. This roadway is classified as a Secondary Roadway and is currently two lanes for Pourroy Road and four lanes for Abelia Street. The posted speed limit on Abelia Street is 45 mph.

Whisper Heights Parkway/Pourroy Road: This roadway is Whisper Heights Parkway to the west of SR-79 and Pourroy Road to the east of SR-79. Pourroy Road is classified as a Secondary Roadway. Whisper

3. Environmental Analysis

Heights Parkway is currently two lanes and Pourroy Road is currently four lanes in the study area. The posted speed limit on Whisper Heights Parkway is 25 mph.

Jean Nicholas Road/Skyview Road: This roadway is Jean Nicholas Road to the west of SR-79 and Skyview Road to the east of SR-79. It is classified as a Secondary Roadway. Jean Nicholas Road currently has two eastbound lanes and one westbound lane while Skyview Road currently has four lanes.

Max Gillis Boulevard/Thompson Road: This Roadway is Max Gillis Boulevard to the west of SR-79 and Thompson Road to the east of SR-79. Max Gillis Boulevard and Thompson Road currently have four lanes. Max Gillis Boulevard is classified as a Major Roadway and Thompson Road is classified as a Secondary Roadway. Max Gillis Boulevard and Thompson Road have a posted speed limit of 45 mph.

Benton Road: This east-west roadway currently is two lanes in the project area and is classified as an Urban Arterial Roadway.

Pat Road: This roadway is a two-lane local street.

Elliot Road: This north-south roadway is a two-lane local street.

Intersections

The intersections listed in Table 16 were analyzed based on Riverside County guidelines requiring intersections at streets with a minimum classification of collector or higher to be studied where the project adds 50 or more peak hour trips.

Table 16 Study Area Intersections

Intersection	Traffic Control	Jurisdiction
SR-79 at Keller Road	Signalized	Caltrans
SR-79 at Pourroy Road/Abelia Street	Signalized	Caltrans
SR-79 at Whisper Heights Parkway/Pourroy Road	Signalized	Caltrans
SR-79 at Jean Nicholas Road/Skyview Road	Signalized	Caltrans
SR-79 at Max Gillis Boulevard/Thompson Road	Signalized	Caltrans
SR-79 at Benton Road	Signalized	Caltrans
Pat Road at Pourroy Road	Side-street stop	Riverside County
Jean Nicholas Road at Elliot Road	Side-street stop	Riverside County
Pourroy Road at Skyview Road	All-way stop	Riverside County
Pourroy Road at Thompson Road	All-way stop	Riverside County

Source: PlaceWorks 2016.

Pedestrian Facilities

There are currently no paved sidewalks on Keller Road or the section of SR-79 along the project site frontage.

Bicycle Facilities

There are no bicycle facilities on Keller Road or SR-79 near the project site.

Public Transit

Riverside Transit Agency Route 79 operates on SR-79, extending from Hemet in the northeast to Temecula in the southwest. Route 79 operates six days per week, Monday through Saturday, with a frequency of about one hour (RTA 2016). Project development would not interfere with operation of Route 79.

Methodology

Levels of Service

Roadway capacity is generally limited by the ability to move vehicles through intersections. A level of service (LOS) is a standard performance measurement to describe the operating characteristics of a street system in terms of the level of congestion or delay experienced by motorists. Service levels range from A through F, which relate to traffic conditions from best (uncongested, free-flowing conditions) to worst (total breakdown with stop-and-go operation).

The methodology used to assess the operation of a signalized intersection is based on the Highway Capacity Manual (HCM). The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions. The peak hours selected for analysis are the highest volumes that occur in four consecutive 15-minute periods from 7 to 9 AM and from 4 to 6 PM on weekdays. The HCM 2010 signalized intersection methodology presents LOS in terms of control delay (in seconds per vehicle). Per the HCM methodology, overall average intersection delays at signalized intersections were calculated, and the worst-case approach delays were calculated at unsignalized intersections. The level of service corresponds to the delay calculated. Table 17 describes the level of service concept and the operating conditions expected under each level of service for signalized and unsignalized intersections. The software PTV Vistro 4 was used to determine the LOS at the study area intersections.

Table 17 Intersection Level of Service Descriptions

LOS	Description	Average Delay Per Vehicle (seconds)	
		Signalized	Unsignalized
A	Level of Service A occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	0 to 10.00	0 to 10.00
B	Level of Service B generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level of Service A, causing higher levels of average total delay.	10.01 to 20.00	10.01 to 15.00
C	Level of Service C generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	20.01 to 35.00	15.01 to 25.00

3. Environmental Analysis

Table 17 Intersection Level of Service Descriptions

LOS	Description	Average Delay Per Vehicle (seconds) Signalized	Average Delay Per Vehicle (seconds) Unsignalized
D	Level of Service D generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.01 to 55.00	25.01 to 35.00
E	Level of Service E is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences.	55.01 to 80.00	35.01 to 50.00
F	Level of Service F is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume to capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	80.01 and up	50.01 and up

Source: Highway Capacity Manual, Transportation Research Board, 2000.

Acceptable LOS and Thresholds of Significance

The project site is in the Southwest Area Plan. Policy C 2.1 of the County of Riverside General Plan has established LOS "D" as the minimum level of service in community development areas for intersections of any combination of Secondary Highways, Major Highways, Arterials, Urban Arterials, Expressways, and conventional state highways. Based on the Route Concept Report Fact Sheet for State Route 79 (SR-79; Caltrans 1999), in accordance with Riverside County's Congestion Management Plan (CMP; RCTC 2011) and, LOS "E" is considered the limit of acceptable traffic operations along SR-79 through the year 2020.

Potential traffic impacts would occur if, during the weekday peak hours:

- At intersections currently operating at acceptable LOS, the addition of project trips would change the LOS to an unacceptable LOS.
- At intersections currently operating at unacceptable LOS, the project would increase the delay by more than 5 seconds.

Existing Intersections Operations

Existing Traffic Volumes

Weekday AM and PM peak hour turn movement volumes were collected at the study-area intersections. The counts were collected on Wednesday, September 14, 2016. The existing AM and PM peak hour count worksheets and figures showing turn-movement volumes are provided in the Traffic Impact Analysis (provided as Appendix H to this Initial Study).

Existing Conditions Intersection Operations Analysis

The intersection operations analysis results are summarized in Table 18. As shown in the table, all study area intersections currently operate at acceptable LOS during the peak hours for Existing traffic conditions, except for SR-79 at Max Gillis Boulevard/Thompson Road in the AM and PM peak hour, and SR-79 at Benton Road in the PM peak hour.

Table 18 Existing Peak Hour Intersection Levels of Service

Intersection	Traffic Control	Jurisdiction	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. SR-79 at Keller Road	Signalized	Caltrans	2.8	A	5.5	A
2. SR-79 at Pourroy Road/Abelia Street	Signalized	Caltrans	17.2	B	12.5	B
3. SR-79 at Whisper Heights Parkway/Pourroy Road	Signalized	Caltrans	15.2	B	15.6	B
4. SR-79 at Jean Nicholas Road/Skyview Road	Signalized	Caltrans	15.7	B	13.0	B
5. SR-79 at Max Gillis Boulevard/Thompson Road	Signalized	Caltrans	**180.4**	**F**	**144.6**	**F**
6. SR-79 at Benton Road	Signalized	Caltrans	21.0	C	**86.8**	**F**
7. Pourroy Road at Pat Road	Unsignalized	Riverside	10.7	B	9.5	A
8. Elliot Road at Jean Nicholas Road	Unsignalized	Riverside	19.0	C	13.2	B
9. Pourroy Road at Skyview Road	Unsignalized	Riverside	11.2	B	10.0	A
10. Pourroy Road at Thompson Road	Unsignalized	Riverside	13.9	B	16.1	C

Notes: LOS calculation worksheets included in in the Traffic Impact Analysis included as Appendix H of this Initial Study.
Intersections with unacceptable LOS are shown in **bold.**

Project Traffic

The project would have a capacity of 600 students from grades K to 8. The trip generation was calculated based on rates in the Institute of Transportation Engineers' (ITE) manual, *Trip Generation* (9th edition), for Land Use 534, Private School (K-8) and supplemented by rates from Land Use 536, Private School (K-12). Table 19 shows the trip generation rates and project trip generation for the daily, AM peak hour, and PM peak hour volumes. The project is expected to generate up to1,488 daily trips, 540 trips (297 inbound and 243 outbound) during the AM peak hour, and 102 trips (44 inbound and 58 outbound) during the PM peak hour.

Table 19 Project Trip Generation

Land Use	Unit	Trip Generation						
		Daily[2]	AM Peak Hour[1]			PM Peak Hour[2]		
			In	Out	Total	In	Out	Total
Private School (K-8)	Students	2.48	0.50	0.41	0.90	0.07	0.10	0.17
Project Trip Generation	600	1,488	297	243	540	44	58	102

1 Used the trip generation rates of ITE Code 534 Private School (K-8) from the ITE Trip Generation Manual 9th Edition.
2 Used the trip generation rates of ITE Code 536 Private School (K-12) from the ITE Trip Generation Manual 9th Edition.

3. Environmental Analysis

Temecula Valley Charter School exists 1.4 miles southeast of the project site at 35755 Abelia Street in the community of French Valley and had 516 students in the 2015-16 school year (CDE 2016). The charter school proposes to relocate to the proposed school site. Thus, trips generated by about 85 percent of the 600-student capacity of the proposed school would be already-existing trips on roadways in and near French Valley and would not be new trips added to area roadways. Therefore, this analysis overestimates project trip generation.

The general approach for conducting traffic impact analyses is to evaluate weekday peak hour traffic during the commute peak traffic conditions that generally occur from 7 to 9 AM and 4 to 6 PM. The performance of the project access during school drop-off and pick-up times is evaluated in detail under *Site Access and Internal Circulation* below.

Trip Distribution and Assignment

The traffic that would be generated by the school was geographically distributed onto the street network by evaluating the layout of the study area roadway network and reviewing land uses designated as residential in the area. Figure 11, *Project Trip Distribution,* presents the anticipated trip distribution for the school. The trip distribution percentages are applied to the project trip generation to determine the traffic volumes forecast to be added at each intersection (i.e., trip assignment).

Existing Plus Project Traffic Conditions

To assess Existing Plus Project traffic conditions, existing traffic is combined with project traffic. The intersection operations for the Existing Plus Project traffic conditions are shown in Table 20.

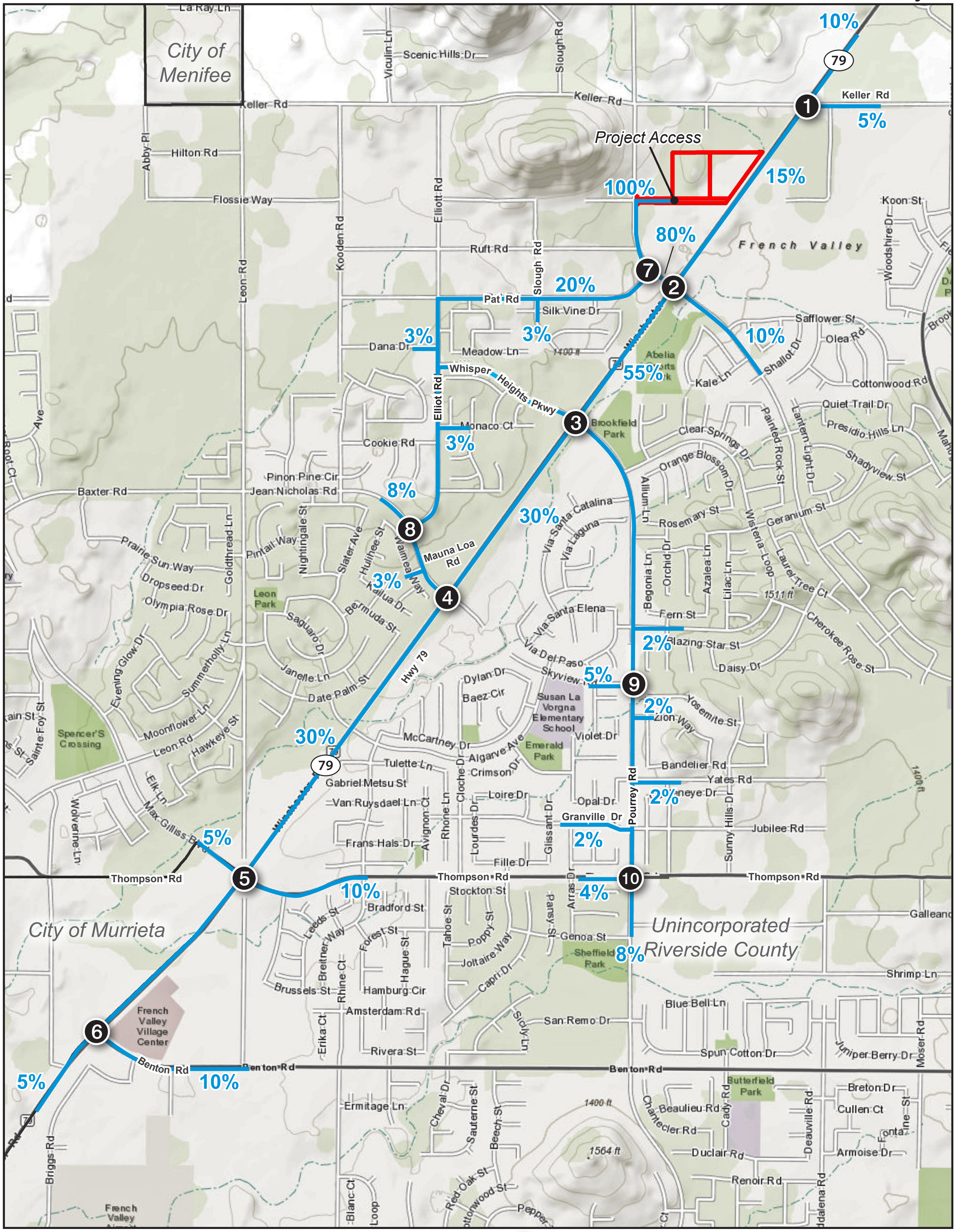
Table 20 Intersection Delay and LOS, Existing Plus Project Conditions

Intersection	Traffic Control	Jurisdiction	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. SR-79 at Keller Road	Signalized	Caltrans	4.2	A	7.4	A
2. SR-79 at Pourroy Road/Abelia Street	Signalized	Caltrans	33.3	C	14.7	B
3. SR-79 at Whisper Heights Parkway/Pourroy Road	Signalized	Caltrans	18.0	B	16.9	B
4. SR-79 at Jean Nicholas Road/Skyview Road	Signalized	Caltrans	16.1	B	14.4	B
5. SR-79 at Max Gillis Boulevard/Thompson Road	Signalized	Caltrans	**180.4**	**F**	**165.2**	**F**
6. SR-79 at Benton Road	Signalized	Caltrans	24.6	C	**87.0**	**F**
7. Pourroy Road at Pat Road	Unsignalized	Riverside	23.8	C	10.3	B
8. Elliot Road at Jean Nicholas Road	Unsignalized	Riverside	22.4	C	14.5	B
9. Pourroy Road at Skyview Road	Unsignalized	Riverside	12.7	B	11.2	B
10. Pourroy Road at Thompson Road	Unsignalized	Riverside	15.5	C	17.3	C

Notes: LOS calculation worksheets included in the Traffic Impact Analysis included as Appendix H of this Initial Study.
Intersections with unacceptable LOS are shown in **bold.**

Figure 11 - Project Trip Distribution

3. Environmental Analysis



Project Site

Trip Route

Intersection Location Number

XX% % to/from Project

0 2,000

Scale (Feet)

Base Map Source: ESRI, USGS, NOAA, HERE, 2016

3. Environmental Analysis

This page intentionally left blank.

Under Existing Plus Project conditions, the intersections of SR-79 at Max Gillis Boulevard/Thompson Road would operate at LOS F in the AM and PM peak hour, and SR-79 at Benton Road would operate at LOS F in the PM peak hour. The remaining study intersections would operate at acceptable LOS.

Future Traffic Conditions

Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways as well as traffic generated by future cumulative projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. The ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Future year traffic forecasts for 2018 traffic conditions are based upon two years of ambient growth at 2 percent per year. The total ambient growth is the compounded growth of 2 percent per year over two years, which results in a total growth of 4 percent.

Cumulative projects are closely related past, present, and reasonably foreseeable probable future projects. A total of 18 projects in the County of Riverside and City of Murrieta have been screened. Based on a review of the circulation system, the trip generation, location, and land use type, the cumulative projects shown on Figure 12, *Cumulative Developments Location Map,* would have the potential for directly adding measurable traffic to the area street system. The cumulative development projects assumed in this traffic analysis are estimated to generate 40,633 trip-ends per day during a typical weekday, with approximately 1,488 vehicle trips during the AM peak hour and 3,357 vehicle trips during the PM peak hour. The trip generation calculations for the cumulative projects are in the Traffic Impact Analysis included as Appendix H to this Initial Study.

The following describes each future scenario evaluated and identifies the intersections that are forecast to operate at unacceptable LOS for each scenario.

Existing Plus Ambient Plus Project Traffic Conditions

A scenario for existing + ambient growth + project (EAP) was evaluated, corresponding to a scenario for project opening year 2018 with the project but without the development of cumulative projects. The intersection operations for the EAP traffic conditions have been calculated and are given in Table 21.

As shown in the table, under EAP conditions, the intersections of SR-79 at Max Gillis Boulevard/Thompson Road would operate at unacceptable LOS F in the AM and PM peak hour, and SR-79 at Benton Road would operate at unacceptable LOS F in the PM peak hour. The remaining study intersections would operate at acceptable LOS.

3. Environmental Analysis

Table 21 Intersection Delay and LOS, EAP Conditions

Intersection	Traffic Control	Jurisdiction	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. SR-79 at Keller Road	Signalized	Caltrans	4.3	A	8.9	A
2. SR-79 at Pourroy Road/Abelia Street	Signalized	Caltrans	38.0	D	15.2	B
3. SR-79 at Whisper Heights Parkway/Pourroy Road	Signalized	Caltrans	18.7	B	17.8	B
4. SR-79 at Jean Nicholas Road/Skyview Road	Signalized	Caltrans	17.2	B	14.9	B
5. SR-79 at Max Gillis Boulevard/Thompson Road	Signalized	Caltrans	**196.6**	**F**	**184.7**	**F**
6. SR-79 at Benton Road	Signalized	Caltrans	27.6	C	**98.3**	**F**
7. Pourroy Road at Pat Road	Unsignalized	Riverside	24.3	C	10.3	B
8. Elliot Road at Jean Nicholas Road	Unsignalized	Riverside	24.0	C	14.9	B
9. Pourroy Road at Skyview Road	Unsignalized	Riverside	13.1	B	11.4	B
10. Pourroy Road at Thompson Road	Unsignalized	Riverside	16.5	C	18.8	C

Notes: LOS calculation worksheets included in the Traffic Impact Analysis included as Appendix H of this Initial Study.
Intersections with unacceptable LOS are shown in **bold.**

2018 Without Project Traffic Conditions

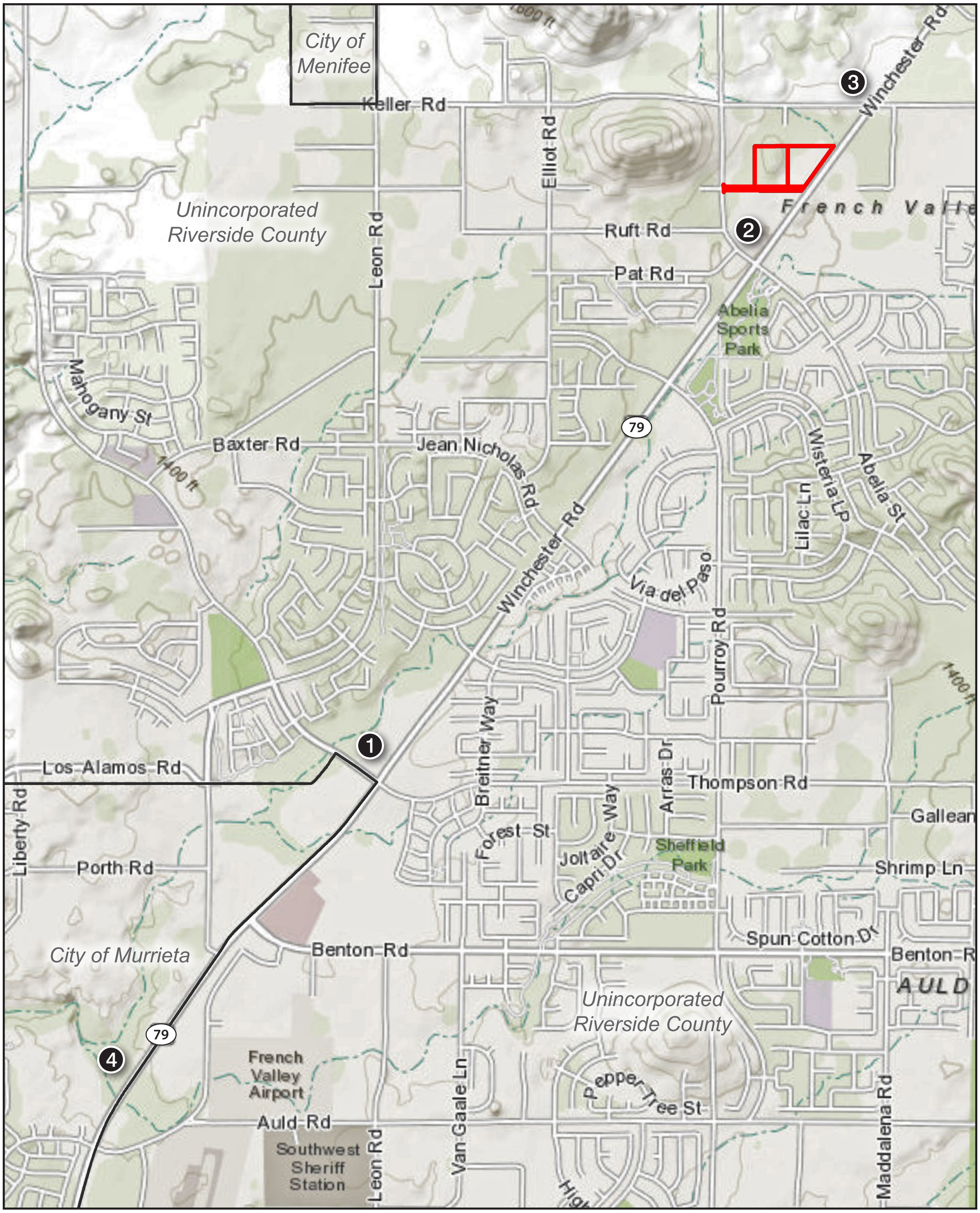
To assess project completion traffic conditions at the time of project opening year, existing traffic is combined with the anticipated ambient growth and cumulative projects to reflect 2018 No Project traffic conditions (existing + ambient growth + cumulative projects). The intersection operations for the 2018 No Project traffic conditions have been calculated and are given in Table 22.

Table 22 Intersection Delay and LOS, 2018 No Project Conditions

Intersection	Traffic Control	Jurisdiction	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. SR-79 at Keller Road	Signalized	Caltrans	20.5	C	**219.2**	**F**
2. SR-79 at Pourroy Road/Abelia Street	Signalized	Caltrans	71.5	E	**208.1**	**F**
3. SR-79 at Whisper Heights Parkway/Pourroy Road	Signalized	Caltrans	32.3	C	**152.0**	**F**
4. SR-79 at Jean Nicholas Road/Skyview Road	Signalized	Caltrans	19.6	B	39.6	D
5. SR-79 at Max Gillis Boulevard/Thompson Road	Signalized	Caltrans	**214.6**	**F**	**258.7**	**F**
6. SR-79 at Benton Road	Signalized	Caltrans	40.5	D	**175.4**	**F**
7. Pourroy Road at Pat Road	Unsignalized	Riverside	27.7	D	**61.5**	**F**
8. Elliot Road at Jean Nicholas Road	Unsignalized	Riverside	25.4	D	24.4	C
9. Pourroy Road at Skyview Road	Unsignalized	Riverside	17.0	C	**63.3**	**F**
10. Pourroy Road at Thompson Road	Unsignalized	Riverside	22.9	C	**81.5**	**F**

Notes: LOS calculation worksheets included in in the Traffic Impact Analysis included as Appendix H of this Initial Study.
Intersections with unacceptable LOS are shown in **bold.**

Figure 12 - Cumulative Developments Location Map
3. Environmental Analysis



Project Site

City Boundary

1 Self Storage Facility/Retail Building/Car Wash

2 160,680 SF Mix of Commercial, Restaurant, Financial

3 SP Commercial Office, Retail Mixed Use, Residential

4 Adobe Springs

0 2,000
Scale (Feet)

Base Map Source: ESRI, USGS, NOAA, HERE, 2016

3. Environmental Analysis

This page intentionally left blank.

Under 2018 No Project conditions, the following intersections would operate at unacceptable LOS:

- SR-79 at Keller Road (PM peak hour)
- SR-79 at Pourroy Road/Abelia Street (PM peak hour)
- SR-79 at Whisper Heights Parkway/Pourroy Road (PM peak hour)
- SR-79 at Max Gillis Boulevard/Thompson Road (AM and PM peak hours)
- SR-79 at Benton Road (PM peak hour)
- Pourroy Road at Pat Road (PM peak hour)
- Pourroy Road at Skyview Road (PM peak hour)
- Pourroy Road at Thompson Road (PM peak hour)

2018 With Project and Cumulative Projects Traffic Conditions

To assess future cumulative traffic conditions, traffic generated by cumulative projects is added to the EAP conditions discussed above. The intersection operations for the 2018 Cumulative traffic conditions have been calculated and are listed in Table 23.

Table 23 Intersection Delay and LOS, 2018 with Project and Cumulative Projects Traffic Conditions

Intersection	Traffic Control	Jurisdiction	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. SR-79 at Keller Road	Signalized	Caltrans	15.9	B	**221.5**	**F**
2. SR-79 at Pourroy Road/Abelia Street	Signalized	Caltrans	**132.5**	**F**	**236.2**	**F**
3. SR-79 at Whisper Heights Parkway/Pourroy Road	Signalized	Caltrans	49.5	D	**143.1**	**F**
4. SR-79 at Jean Nicholas Road/Skyview Road	Signalized	Caltrans	21.0	C	43.0	D
5. SR-79 at Max Gillis Boulevard/Thompson Road	Signalized	Caltrans	**218.7**	**F**	**261.2**	**F**
6. SR-79 at Benton Road	Signalized	Caltrans	47.3	D	**176.8**	**F**
7. Pourroy Road at Pat Road	Unsignalized	Riverside	**357.4**	**F**	**86.7**	**F**
8. Elliot Road at Jean Nicholas Road	Unsignalized	Riverside	31.9	D	25.4	D
9. Pourroy Road at Skyview Road	Unsignalized	Riverside	21.6	C	**68.5**	**F**
10. Pourroy Road at Thompson Road	Unsignalized	Riverside	28.9	D	**85.1**	**F**

Notes: LOS calculation worksheets included in the Traffic Impact Analysis included as Appendix H of this Initial Study.
Intersections with unacceptable LOS are shown in **bold.**

As shown in the table, under 2018 With Project With Cumulative Project conditions, the following intersections would operate at unacceptable LOS:

- SR-79 at Keller Road (PM peak hour)
- SR-79 at Pourroy Road/Abelia Street (AM and PM peak hours)
- SR-79 at Whisper Heights Parkway/Pourroy Road (PM peak hour)
- SR-79 at Max Gillis Boulevard/Thompson Road (AM and PM peak hours)
- SR-79 at Benton Road (PM peak hour)

- Pourroy Road at Pat Road (AM and PM peak hour)
- Pourroy Road at Skyview Road (PM peak hour)
- Pourroy Road at Thompson Road (PM peak hour)

Impacts

Significant impacts are determined by comparing with- and without-project scenarios for each traffic condition. As discussed above, potential traffic impacts would occur if, during the weekday peak hours:

- At intersections currently operating at acceptable LOS (A to D), the addition of project trips would change the LOS to an unacceptable LOS E or F.

- At intersections currently operating at unacceptable LOS E or F, the project would increase the delay by more than 5 seconds.

According to this criterion, potential impacts would occur at the following locations:

Existing Plus Project Conditions

5. SR-79 at Max Gillis Boulevard/Thompson Road (PM peak hour)

6. SR-79 at Benton Road (PM peak hour)

2018 Cumulative Plus Project Conditions

2. SR-79 at Pourroy Road/Abelia Street (AM and PM peak hours)

5. SR-79 at Max Gillis Boulevard/Thompson Road (AM peak hour)

6. SR-79 at Benton Road (AM peak hour)

7. Pourroy Road at Pat Road (AM and PM peak hour)

9. Pourroy Road at Skyview Road (PM peak hour)

To address intersection operational deficiencies, the following road improvements would be necessary:

2. SR-79 at Pourroy Road/Abelia Street

- Construct a southbound through lane
- Construct a northbound through lane
- Construct a northbound left turn lane
- Construct an eastbound right turn lane

5. SR-79 at Max Gillis Boulevard/Thompson Road

- Construct an eastbound right turn lane
- Construct a westbound left turn lane
- Construct a northbound left turn lane
- Construct a southbound through lane

6. SR-79 at Benton Road

- Construct a southbound left turn lane
- Construct a westbound right turn lane

7. Pourroy Road at Pat Road

- Install a traffic signal

9. Pourroy Road at Skyview Road

- Install a traffic signal

None of the intersections above were identified in the Western Riverside Council of Governments Transportation Uniform Mitigation Fee (TUMF) program, the Riverside County Development Impact Fee program, or the Road and Bridge Benefit Districts. These programs are discussed below.

Applicable Funding Mechanisms

Several funding mechanisms for transportation improvements in Riverside County are discussed in the Traffic Impact Analysis included as Appendix H to this Initial Study. The proposed non-profit K-8 school would be exempt from payments of such fees.

Signal Warrants

Signal warrants are a set of criteria used to evaluate the potential need for the installation of a traffic signal at an unsignalized or stop-controlled intersection. The methodology for the signal warrant analysis is included in the 2014 California Manual on Uniform Traffic Control Devices. The manual states that if one or more of the criteria for signal warrants is met, an engineering study would be required to evaluate other factors to determine if an intersection must be signalized. The traffic analysis in this study uses Warrant 3 criteria, which are based on traffic volumes entering the intersections during the peak hour. The signal warrant calculations are in the Traffic Impact Analysis (Appendix H to this Initial Study). The signal warrant criteria would not be met at any intersection under existing and 2018 scenarios.

Site Access and Internal Circulation

Site access would be via two 1-way driveways at the southeast corner of the site from the extension of Koon Street, which would begin at the existing Pourroy Road intersection and end in a cul-de-sac at SR-79. Koon Street would link to Pourroy Road and form a 4-leg intersection. The intersection would be approximately 1,200 feet from SR-79. The segment of Pourroy Road north of Pat Road is currently unpaved (starting

3. Environmental Analysis

approximately 200 feet south of Flossie Way and is mostly flat and clear of visual obstructions for at least 200 feet north and south of Flossie Way.

The proposed internal circulation would consist of a flow-through drop-off loop that would be 30 feet wide and extend around the periphery of the parking lot. The total length of the loop would be approximately 1,400 feet. The parking lot would include 100 parking spaces, extending the length of the site boundary along SR-79. The student drop-off and pick-up area (loading) would be along the western portion of the parking lot adjacent to the school buildings. It would have a lane for loading/unloading and at least one passing lane. Preliminary plans show one passing lane and one loading lane. Given a length of approximately 700 feet from the beginning of the loading area to the driveway entrance plus the length of Flossie Way of approximately 800 feet, there would be a total of approximately 1,500 feet of driveway length to queue cars during student drop-off and pick-up times. Assuming an average length of 25 feet per vehicle, the internal driveways could accommodate up to 60 vehicles before the student loading area. In addition, there would be 100 parking spaces and additional space in the loading area. It is anticipated that queues would be limited to Flossie Way, and some queueing may occur on Pourroy Road in the proximity of Flossie Way as vehicles slow down to turn into Flossie Way. The highest turn movement volumes at the access driveway would occur during the AM peak hour with student drop-off. The typical morning peak drop-off and afternoon pick-up activity lasts about 20 minutes, and any possible queue would dissipate immediately afterward.

Project Improvements

The following roadway improvements are necessary to ensure that adequate site access is provided. Figure 13, *Project Site Access Improvements*, presents the project's site access and recommendations.

- Construct Flossie Way at its ultimate width as a local road per County of Riverside design standards with a right-of-way of 60 feet between the project's western boundary and the project's access driveway. A sidewalk shall be provided on the eastern side of the road along the school property with an adequate connection to allow pedestrian connections to the school buildings without walking on driveways.

- The intersection of Flossie Way/Koon Street/Pourroy Road shall form a 4-leg intersection with Flossie Way.

- Parking and student loading/unloading shall be prohibited on Flossie Way to reduce friction and maneuvers on Flossie Way, especially during student drop-off and pick-up times.

- Prior to the opening of the project, TVCS shall work with Riverside County to identify on-site traffic signing and striping to be implemented in conjunction with detailed construction plans for the project. These shall be in conformance with design standards from the California Manual of Uniform Traffic Control Devices for Streets and Highways and Riverside County standards.

- TVCS and Riverside County should periodically review traffic operations in the vicinity of the project once the project is constructed to ensure that traffic operations are satisfactory.

Figure 13 - Project Site Access Improvements

3. Environmental Analysis

Prior to the opening of the project, the school shall work with the Riverside County to identify on-site traffic signing and striping to be implemented in conjunction with detailed construction plans for the project. These shall be in conformance with design standards from the California Manual of Uniform Traffic Control Devices for Streets and Highways (CA MUTCD) and Riverside County standards.

The school and the Riverside County should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that traffic operations are satisfactory.

Project Site

0 500
Scale (Feet)

Source: Google Earth Pro, 2016; Site Plan: WLC Architects, 2016

3. Environmental Analysis

This page intentionally left blank.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less Than Significant Impact. The Congestion Management Program in effect in Riverside County was approved by the Riverside County Transportation Commission in 2011. All freeways and selected arterial roadways in the county are designated elements of the CMP system of highways and roadways. SR-79 is a part of the CMP roadway system. According to the County CMP, when a deficiency is identified, a deficiency plan must be prepared by the local agency (in this case Caltrans). Other agencies identified as contributors to the deficiency, which include the County of Riverside, are also required to coordinate with the development of the plan. The plan must contain mitigation measures, including consideration of Transportation Demand Management strategies and transit alternatives, and a schedule for mitigating deficiency.

Western Riverside County local agencies and the County of Riverside have adopted Transportation Uniform Mitigation Fee programs. If, during the annual LOS monitoring process, an intersection within the TUMF area falls below LOS E, planned improvements necessary to mitigate the deficiency would be implemented through TUMF projects.

The project would generate 540 AM peak hour trips and 102 PM peak hour trips. The trip distribution map shows that up to 55 percent of these trips would be on segments of SR-79. Therefore, up to 297 trips would be added to segments of SR-79. The project would contribute to trips that would cause intersections along SR-79 to operate at unacceptable LOS. These deficiencies would occur without and with the project. The project would cause a cumulative impact at three study intersections along SR-79 at the intersections of SR-79 at Pourroy Road/Abelia Street, SR-79 at Max Gillis Boulevard/Thompson Road, and SR-79 at Benton Road.

Approximately 85 percent of project trip generation would consist of trips already generated by the existing Temecula Valley Charter School campus on Abelia Street that would be relocated to the proposed school site. Trips to and from the existing campus use SR-79. Thus, project trip generation in this Initial Study overestimates new trips that would be added to study area roadways.

In addition, the TUMF program recognizes that schools accommodate residential growth and don't generate trips in the absence of such growth and therefore exempts schools from TUMF fees. Impacts would be less than significant and no mitigation is required.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The nearest public-use airport to the site is French Valley Airport about 3.3 miles to the southwest. The site is not in areas surrounding French Valley Airport where heights of structures are limited to prevent obstructions to air navigation. Project development would require relocation of air traffic patterns, and no impact would occur. No mitigation is needed.

3. Environmental Analysis

d) Alter waterborne, rail, or air traffic?

No Impact. One navigable waterway in Riverside County – the Colorado River on the east County boundary, 138 miles east of the project site - is listed on the US Army Corps of Engineers Los Angeles District's list of *Navigable Waters in Los Angeles District* (Corps 2017). Project development would not alter waterborne traffic.

The nearest railroad track to the project site is a BNSF Railway track in the City of Perris about 12 miles to the northwest (FRA 2017). Project development would not alter rail traffic.

The project site is not within the airport land use plan or within two nautical miles of a public-use airport. The nearest public-use airport to the site is French Valley Airport, about 3.3 miles to the southwest. The site is not in areas surrounding French Valley Airport where land uses are regulated to minimize hazards from aircraft crashes to persons on the ground, and not in areas where heights of structures are limited to prevent obstructions to air navigation. Project development would not alter air traffic. No impact would occur and no mitigation is needed.

e) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant Impact. Proposed site access is described above in Section 44.a. The designs of roadways and intersections that would be built as part of the project would not create conflicting turning movements or place queues for driveways on highways or arterial roadways. The proposed site access connecting the Koon Street cul-de-sac with SR-79 would be emergency-only and thus would not create turning movements or queues conflicting with traffic on SR-79. Impacts would be less than significant and no mitigation is needed.

f) Cause an effect upon, or a need for new or altered maintenance of roads?

Less than Significant Impact. Project traffic impacts would be less than significant, as substantiated above in Section 44.a. Therefore, any increase in roadway maintenance required due to project development would be within the scale of increase caused by existing traffic and traffic resulting from planned growth in the project region. Impacts would be less than significant and no mitigation would be required.

g) Cause an effect upon circulation during the project's construction?

Less than Significant Impact. Site grading would be balanced, that is, is not expected to require soil import or export. All staging of construction equipment and materials would be done onsite and would not block surrounding roadways. Construction would be phased so that only part of the total construction workforce would be onsite at any time. Project construction trip generation would be far lower than the 1,488 daily trips estimated for project operation. Project construction traffic impacts would be less than significant and no mitigation is required.

h) **Result in inadequate emergency access?**

No Impact. The school site plan provides one access route from SR-79 via Pourroy Road and Flossie Way. The site plan provides access roads to within 150 feet of all portions of the exterior walls of each building, conforming with Section 503 of the California Fire Code (California Code of Regulations Title 24 Part 9). The project would provide adequate emergency access, and no adverse impact would occur. No mitigation is required.

i) **Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?**

No Impact. Riverside Transit Agency Route 79 operates on Winchester Road, extending from Hemet in the northeast to Temecula in the southwest. Route 79 operates six days per week, Monday through Saturday, with a frequency of about one hour (RTA 2016). Project development would not interfere with operation of Route 79. There are no paved sidewalks or bicycle facilities near the project site that would be interfered with by project development. No impact would occur and no mitigation is needed.

45. Bike Trails

a) **Would the project adversely affect a bikeway included in the Riverside County Southwest Area Plan Trails and Bikeway System?**

No Impact. Project development would not impact County bikeways, as substantiated above in Section 43.a.

3.17 UTILITIES AND SERVICE SYSTEMS

46. Water

a) **Require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which would cause significant environmental effects?**

Less Than Significant Impact. Water treatment facilities filter and/or disinfect water before it is delivered to customers. The Eastern Municipal Water District (EMWD) provides water to the community of French Valley and would serve the proposed school. The project site is in EMWD's Skinner Service Area, whose water supplies consist of imported water from northern California and the Colorado River treated at the Metropolitan Water District's Skinner Filtration Plant (EMWD 2016). The Skinner Filtration Plant has capacity of 630 million gallons per day (mgd) (MWDSC 2016). Elementary and middle schools are estimated to use 10 gallons of water per student per day, that is, 125 percent of the wastewater generation factor of 8 gallons per day (gpd) per student (Los Angeles 2006). Thus, the 600-student school is estimated to use about 6,000 gallons of water per day. There is sufficient water treatment capacity in the region for estimated project water demands, and project development would not require construction of new or expanded water treatment facilities. Impacts would be less than significant and no mitigation is required.

3. Environmental Analysis

b) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Less Than Significant Impact. The project site is in a portion of EMWD's service area supplied with water imported from northern California and the Colorado River. EMWD retails water to customers in parts of its service area including the project site and wholesales imported water to six water purveyors in its service area. Both retail and wholesale supplies and demands are listed in Table 24.

Table 24 EMWD Forecast Water Supplies and Demands, acre-feet per year

	2020	2025	2030	2035	2040
Retail Supplies and Demands					
Imported Water[1]	81,197	89,097	100,497	111,597	122,097
Groundwater2	19,303	22,403	22,403	22,403	22,403
Subtotal, Potable Water	*100,500*	*111,500*	*122,900*	*134,000*	*144,500*
Recycled Water	45,245	48,334	50,017	51,800	53,300
Total Supplies	**145,745**	**159,834**	**172,917**	**185,800**	**197,800**
Demands	**145,745**	**159,834**	**172,917**	**185,800**	**197,800**
Difference	0	0	0	0	0
Wholesale Supplies and Demands					
Imported Water	50,500	54,100	57,700	61,200	64,800
Recycled Water	1,656	4,766	5,183	5,600	5,600
Total Supplies	**52,156**	**58,866**	**62,883**	**66,800**	**70,400**
Demands	**52,156**	**58,866**	**62,883**	**66,800**	**70,400**
Difference	0	0	0	0	0

Source: RMC 2016.
[1] Imported water includes treated imported water delivered directly to customers; raw imported water treated at EMWD filtration plants before delivery to customers; and imported water used to replenish groundwater for the Soboba Band of Luiseno Indians and others pursuant to a court settlement.
[2] Groundwater includes potable groundwater and groundwater from the western part of the San Jacinto Groundwater Basin desalinated at EMWD desalters.

The proposed school is estimated to use about 6,000 gpd based on 125 percent of the wastewater generation factor for elementary and middle schools (Los Angeles 2006). There are sufficient existing and planned water supplies in the region to meet estimated project water demands, and project development would not require EMWD to obtain new or expanded water supplies. Impacts would be less than significant.

47. Sewer

a) Require or result in the construction of new wastewater treatment facilities, including septic systems, or expansion of existing facilities, the construction of which would cause significant environmental effects?

Less Than Significant Impact. EMWD provides wastewater treatment for parts of western Riverside County including the project site. The project site is in the service area of EMWD's Temecula Valley Regional Water Reclamation Facility, which has capacity of 18 mgd and treated average flows of about 13.5 mgd in 2015 (RMC 2016). Expansion of this facility to 23 mgd capacity is expected to be complete by 2017 (EMWD 2014). The proposed school is estimated to generate about 4,800 gallons of wastewater per day, based on the generation factor of 8 gpd per student. There is sufficient wastewater treatment capacity in the region to treat project-generated wastewater, and project development would not require EMWD to build new or expanded wastewater treatment facilities.

The project would include installation of sewer laterals connecting to nearby sewer mains, and would not build or use septic systems. Impacts would be less than significant and no mitigation is needed.

b) Result in a determination by the waste water treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less Than Significant Impact. Project impacts on wastewater treatment capacity would be less than significant, as substantiated in Section 47.a.

48. Solid Waste

a) Is the project served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less Than Significant Impact. In 2015 about 99 percent of solid waste landfilled from the two cities closest to the project site, Murrieta and Menifee, was disposed of at two landfills—Badlands Sanitary Landfill near the City of Moreno Valley and El Sobrante Landfill near the City of Corona (CalRecycle 2016a). Capacities and disposal amounts for the two facilities are listed in Table 25.

Table 25 Landfills Serving Murrieta and Menifee

Landfill and Nearest City	Permitted Throughput Capacity, Tons per Day	Average Disposal, Tons per Day, 2014	Residual Capacity, Tons per Day	Remaining Capacity, Tons	Estimated Closing Date
Badlands Sanitary Moreno Valley	4,800	2,812	2,988	11,811,599	2022
El Sobrante Corona	16,054	6,793	9,261	145,530,000	2045
Total	**20,854**	**9,605**	**12,249**	**157,341,599**	**—**

Sources: CalRecycle 2016b, 2016c, 2016d.

The proposed school is estimated to generate about 0.007 pound of solid waste per square foot per day, or about 385 pounds per day for the approximately 55,000 total square feet of building area. There is sufficient landfill capacity in the region for estimated project solid waste generation, and project development would not require new or expanded landfills. Impacts would be less than significant.

b) Does the project comply with federal, state, and local statutes and regulations related to solid wastes including the CIWMP (County Integrated Waste Management Plan)?

No Impact. Assembly Bill 939 (Integrated Solid Waste Management Act of 1989; Public Resources Code 40050 et seq.) established an integrated waste-management system that focused on source reduction,

3. Environmental Analysis

recycling, composting, and land disposal of waste. AB 939 required every California city and county to divert 50 percent of its waste from landfills by the year 2000. Compliance with AB 939 is measured in part by comparing solid waste disposal rates for a jurisdiction with target disposal rates; actual rates at or below target rates are consistent with AB 939. AB 939 also requires California counties to show 15 years disposal capacity for all jurisdictions within the county or show a plan to transform or divert its waste.

Assembly Bill 341 (2011) increased the statewide waste diversion goal to 75 percent by 2020, and mandated recycling for commercial and multifamily residential land uses.

Assembly Bill 1826 (California Public Resources Code, Sections 42649.8 et seq.), which took effect in 2016, requires recycling of organic matter by businesses, and multifamily residences of five of more units, generating such wastes in amounts over certain thresholds.

Section 5.408 (Construction Waste Reduction, Disposal, and Recycling) of the 2013 California Green Building Standards Code (CALGreen; Title 24, California Code of Regulations, Part 11) requires that at least 50 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

The proposed school would include collection areas for recyclable materials, including organic matter. Disposition of demolition and construction debris would comply with AB 341, AB 1826, and CALGreen Section 5.408. No impact would occur and no mitigation is needed.

49. Utilities

Would the project impact the following facilities requiring or resulting in the construction of new facilities or the expansion of existing facilities; the construction of which could cause significant environmental effects?

a. Electricity?

b. Natural Gas?

c. Communications Systems?

Less than Significant Impact. Electricity, natural gas, and communications systems are already available in French Valley. The project would relocate an existing charter school to the proposed campus. The proposed school would serve students already living in the region or already forecast to live in the region due to planned growth; project development would not increase population or total student enrollment in or near French Valley. Development of the project would not require construction or expansion of new utility facilities that could cause significant environmental effects, and no mitigation is needed.

d. Storm Water Drainage

Less than Significant Impact. A majority of the runoff from the site will occur over impervious surfaces that will discharge into the existing off-site storm drain system. Other flows will drain into proposed playfield areas that will mimic the existing condition and allow for onsite retention. Impacts would be less than significant and no mitigation is needed.

e. Street Lighting

Less than Significant Impact. Project development would include installation of street lights on the segments of Flossie Way and Pourroy Road that would be improved by the project. The street lights would conform to all applicable Riverside County standards, including standards regulating nighttime lighting related to the Mt. Palomar Observatory. Street light installation would not cause significant impacts.

f. Maintenance of public facilities, including roads?

Less than Significant Impact. Project traffic impacts would be less than significant, as substantiated above in Section 44.a. Thus, Project development would not create a need for roadway maintenance exceeding that caused by existing and planned developments in the region. Impacts would be less than significant.

g. Other Governmental Services?

Less than Significant Impact. Project development would not require the construction or expansion of fire or police stations, schools, libraries, or health care facilities, as substantiated above in Sections 37 through 42. Impacts would be less than significant and no mitigation is required.

3.18 MANDATORY FINDINGS OF SIGNIFICANCE

a) **Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?**

Less Than Significant Impact. As demonstrated in Section 3.4, *Biological Resources*, implementation of the proposed project would not result in the reduction of the habitat of fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or reduce the number or restrict the range of a rare or endangered plant or animal. Additionally, as demonstrated in Section 3.5, *Cultural Resources*, no historic resources were identified onsite, and therefore the project does not have the potential to eliminate important examples of California history or prehistory

b) **Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)**

Less Than Significant Impact. No significant cumulative impacts are identified in this Initial Study, and impacts would be less than significant.

3. Environmental Analysis

c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

Less Than Significant Impact. As demonstrated in the respective topical sections of this Initial Study, project development would not cause substantial adverse effects on human beings, either directly or indirectly. All such impacts were deemed to be less than significant.

4. References

Airnav.com. 2016, November 22. Airport Information. http://www.airnav.com/airports/.

Bay Area Air Quality Management District (BAAQMD). 2011, Revised. California Environmental Quality Act Air Quality Guidelines.

Beranek, Leo. 1988. Noise and Vibration Control. Revised edition. Washington, D.C.: Institute of Noise Control Engineering.

Bies, David A. and Colin H. Hansen. 2009. *Engineering Noise Control: Theory and Practice.* 4th edition. New York: Spon Press.

California Air Resources Board (CARB). 2008, October. Climate Change Proposed Scoping Plan, a Framework for Change.

———. 2013, October 23. Proposed 2013 Amendments to Area Designations for State Ambient Air Quality Standards. http://www.arb.ca.gov/regact/2013/area13/area13isor.pdf.

———. 2014, May 15. Proposed First Update to the Climate Change Scoping Plan: Building on the Framework, http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm.

———. 2015, December. Area Designations Maps: State and National. http://www.arb.ca.gov/desig/adm/adm.htm.

———. 2016, April. Proposed Short-Lived Climate Pollutant Reduction Strategy. https://www.arb.ca.gov/cc/shortlived/meetings/04112016/proposedstrategy.pdf

California Department of Forestry and Fire Prevention (CAL FIRE). 2009, December 24. Very High Fire Hazard Severity Zones in LRA: Western Riverside County. http://frap.fire.ca.gov/webdata/maps/riverside_west/fhszl_map.60.pdf.

California Department of Resources Recycling and Recovery (CalRecycle). 2016a, July 28. Jurisdiction Disposal by Facility. http://www.calrecycle.ca.gov/lgcentral/Reports/DRS/Destination/JurDspFa.aspx.

———. 2016b, July 28. Facility/Site Summary Details: El Sobrante Landfill: http://www.calrecycle.ca.gov/SWFacilities/Directory/33-AA-0217/Detail/.

———. 2016c, July 28. Facility/Site Summary Details: Badlands Sanitary Landfill. http://www.calrecycle.ca.gov/SWFacilities/Directory/33-AA-0006/Detail/.

4. References

———. 2016d, July 28. Landfill Tonnage Reports. http://www.calrecycle.ca.gov/SWFacilities/Landfills/Tonnages/.

California Department of Transportation (Caltrans). 1999, November. State Route 79. Route Concept Fact Sheet. http://sr79project.info/uploads/media_items/route-concept-report-november -1999.original.pdf.

———. 2006, August. Traffic Noise Analysis Protocol.

———. 2009, November. Technical Noise Supplement ("TeNS"). Prepared by ICF International.

———, Department of Transportation, Noise, Vibration, and Hazardous Waste Management Office. 2004, June. Transportation- and Construction-Induced Vibration Guidance Manual. Prepared by ICF International.

———, Division of Environmental Analysis. 2002, February. Transportation Related Earthborne Vibration (Caltrans Experiences). Technical Advisory, Vibration. TAV-02-01-R9601. Prepared by Rudy Hendricks. California Air Pollution Control Officers Association (CAPCOA). 2013. California Emissions Estimator Model (CalEEMod). Version 2013.2.2. Prepared by: ENVIRON International Corporation and the California Air Districts.

———. 2011, September 7. California Scenic Highway Mapping System. http://www.dot.ca.gov/hq/LandArch/scenic_highways/.

California Geological Survey (CGS). 1990, January 1. Special Studies Zones Map, Murrieta Quadrangle. http://gmw.consrv.ca.gov/shmp/download/quad/MURRIETA/maps/MRIETA.PDF.

———. 2014a, October 21. Ground Motion Interpolator. http://www.quake.ca.gov/gmaps/PSHA/psha_interpolator.html.

———. 2014b, November 4. Update of Mineral Land Classification for Portland Cement Concrete-Grade Aggregate in the Temescal Valley Production Area, Riverside County, California. ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sr/sr_231/Temescal_Valley_Rpt%20Final_11-04-14-a.pdf.

———. 2014c, November 5. Updated Mineral Land Classification Map for Portland Cement Concrete-Grade Aggregate in the Temescal Valley Production Area, Riverside County, California. Special Report 231, Plate 1. ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sr/sr_231/TemescalValley_MRZ_Plate1.pdf.

———. 2014d, November 5. Updated Mineral Land Classification Map for Portland Cement Concrete-Grade Aggregate in the Temescal Valley Production Area, Riverside County, California. Special Report 231, Plate 2. ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sr/sr_231/TemescalValley_MRZ_Plate1.pdf.

———. 2016, July 22. Fault Activity Map of California (2010). http://maps.conservation.ca.gov/cgs/fam/.

4. References

California State Library (CSL). 2017, April 11. California Public Library Outlets. http://www.batchgeo.com/map/capublibs.

Department of Water Resources (DWR). 2014, November. Public Update for Drought Response. http://water.ca.gov/waterconditions/docs/DWR_PublicUpdateforDroughtResponse_GroundwaterBasins.pdf.

———. 2016, July 26. Groundwater Information Center Map Interactive Map Application. https://gis.water.ca.gov/app/gicima/.

Diversified Engineering. 1983, August. Environmental Constraints Sheet, Parcel Map No. 19448.

Division of Land Resource Protection (DLRP). 2016a, July 22. California Important Farmland Finder. http://maps.conservation.ca.gov/ciff/ciff.html.

———. 2016b, June 29. Riverside County Williamson Act Lands FY 2015/2016 Sheet 1 of 3.

Domenigoni, Loretta (Parks Planner). 2017, April 11. Phone conversation. Valley-Wide Recreation and Parks District.

EMG. 2016, June 6. Phase I Environmental Site Assessment of 34155 Winchester Road, Winchester, California 92596. Prepared for Hansburger & Klein.

Eastern Municipal Water District (EMWD). 2014, March 27. Temecula Valley Regional Water Reclamation Facility. http://www.emwd.org/home/showdocument?id=1426.

———. 2016, July. 2015 Water Quality Consumer Confidence Report. http://www.emwd.org/home/showdocument?id=14761.

Employment Development Department (EDD). 2016, November 21. Labor Force and Unemployment Rate for California Counties. https://data.edd.ca.gov/Labor-Force-and-Unemployment-Rates/Labor-Force-and-Unemployment-Rate-for-California-C/r8rw-9pxx.

Federal Emergency Management Agency (FEMA). 2016, July 27. Flood Map Service Center. https://msc.fema.gov/portal.

Federal Highway Administration (FHWA). 1978, December. Federal Highway Traffic Noise Prediction Model. Report No. FHWA-RD77-108. US Department of Transportation.

Federal Transit Administration (FTA). 2006, May. Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. US Department of Transportation.

Governor's Office of Planning and Research. 2003, October. State of California General Plan Guidelines.

———. 2008, June. Technical Advisory, CEQA and Climate Change: Addressing Climate Change Through CEQA Review. http://www.opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf.

4. References

Harris, Cyril M. 1998. Handbook of Acoustical Measurements and Noise Control. 3rd edition. Woodbury, NY: Acoustical Society of America.

Management Partners Incorporated. 2009, November 10. Riverside County Strategic Plan 2009-2029. http://www.rvcfire.org/stationsAndFunctions/AdminSppt/StrategicPlanning/Documents/StrategicPlan2009.pdf.

Metropolitan Water District of Southern California (MWDSC). 2016, July 27. Skinner Treatment Plant. http://www.mwdh2o.com/AboutYourWater/Water-Quality/Robert-Skinner.

Nationwide Environmental Title Research (NETR). 2016, July 22. Historical aerial photographs. Historicaerials.com.

Office of Environmental Health Hazard Assessment (OEHHA). 2015, February. Air Toxics Hot Spots Program Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments. http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf.

Office of Mine Reclamation (OMR). 2016, November 22. Mines Online. http://maps.conservation.ca.gov/mol/mol-app.html.

Office of Statewide Health Planning and Development (OSHPD). 2017, January 3. Primary Care Clinics Licensed as of December 31, 2016. https://www.oshpd.ca.gov/documents/HID/FacilityList/PCListing_Dec2016.xlsx.

Phillip Brylski, Ph.D and David Bramlet (Brylski and Bramlet). 2017, May 24. Habitat Assessment.

Riverside County. 2015, December. County of Riverside Climate Action Plan. http://planning.rctlma.org/Portals/0/genplan/general_plan_2016/climate_action_plan/CAP_120815.pdf?ver=2016-04-01-101221-240.

Riverside County. 2017, April 10. Successor Agency. http://countyofriverside.us/AbouttheCounty/SuccessorAgency.aspx.

Riverside County Fire Department (RCFD). 2016, July 26. Station Locator. http://www.rvcfire.org/stationsAndFunctions/FireStations/Pages/Fire-Station-Map.aspx.

Riverside County Planning Department (RCPD). 2015, December 15. Safety Element. Chapter 6 of Riverside County General Plan. http://planning.rctlma.org/Portals/0/genplan/general_plan_2016 /elements/Ch06_Safety-120815.pdf?ver=2016-04-01-100802-943.

Riverside County Planning Department (RCPD). 2015, December 8. Circulation Element. Chapter 4 of Riverside County General Plan. http://planning.rctlma.org/Portals/0/genplan/general_plan_2016/elements/Ch04_Circulation_120815.pdf?ver=2016-04-01-100756-397.

Riverside County Planning Department (RCPD). 2015, December 15. Southwest Area Community Plan. http://planning.rctlma.org/Portals/0/genplan/general_plan_2016/area_plans/SWAP_121515m.pdf?ver=2016-04-01-101033-273.

Riverside County Transportation Commission (RCTC). 2011, December 14. 2011 Riverside County Congestion Management Program. http://rctc.org/uploads/media_items/congestionmanagementprogram.original.pdf.

Riverside Transit Agency (RTA). 2016, May 8. Route 79 Schedule. http://www.riversidetransit.com/images/stories/DOWNLOADS/ROUTES/079.pdf.

RMC Water and Environment. 2016, June. Eastern Municipal Water District 2015 Urban Water Management Plan. http://www.emwd.org/home/showdocument?id=1506.

South Coast Air Quality Management District (SCAQMD). 1993. California Environmental Quality Act Air Quality Handbook.

———. 2008, July. Final Localized Significance Threshold Methodology. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf.

———. 2011. Fact Sheet for Applying CalEEMod to Localized Significance Thresholds. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf.

———. 2013, February. Final 2012 Air Quality Management Plan. http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan.

Southern California Association of Governments (SCAG). 2016, April. The 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): A Plan for Mobility, Accessibility, Sustainability, and a High Quality of Life. http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf.

Summitwest Environmental, Inc. 2017, May 29. Fairy Shrimp Survey.

US Army Corps of Engineers (Corps). 2017, April 11. Navigable Waters in Los Angeles District.

US Census Bureau (USCB). 2016, November 23. American Factfinder: Table DP04: Selected Housing Characteristics: 2010-2014 American Community Survey 5-Year Estimates. French Valley CDP, California. https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk.

US Department of Housing and Urban Development (HUD). 1985, March. The Noise Guidebook: A Reference Document for Implementing the Department of Housing and Urban Development's Noise Policy. Washington, DC: The Division.

4. References

US Environmental Protection Agency (USEPA). 1971, December. Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances. Prepared by Bolt, Beranek & Newman (Cambridge, MA) for the U.S. EPA Office of Noise Abatement and Control. Washington, D.C.

———. 1974, March. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Washington, D.C.: U.S. EPA Office of Noise Abatement and Control.

———1978, November. Protective Noise Levels. EPA 550/9-79-100. (Condensed version of 1971 and 1974 documents.)

US Geological Survey (USGS). 2016, April 7. The Modified Mercalli Intensity Scale. http://earthquake.usgs.gov/learn/topics/mercalli.php.

US Geological Survey (USGS). 2016, June 2. California Volcano Observatory. https://volcanoes.usgs.gov/observatories/calvo/.

Wald, David J., et al. 1999, August. "Relationships between Peak Ground Acceleration, Peak Ground Velocity, and Modified Mercalli Intensity in California." Earthquake Spectra 15 No. 3.

Western Riverside Council of Governments (WRCOG). 2013, February 4. 2010-2035 Western Riverside County Growth Forecasts. http://www.wrcog.cog.ca.us/uploads/media_items/wrcog-growth-forecast-2010-2035.original.pdf.

5. List of Preparers

COUNTY OF RIVERSIDE

Larry Ross, Principal Planner

Heather Thomson, County Archeologist

Savannah Jones, Ecological Resources Specialist II

TEMECULA VALLEY CHARTER SCHOOL

Mark Horn, Board President

PLACEWORKS

Dwayne Mears, AICP, Principal, Environmental Services

Michael Milroy, Associate

Fernando Sotelo, P. E., Senior Associate, Transportation

Stephanie Chen, Project Engineer

Natalie Foley, Project Engineer

Cary Nakama, Graphic Artist

5. List of Preparers

This page intentionally left blank.

Appendix A Health Risk Assessment

Health Risk Assessment | October 2016

Temecula Valley Charter School

Prepared for:

Temecula Valley Charter School
Contact: Mark Horn, Board President
35755 Abelia Street
Winchester, California 92596
951.294.6780

Prepared by:

PlaceWorks
Contact: Steve Bush, PE
1625 Shattuck Avenue, Suite 300
Berkeley, California 94709
510.848.3815
510.848.4315(f)
www.placeworks.com

TVCS-02.2

Table of Contents

Table of Contents

List of Figures

List of Tables

List of Appendices

1. Introduction

The Temecula Valley Charter School Board of Directors is seeking approval from Riverside County for development of a public charter school for 600 kindergarten through 8th grade (K-8) students in the Community of French Valley in unincorporated Riverside County on two parcels on the west side of Winchester Road (State Route 79) between Keller Road and Pourroy Road.

Regulations pertaining to the siting of new schools or modernization of existing schools in California require compliance with the California Code of Regulations (CCR) Title 5 standards. For new schools, Title 5 studies must demonstrate that facilities with the potential to emit hazardous air pollutants within a quarter-mile radius of the school site will not constitute an actual or potential public health risk to students and staff that will attend the school. This health risk assessment (HRA) involved conducting the following tasks:

- Emissions associated with vehicles and trucks traveling on State Route 79 (SR-79), which is approximately 60 feet southeast of the project boundary, and were evaluated. Because the site is within 500 feet of the edge of a freeway traffic lane or busy traffic corridor, criteria air pollutants as well as toxic air contaminants (TACs) were also evaluated to determine if air quality at the proposed site poses a short-term or long-term exposure risk to students and staff.

- Facilities within a quarter-mile (1,320-foot) radius of the proposed site that might reasonably emit hazardous or acutely hazardous air emissions were identified and evaluated.

- Air dispersion modeling, using the AERMOD computer model, was conducted to quantify maximum ground-level concentrations for receptors at the project site. Meteorological data from the nearest South Coast Air Quality Management District (SCAQMD) monitoring station with similar meteorological conditions were used to represent local weather conditions and prevailing winds.

- Cancer and non-cancer risks to students and staff attending the school site were determined, based on the results of the AERMOD modeling. The assessment considered exposure through the inhalation pathway. Unit Risk Factors (URFs) and Cancer Potency Factors (CPFs) were used to determine carcinogenic risk and Recommended Exposure Limits (RELs) were used to determine non-carcinogenic risk.

- A health risk assessment report has been prepared that compares the calculated risks with thresholds established by the SCAQMD and California Air Resources Board's (CARB) Air Toxics "Hot Spots" Program (AB2588).

1. Introduction

The assessment and dispersion modeling methodologies used in the preparation of this report included all relevant and appropriate procedures developed by the US Environmental Protection Agency (USEPA) and Office of Environmental Health Hazard Assessment (OEHHA). These methodologies and assumptions were used to ensure that the assessment effectively quantified school-based impacts associated with emission sources.

It should be noted that these health impacts were based on conservative (i.e., health protective) assumptions. The USEPA (2005) and OEHHA (2015) note that conservative assumptions used in a risk assessment are intended to ensure that the estimated risks do not underestimate the actual risks. Therefore, the estimated risks do not necessarily represent actual risks experienced by populations at or near a site. The use of conservative assumptions tends to produce upper-bound estimates of risk and usually overestimate exposure and thus risk. For this school-based risk assessment, the following conservative assumptions were used:

- It was assumed that maximum exposed children and adults stood outside at the site for 8 hours per day, 180 days per year for 9 years (K-8 students) or 250 days per year for 25 years (staff). In reality, students and staff are exposed to outdoor pollutant concentration levels only during nutrition, lunch, and PE class and are exposed to reduced indoor pollutant concentrations for the remaining school hours. This would result in lower estimated risk values.

- The calculated risk for children from 2-16 years is multiplied by a factor of 3 to account for early life exposure and uncertainty in child versus adult exposure impacts.

Thus, the estimated risks provided in this HRA are conservative.

2. Project Description

The project consists of construction and operation of a K-8 charter school for 600 students. Several one-story school buildings, totaling about 45,000 square feet of building area, would be clustered in the east-central part of the site around a quad. Facilities would include 31 classrooms, a multipurpose room, administrative space, and a library/media center. The multipurpose building, which would be built in the south-central part of the site, would be about 30 feet high, and the remainder of the buildings would be about 15 feet high. The charter school could open as early as 2017.

The project site is surrounded by rural residential uses to the west and north; a single-family home on one of the rural residential properties abuts the west part of the north site boundary. The project site is surrounded by vacant land to the south; and by vacant land and agricultural uses to the east opposite SR-79. Lake Skinner Recreation Area is about 1.7 miles to the southeast, and Diamond Valley Lake is about three miles to the northeast. The Interstate 215 freeway is about 4.1 miles to the west. Two concrete culverts pass under SR-79 east of the project site, carrying storm water southeastward under the roadway.

The project site and vicinity are depicted in Figure 1.

2. Project Description

This page intentionally left blank.

Figure 1 - Site Location

Project Boundary
Temecula Sphere of Influence Boundary
0 600
Scale (Feet)

Base Map Source: Google Earth Pro, 2016

2. Project Description

This page intentionally left blank.

3. Source Identification

The health risk assessment evaluated the impact of potential long-term (chronic) exposure to air toxic emissions generated by vehicles traveling along SR-79 (mile post 7.63). Due to the proximity of the project site to SR-79, potential long-term (chronic) exposure to air toxic emissions and short-term (acute) health impacts from exposures to criteria pollutants (particulate matter, carbon monoxide, and nitrogen dioxide) were evaluated.

Properties within a quarter-mile radius (1,320 feet) were surveyed using aerial photography and SCAQMD's Facility Information Detail (FIND) database to identify facilities that have the potential to generate hazardous and acutely hazardous air emissions. Due to the rural nature of the surrounding area, no additional permitted or non-permitted facilities were identified. Additionally, the Riverside County Agricultural Commissioner's Office (County) implements a general permit condition to growers in the County specifically preventing the ground application of pesticides or herbicides within a ¼-mile of a school during school hours. In addition to preventing pesticide application during school hours, the County prohibits pesticide spraying during non-school hours for major school events. Since active growers in the County would be prevented from spraying pesticides during school hours within a ¼-mile radius of the site, there should be no adverse health impacts on students and staff at the proposed elementary school from pesticide or herbicide spraying.

A summary of the emissions sources evaluated during this assessment is provided below in Table 1.

Table 1 Emission Sources

Source	Location
State Route 79	Mile Post 7.63

3. Source Identification

This page intentionally left blank.

4. Source Characterization

Vehicle emissions contribute significantly to localized concentrations of air contaminants. Typically, emissions generated from these sources depend on vehicle mix, the percentage of heavy duty diesel trucks, the rate at which pollutants are generated during the course of travel, and the number of vehicles traveling along the roadway network.

The peak hourly traffic for the section of SR-79 nearest the project site was determined from the *Traffic Impact Analysis for Temecula Valley Charter School* (PlaceWorks, 2016). Additionally, projected future peak hourly traffic was determined from the *2014 Final State Route 79 Realignment Supplemental Traffic Report* (Riverside County Transportation Commission), assuming realignment project approval. To produce a representative vehicle fleet distribution of gasoline fueled and diesel fueled vehicles, the assessment utilized an estimate of vehicle mix based on annual truck traffic reports from the California Department of Transportation, Traffic Branch (Caltrans). Table 2 lists the identified peak hourly traffic volumes and diesel truck percentage considered in the assessment.

Table 2 Vehicle Fleet Mix Profile

Roadway	Peak Hourly Vehicle Traffic (Veh/hr)[1]	Truck Percentage[2]
SR-79 (Mile Post 7.63)	2016 – 1,964	10
	2040 - 7,212	10

Sources:
1 2016 peak hour traffic from *Traffic Impact Analysis for Temecula Valley Charter School* (PlaceWorks, 2016); projected 2040 peak hourly traffic from *2014 Final State Route 79 Realignment Supplemental Traffic Report* (Riverside County Transportation Commission), assuming realignment project approval.
2 Caltrans Traffic Census Website. http://traffic-counts.dot.ca.gov/.

The truck percentage for each evaluated roadway segment was used to estimate the number of diesel trucks traveling on each roadway. To determine variances in hourly traffic volumes, the assessment used data available through the Caltrans Performance Measurement System (Caltrans PeMS, 2016). An average annual traffic increase was determined using the 2016 and 2040 peak hour traffic volumes. To account for the emission standards representative of the California fleet, the Air Resources Board has developed the EMFAC2014 emission factor model. EMFAC2014 was used to identify pollutant emission rates for total organic gases (TOG), diesel particulate matter (DPM), carbon monoxide (CO) and nitrogen dioxide (NO_2). The PM_{10} emission factor was used as the surrogate for DPM. To quantify the toxic air contaminants (TACs) associated with the TOG fraction, the speciation profile provided by the Bay Area Air Quality Management District (2012) was used.

For particulate matter (PM_{10} and $PM_{2.5}$), emissions were quantified as the sum of re-entrainment of paved roadway dust and tailpipe emissions. The predictive emission equation developed by the USEPA (AP-42, Section 13.2.1) was used to generate the entrained dust source strength.

4. Source Characterization

A list of emitted compounds for the mobile-source category is presented in Table 3. Appendix A presents the emission rate calculations for each source considered in the assessment. Appendix B contains a graphical representation of each emitting source.

Table 3 Compounds Emitted from Mobile Sources

Source	Contaminant
SR-79 (gasoline vehicles and diesel trucks)	Diesel Particulate Matter (DPM) Acetaldehyde, Acrolein, Benzene, 1,3-Butadiene, Ethylbenzene, Formaldehyde, Hexane, Methanol, Methyl Ethyl Ketone, Naphthalene, Propylene, Styrene, Toluene, Xylenes Particulate Matter (PM_{10} and $PM_{2.5}$) Carbon Monoxide Nitrogen Dioxide

Note: EMFAC2014 generates emission factors for nitrogen oxides (NOx). To convert to nitrogen dioxide, an NO_2 to NOx ratio of 0.053 was applied. The NO_2 conversion rate was derived from a report entitled Final Localized Significance Threshold Methodology (SCAQMD, 2008).

5. Air Dispersion Modeling

To assess the impact of emitted compounds on individuals who may work and/or attend classes at the proposed school facility, air quality modeling using the AERMOD atmospheric dispersion model was performed. The model is a steady state Gaussian plume model and is recommended by SCAQMD for estimating ground level impacts from point and fugitive sources in simple and complex terrain.

The model requires additional input parameters, including chemical emission data and local meteorology. Inputs for each emitting source were based on the characterizations referenced in Section 4. Meteorological data provided by SCAQMD for the Lake Elsinore meteorological station (2008-2012) were used to represent local weather conditions and prevailing winds. According to the wind rose for the Lake Elsinore, presented in Appendix A, the prevailing wind direction in the area of the project site is to the southwest.

The modeling analysis also considered the spatial distribution of each emitting source in relation to the project site. To accommodate the model's Cartesian grid format, direction-dependent calculations were obtained by identifying the Universal Transverse Mercator coordinates for each source. In addition, digital elevation model (DEM) data for the area were obtained and included in the model runs to account for complex terrain. For all modeling runs, a unit emission rate of 1 gram per second (g/s) was used. The unit emission rates were proportioned among the volume sources for mobile sources (e.g. SR-79). The maximum AERMOD concentrations from the output files were then multiplied by the emission rates calculated in Appendix A to obtain the maximum ground-level concentrations at the school site.

For mobile sources, two sets of volume sources were modeled in AERMOD. One set of volume sources representing the motor vehicles traveling along the mobile sources was used to characterize emissions of TOG, CO, NO_x, $PM_{10,}$ and $PM_{2.5}$. For this run, a release height of 0.60 meters was used (CARB, 2000). The second set of volume sources representing truck traffic was used to characterize emissions of DPM. For this set of sources, a release height of 4.15 m was used. Different emission factors were used to characterize TOG and DPM emissions from vehicle traffic traveling along SR-79 due to different exposure periods for adult staff and students. For the adult staff exposure scenario, a 25-year exposure period was used, as per the new OEHHA guidance for worker exposure. A 9-year exposure period was used for the student exposure scenario representing the school years for kindergarten through 8th grade.

The AERMOD output for the emission sources is presented in Appendix C. The ground-level concentrations used in the risk calculation spreadsheets are provided in Table D1 of Appendix D. The annual average concentrations from the AERMOD runs were used to determine cancer risk and chronic non-cancer risk, and the maximum one-hour concentrations were used to determine acute non-cancer risk. Additionally, CARB's Hotspots Analysis and Reporting Program (HARP2), Risk Assessment Standalone Tool was used to determine the 8-hour chronic non-cancer risk; the program determines the 8-hour non-cancer risk from the annual average concentrations (CARB, 2016).

5. Air Dispersion Modeling

This page intentionally left blank.

6. Risk Characterizations

6.1 CARCINOGENIC CHEMICAL RISK

Carcinogenic compounds are not considered to have threshold levels (i.e., dose levels below which there are no risks). Any exposure, therefore, will have some associated risk. The SCAQMD has established a maximum incremental cancer risk of 10 in a million ($1x10^{-5}$) for CEQA projects and the OEHHA also sets a typical risk management level as 10 in a million (OEHHA, 2015).

Health risks associated with exposure to carcinogenic compounds at the proposed project site can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. Under a deterministic approach (i.e., point estimate methodology), the cancer risk probability is determined by multiplying the chemical's annual concentration by its cancer potency factor (CPF), a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It is an upper-limit estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu g/m^3$) over a lifetime of 70 years.

Recent guidance from OEHHA recommends a refinement to the standard point estimate approach with the use of age-specific breathing rates and age sensitivity factors (ASFs) to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose for each age group. Once determined, contaminant dose is multiplied by the cancer potency factor in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. Therefore, to accommodate the unique exposures associated with the proposed school population, the following dose algorithm was used.

$$\mathrm{Dose}_{\mathrm{AIR,per\ age\ group}} = (\mathrm{C_{air}} \times \mathrm{EF} \times [\frac{\mathrm{BR}}{\mathrm{BW}}] \times \mathrm{A} \times \mathrm{CF})$$

Where:

$\mathrm{Dose_{AIR}}$	=	dose by inhalation (mg/kg-day), per age group
$\mathrm{C_{air}}$	=	concentration of contaminant in air ($\mu g/m^3$)
EF	=	exposure frequency (number of days/365 days)
BR/BW	=	daily breathing rate normalized to body weight (L/kg-day)
A	=	inhalation absorption factor (default = 1)
CF	=	conversion factor ($1x10^{-6}$, µg to mg, L to m^3)

The inhalation absorption factor (A) is a unitless factor that is only used if the cancer potency factor included a correction for absorption across the lung. For this assessment, the default value of 1 was used. To represent the unique characteristics of the school population, the assessment employed the USEPA's guidance to develop viable dose estimates based on reasonable maximum exposure, defined as the "highest exposure that is reasonably expected to occur" for a given receptor population. Lifetime risk values for the student population were adjusted to account for an exposure of 180 days per year for 9 years (kindergarten through 8th grade). In addition, the calculated risk for students is multiplied by an ASF weighting factor of 3 (for children ages 2 to 16) to account for early life sensitivity to pollutant exposures (OEHHA, 2015). To assess staff-related risk, exposures were adjusted to account for an employment period of 250 days per year for 25 years. This timeline is considered appropriate for potential workplace exposures established by OEHHA (2015).

To calculate the overall cancer risk, the risk for each appropriate age group is calculated per the following equation:

$$\text{Cancer Risk}_{\text{AIR}} = \text{Dose}_{\text{AIR}} \times \text{CPF} \times \text{ASF} \times \frac{\text{ED}}{AT}$$

Where:

Dose_{AIR}	=	dose by inhalation (mg/kg-day), per age group
CPF	=	cancer potency factor, chemical-specific $(\text{mg/kg-day})^{-1}$
ASF	=	age sensitivity factor, per age group
ED	=	exposure duration (years)
AT	=	averaging time period over which exposure duration is averaged (always 70 years)

The CPFs used in the assessment were obtained from OEHHA guidance. The cancer risk is calculated separately for the students and staff, because of age differences in sensitivity to carcinogens and age differences in intake rates. The final step converts the cancer risk in scientific notation to a whole number that expresses the cancer risk in "chances per million" by multiplying the cancer risk by a factor of 1×10^6 (i.e. 1 million).

CARB's Hotspots Analysis and Reporting Program (HARP2), Risk Assessment Standalone Tool was used to calculate the cancer risk values (CARB, 2016). The determined cancer risks attributed to each chemical exposure and summation of those risks are presented in Appendix D, Table D2.

6.2 NON-CARCINOGENIC HAZARDS

An evaluation of the potential non-cancer effects of chronic and acute chemical exposures was also conducted. Under the point estimate approach, adverse health effects are evaluated by comparing the annual ground level concentration of each chemical compound with the appropriate Reference Exposure Level (REL). Available RELs promulgated by OEHHA were considered in the assessment.

To quantify non-carcinogenic impacts, the hazard index approach was used. The hazard index assumes that chronic or acute sub-threshold exposures adversely affect a specific organ or organ system (toxicological endpoint). For each discrete chemical exposure, target organs presented in regulatory guidance were used. To calculate the hazard index, each chemical concentration or dose is divided by the appropriate toxicity value. For compounds affecting the same toxicological endpoint, this ratio is summed. Where the total equals or exceeds one, a health hazard is presumed to exist.

CARB's HARP2, Risk Assessment Standalone Tool was used to calculate the chronic and acute health risk values (CARB, 2016). The determined non-cancer hazard quotient for identified compounds generated from each source and a summation for each toxicological endpoint are presented in Appendix D, Tables D2-D4.

6.3 CRITERIA AIR POLLUTANTS

The State of California has promulgated ambient air quality standards for various pollutants. These standards were established to safeguard the public's health and welfare with specific emphasis on protecting those individuals susceptible to respiratory distress, such as asthmatics, the young, the elderly, and those with existing conditions that may be affected by increased pollutant concentrations. A list of criteria air pollutants considered in the assessment and their associated air quality standards are presented in Table 4.

Table 4 California Ambient Air Quality Standards

Pollutant	Standard	Health Effects
Carbon Monoxide (CO)	>9.0 ppm (8 hr avg.) >20.0 ppm (1 hr avg.)	1) Aggravation of angina pectoris and other aspects of coronary heart disease. 2) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease. 3) Impairment of central nervous system functions. 4) Possible increased risk to fetuses.
Nitrogen Dioxide (NO_2)	≥0.030 ppm (annual avg.) ≥0.18 ppm (1 hr avg.)	1) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups. 2) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes.
Particulates (PM_{10})	>50 $\mu g/m^3$ (24 hr avg.) >20 $\mu g/m^3$ (annual avg.)	1) Excess deaths from short-term exposures and the exacerbation of symptoms in sensitive individuals with respiratory disease. 2) Excess seasonal declines in pulmonary function especially in children.
Particulates ($PM_{2.5}$)	>12 $\mu g/m^3$ (annual avg.)	1) Excess deaths from short-term exposures and the exacerbation of symptoms in sensitive individuals with respiratory disease. 2) Excess seasonal declines in pulmonary function especially in children.

Notes: ppm: parts per million; $\mu g/m^3$: micrograms per cubic meter
Source: California Code of Regulations, Title 17, Section 70200.

Pollutant emissions are considered to have a significant effect on the environment if they result in concentrations that create either a violation of an ambient air quality standard, contribute to an existing air quality violation, or expose sensitive receptors to significant pollutant concentrations. Should ambient air quality already exceed existing standards, SCAQMD has established significance criteria that identify incremental air concentrations for selected pollutants. Table 5 outlines the significance thresholds considered for sites that are within an air basin where criteria pollutants exceed air quality standards.

6. Risk Characterizations

Table 5 Localized Significance Thresholds

Pollutant	Averaging Time	Significance Criteria
Carbon Monoxide (CO)	8 Hours 1 Hour	Project contributes to exceedance of 9.0 ppm Project contributes to exceedance of 20 ppm
Nitrogen Dioxide (NO_2)	Annual 1 Hour	Project contributes to exceedance of 0.03 ppm Project contributes to exceedance of 0.18 ppm
Particulates (PM_{10})	Annual 24 Hours	Project causes an incremental increase of 1.0 $\mu g/m^3$ Project causes an incremental increase of 2.5 $\mu g/m^3$
Particulates ($PM_{2.5}$)	24 Hours	Project causes an incremental increase of 2.5 $\mu g/m^3$

Notes: ppm: parts per million; $\mu g/m^3$: micrograms per cubic meter
Source: SCAQMD, 2015. SCAQMD Air Quality Significance Thresholds accessed online at http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook.

The nearest active air quality monitoring station to the project site is the Lake Elsinore Monitoring Station. Background concentrations are based on the highest observed value for the most recent three-year period. PM_{10} and $PM_{2.5}$ data were not collected for the Lake Elsinore Monitoring Station. Therefore, PM_{10} and $PM_{2.5}$ data from the nearest monitoring station with available data (Perris Valley Monitoring Station and Metropolitan Riverside County 1, respectively) were used for particulate analysis. A summary of the monitoring station data is presented in Table 6.

Table 6 Lake Elsinore Monitoring Station Summary

Pollutant/Averaging Time	Year			Maximum	CAAQS
	2014	2013	2012		
Carbon Monoxide (CO)					
1-Hour	2.0	NM	NM	2.0	20
8-Hour	1.4	0.6	0.7	1.4	9
Nitrogen Dioxide (NO_2)					
1-Hour	0.0453	0.0466	0.0483	0.0483	0.18
Annual	0.0082	0.0084	0.0102	0.0102	0.030
Particulates (PM_{10})					
24-Hour	87	70	62	87	50
Annual	35.1	33.6	26.5	35.1	20
Particulates ($PM_{2.5}$)					
Annual	12.5	12.5	13.5	13.5	12

Note: Particulates (PM_{10} and $PM_{2.5}$) from the Perris Valley and Metropolitan Riverside County 1 Monitoring Stations, respectively, are expressed in micrograms per cubic meter ($\mu g/m^3$). All others are expressed in parts per million (ppm). NM – not monitored that particular year.
Source: SCAQMD, Historical Data by Year, http://www.aqmd.gov/home/library/air-quality-data-studies/historical-data-by-year.

For carbon monoxide (CO) and nitrogen dioxide (NO_2), background concentrations are below the current air quality standards. Therefore, impacts are considered to be significant when pollutant concentrations, added to existing background levels, result in an exceedance of the CAAQS.

For particulate emissions, maximum background concentrations in the vicinity of the site exceed the California Ambient Air Quality Standard (CAAQS) for the annual average averaging times for PM_{10} and $PM_{2.5}$, and the CAAQS for the 24-hour averaging time for PM_{10} concentrations. Additionally for PM_{10} and $PM_{2.5}$ emissions, the project site is within a non-attainment area for particulates (CARB, 2013). As a result, SCAQMD defines a significant impact as PM_{10} and $PM_{2.5}$ concentrations that exceed the specified localized significance threshold (LST) of 2.5 $\mu g/m^3$, over an averaging time of 24 hours, and 1.0 $\mu g/m^3$, for annually averaged concentrations.

Appendix D, Table D5, presents the criteria air pollutant ground level concentrations at the project site determined using AERMOD.

6.4 ACCIDENTAL RELEASES

Under the auspices of the California Accidental Release Prevention (CalARP) Program, should a stationary source use more than a threshold quantity of a regulated hazardous substance, a Risk Management Plan (RMP) which includes a risk assessment of accidental releases is required to be conducted pursuant to the provisions of the federal Accidental Release Prevention program (Title 40, Code of Federal Regulations, Part 68) Article 2, Chapter 6.95 of the Health and Safety Code.

A review of the available information collected during the source identification process (e.g., regulatory records review and on-site interviews with business owner/operators) did not reveal the presence of any CalARP program facilities within 0.25 mile of the proposed site (Center of Effective Government, 2014).

6. Risk Characterizations

This page intentionally left blank.

7. Conclusions

The results of the health risk assessment are provided in Table 7. The excess cancer risk was calculated to be 0.48 per million for adult school staff and 1.13 per million for students. In comparison to the threshold level of 10 in a million, carcinogenic risks are well below the significance threshold value for both school staff and students. For non-carcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one for both school staff and students. Therefore, chronic non-carcinogenic hazards are below the significance threshold. Additionally, the acute 1-hour and 8-hour non-carcinogenic hazards were below the significance thresholds.

Table 7 Health Risk Assessment Results

Source	Cancer Risk (per million)		Chronic Hazard Index	Acute (1-Hour) Hazard Index	8-Hour Hazard Index
	Staff Exposure	Student Exposure			
State Route 79	0.48	1.13	0.003	0.012	0.002
SCAQMD Threshold	10	10	1.0	1.0	1.0
Exceeds Threshold	No	No	No	No	No

Source: Lakes AERMOD View, 9.1.0, 2015.

A comparison of the current air quality standards with the results of the modeling analysis for SR-79 vehicle emissions is provided below:

- For carbon monoxide (CO), the maximum one-hour concentration of 0.26 ppm and the maximum eight-hour concentration of 0.07 ppm, when added to existing background levels, do not exceed the CAAQS.

- For nitrogen dioxide (NO_2), maximum one-hour and annual concentrations of 0.004 ppm and 0.00005 ppm were calculated, respectively. These concentrations, when added to existing background levels, do not exceed the CAAQS.

- For PM_{10}, a maximum 24-hour concentration of 1.67 micrograms per cubic meter ($\mu g/m^3$) was predicted. The maximum 24-hour concentration does not exceed the SCAQMD significance threshold of 2.5 $\mu g/m^3$. Additionally, an annual average concentration of 0.28 $\mu g/m^3$ was predicted. The annual average concentration also does not exceed the SCAQMD significance threshold of 1.0 $\mu g/m^3$.

- For $PM_{2.5}$, a maximum 24-hour concentration of 0.39 $\mu g/m^3$ was predicted. The maximum 24-hour concentration for $PM_{2.5}$ does not exceed the SCAQMD significance threshold of 2.5 $\mu g/m^3$.

7. Conclusions

Based on a comparison to the carcinogenic and non-carcinogenic thresholds established by OEHHA and SCAQMD, hazardous air emissions generated from the stationary and mobile sources within a quarter-mile radius are not anticipated to pose an actual or potential endangerment to students and staff occupying the project site and no mitigation measures are required.

8. References

Bay Area Air Quality Management District (BAAQMD). 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards*.

California Air Pollution Control Officers Association (CAPCOA). 2009. *Health Risk Assessments for Proposed Land Use Projects*.

California Air Resources Board (CARB). 2016. Hotspots Analysis and Report Program (HARP2), Risk Assessment Standalone Tool (RAST), Version 16057.

———. 2014. *EMFAC2014 - Calculating Emission Inventories for Vehicles in California*.

———. 2013. Area Designations Maps/State and National.

———. 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*.

California Department of Transportation (Caltrans). 2016. Performance Measurement System (PeMS). Accessed September 26, 2016 at http://pems.dot.ca.gov.

______. 2014. Traffic Data Branch. http://traffic-counts.dot.ca.gov. Accessed September 29, 2016.

Center of Effective Government. 2014. The Right-to-Know Network accessed on September 29, 2016 at http://www.rtknet.org/db/rmp.

Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments*. Dated February, 2015.

PlaceWorks. 2016. *Traffic Impact Analysis for Temecula Valley Charter School*. Dated October 2016.

Riverside County Transportation Commission. 2014. *2014 Final State Route 79 Realignment Supplemental Traffic Report*. Prepared by CH2MHILL. Dated September 17, 2014.

South Coast Air Quality Management District (SCAQMD). 2015. Air Quality Significance Thresholds. http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/. Accessed November 18, 2015.

———. 2014. Historical Data By Year. http://www.aqmd.gov/home/library/air-quality-data-studies/historical-data-by-year. Accessed September 27, 2016.

———. 2008-2012. *Data Set for Lake Elsinore Meteorological Station*.

8. References

United States Environmental Protection Agency (USEPA). 2015. Technology Transfer Network, Clearinghouse for Inventories and Emission Factors. *Compilation of Air Pollutant Emission Factors*. http://www.epa.gov/ttnchie1/ap42. Accessed September 26, 2016.

———. 2005. *Guideline on Air Quality Models* (Revised). EPA-450/2-78-027R.

Appendix A. Emission Rate Calculations

Appendix

This page intentionally left blank.

Vehicle Mix Worksheet

Table A: Traffic Volumes

Route	Mile Post	Traffic Data Year	Peak Hour Traffic (veh/hr)	Truck Percentage (%)	Annual Increase in Traffic (%)	School Buildout Year
State Route 79	7.63	2016	1,964	10.0%	5.6%	2017

Sources:

Traffic data from Traffic Impact Analysis for Temecula Valley Charter School (2016) and truck percentage from CalTrans, Traffic Data Branch (2014). Website: http://traffic-counts.dot.ca.gov.

Annual traffic increase based on projected growth rate to 7,212 peak hour trips by 2040 (ADT 75,600) from *2014 Final State Route 79 Realignment Supplemental Traffic Report* (Riverside County Transportation Commission), with realignment project approval.

Table B: Highway Parameters

Link/Segment	Link length (m)	Width of roadway (m)	Source Separation (m)	Roadway Configuration	Mile Post	Speed
State Route 79	999	18.5	18.5	At-Grade	7.63	65 mph

Table C: Segment Volumes

Link/Segment	Period Length (years)	Hourly All Vehicles	Hourly TOG Vehicles	Hourly Diesel Vehicles [4]
2017 [1]	3	**2,073**	**1,866**	207
2020 [1]	5	2,439	2,196	244
2025 [1]	5	3,199	2,879	320
2030 [1]	5	4,194	3,775	419
2035 [1]	5	5,500	4,950	550
2040 [1]	2	7,212	6,491	721
25-year weighted average [2]	25	3,892	**3,503**	**389**
9-year weighted average [3]	9	2,402	**2,162**	**240**

1 Increases in Peak Hourly Traffic based on projected growth rate to 7,212 peak hour trips by 2040 from *2014 Final State Route 79 Realignment Supplemental Traffic Report* (Riverside County Transportation Commission), with realignment project approval.

2 Represents the 25-year (staff) weighted average traffic volumes, accounting for annual increases in projected traffic.

3 Represents the 9-year (K-8th grade students) weighted average traffic volumes, accounting for annual increases in projected traffic.

4 Truck percentage of 10%, from CalTrans (2014), used to represent the diesel vehicle traffic along roadway segment.

Average Emission Factors
for School Based Receptors

Weighting Emission Factors

Adjusting the EMFAC2014 emission factors to account for reductions in factors over the exposure duration.

Risk Year	Modeling Year	Period	WF	Weighting Factor Period	Weighting Factor Factor	55 mph - Emission Factors (g/mi) TAC's TOG-gas	55 mph - Emission Factors (g/mi) TAC's PM10-dsl
1	2017	1	0.040	2017-2019	0.120	**0.0448**	0.0539
2	2018	1	0.040				
3	2019	1	0.040				
4	2020	1	0.040	2020-2024	0.200	0.0328	0.0270
5	2021	1	0.040				
6	2022	1	0.040				
7	2023	1	0.040				
8	2024	1	0.040				
9	2025	1	0.040	2025-2029	0.200	0.0235	0.0058
10	2026	1	0.040				
11	2027	1	0.040				
12	2028	1	0.040				
13	2029	1	0.040				
14	2030	1	0.040	2030-2034	0.200	0.0193	0.0047
15	2031	1	0.040				
16	2032	1	0.040				
17	2033	1	0.040				
18	2034	1	0.040				
19	2035	1	0.040	2035-2039	0.200	0.0174	0.0042
20	2036	1	0.040				
21	2037	1	0.040				
22	2038	1	0.040				
23	2039	1	0.040				
24	2040	1	0.040	2040-2041	0.080	0.0163	0.0039
25	2041	1	0.040				
25-year average[1]		25	1.00		1.00	**0.0253**	**0.0151**
9-year average[2]		9				**0.0357**	**0.0336**

[1] Represent the 25-year (staff) weighted average emission factors for each TAC and vehicle speed.

[2] Represent the 9-year (K-8th grade) weighted average emission factors for each TAC and vehicle speed.

WF - period weighting factor

On-Road Mobile Sources
Emission Rate Computation

TOG Emissions

Emission Rate (gr/sec) = ((Emission Factor x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

1	**State Route 79**	
	Link Length (meters)	999
Chronic - Long-term Emissions		
	Hourly Volume/Baseline (VPH) - Staff	3,503
	Emission Factor (gr/mi) - Staff	0.0253
	Hourly Emission Rate (gr/sec) - Staff	**1.53E-02**
	Hourly Volume/Baseline (VPH) - Students	2,162
	Emission Factor (gr/mi) - Students	0.0357
	Hourly Emission Rate (gr/sec) - Students	**1.33E-02**
Acute - Short-term Emissions		
	Hourly Volume/Baseline (VPH) - 2017	1,866
	Emission Factor (gr/mi) - 2017	0.0448
	Hourly Emission Rate (gr/sec) - 2017	**1.44E-02**

On-Road Mobile Sources
Emission Rate Computation

DPM Emissions

Emission Rate (gr/sec) = ((Emission Factor x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

1	**State Route 79**	
	Link Length (meters)	999
	Hourly Volume/Baseline (VPH) - Staff	389
	Emission Factor (gr/mi) - Staff	0.0151
	Hourly Emission Rate (gr/sec) - Staff	**1.01E-03**
	Hourly Volume/Baseline (VPH) - Students	240
	Emission Factor (gr/mi) - Students	0.0336
	Hourly Emission Rate (gr/sec) - Students	**1.39E-03**

On-Road Mobile Souces
Emission Rate Computation

Particulate (PM10) Emissions

For PM10 Reentrainment: Emission Factor (gr/mile) = (Particulate PM10 Base Emission Factor) x (Road Surface Silt Loading) $^{0.91}$ *x (Gross Vehicle Weight)* $^{1.02}$

Particulate PM10 Base Emission Factor (gr/mi)	1.00
Road Surface Silt Loading (gr/m2)	0.02
Gross Vehicle Weight (tons)	2.4
PM10 Reentrainment Emission Factor (gr/mi)	0.069

Emission Rate (gr/sec) = ((Emission Factor x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

1 State Route 79

Link Length (meters)	999
Peak Hour Volume/Baseline (VPH) - 2017	2,073
PM10 Vehicular Emission Factor (gr/mi) - 2017	0.0065
Peak Hour Pollutant Reentrainment Emission Rate (gr/sec)	2.48E-02
Peak Hour Pollutant Emission Rate (gr/sec)	2.32E-03
Peak Hour Pollutant Emission Rate Total (gr/sec)	**2.72E-02**

On-Road Mobile Souces
Emission Rate Computation

Particulate (PM2.5) Emissions

For PM2.5 Reentrainment: Emission Factor (gr/mile) = (Particulate PM2.5 Base Emission Factor) x (Road Surface Silt Loading)$^{0.91}$ x (Gross Vehicle Weight)$^{1.02}$

Particulate PM2.5 Base Emission Factor (gr/mi)	0.17
Road Surface Silt Loading (gr/m2)	0.02
Gross Vehicle Weight (tons)	2.4
PM2.5 Reentrainment Emission Factor (gr/mi)	0.012

Emission Rate (gr/sec) = ((Emission Factor x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

1 State Route 79

Link Length (meters)	999
Peak Hour Volume/Baseline (VPH) - 2017	2,073
PM2.5 Vehicular Emission Factor (gr/mi) - 2017	0.0061
Peak Hour Pollutant Reentrainment Emission Rate (gr/sec)	4.20E-03
Peak Hour Pollutant Emission Rate (gr/sec)	2.18E-03
Peak Hour Pollutant Emission Rate Total (gr/sec)	**6.38E-03**

On-Road Mobile Sources
Emission Rate Computation

CO Emissions

Emission Rate (gr/sec) = ((Emission Factor x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

1 State Route 79

Link Length (meters)	999
Peak Hour Volume/Baseline (VPH) - 2017	2,073
Emission Factor (gr/mi) - 2017	1.0849
Peak Hour Emission Rate (gr/sec) - 2017	**3.88E-01**

On-Road Mobile Sources
Emission Rate Computation

NOx Emissions

Emission Rate (gr/sec) = ((Emission Factor x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

1 State Route 79

Link Length (meters)	999
Peak Hour Volume/Baseline (VPH) - 2017	2,073
Emission Factor (gr/mi) - 2017	0.4986
Peak Hour Emission Rate (gr/sec) - 2017	**1.78E-01**

Initial Sigma Computation

Vertical Sigma Calculations - At-Grade or Above Grade Roadway

Initial Horizontal Dispersion Parameter (Sigma Y)
SY = (source separation distance)/2.15

Initial Vertical Dispersion Parameter (Sigma Z)
$SZ = (1.8 + 0.11(TR)) \times (60/30)^{0.2}$
TR = W2/U

Where:
W2 = traveled way half width (m)
U = average wind speed (m/s)

1 State Route 79

Width of Traveled Way (m)	18.5
Average Wind Speed (m/s)	1.85
Source Separation Distance (m)	18.5

SY = **8.60**
SZ = **2.70**

PeMS - 8/1/2015 - 10/31/2015: SR-79							Normalizing Factors HROFDAY Scalars [1]		
	All Vehicles VMT			Trucks VMT					
Hour	Southbound	Northbound	Total VMT	Southbound	Northbound	Total VMT	Hour	Vehicles	Trucks
0	23,180	23,770	46,950	0	0	0	1	0.280	0.000
1	20,847	19,766	40,613	0	0	0	2	0.242	0.000
2	21,077	18,532	39,609	0	0	0	3	0.236	0.000
3	26,023	19,110	45,133	0	0	0	4	0.269	0.000
4	40,777	23,955	64,732	44	0	44	5	0.385	0.039
5	63,555	33,874	97,430	285	0	285	6	0.580	0.253
6	76,064	50,206	126,269	458	31	489	7	0.752	0.433
7	89,252	58,616	147,868	697	129	826	8	0.880	0.732
8	89,795	55,952	145,747	681	47	729	9	0.868	0.646
9	79,393	57,630	137,022	509	56	565	10	0.816	0.501
10	76,090	59,303	135,393	462	64	526	11	0.806	0.466
11	75,866	62,938	138,804	455	113	568	12	0.827	0.503
12	75,297	66,710	142,007	450	216	666	13	0.846	0.590
13	75,867	69,208	145,076	462	294	756	14	0.864	0.670
14	82,501	74,798	157,299	549	412	962	15	0.937	0.852
15	82,434	83,002	165,435	557	516	1,072	16	0.985	0.950
16	84,652	83,206	167,859	578	512	1,090	17	1.000	0.965
17	83,664	84,275	**167,938**	579	549	**1,129**	**18**	**1.000**	**1.000**
18	76,342	75,699	152,040	492	433	926	19	0.905	0.820
19	60,860	65,749	126,609	239	249	488	20	0.754	0.432
20	48,094	58,028	106,122	52	101	153	21	0.632	0.135
21	41,623	49,594	91,217	13	23	36	22	0.543	0.032
22	34,335	39,368	73,702	2	6	8	23	0.439	0.007
23	28,289	30,565	58,853	1	1	1	24	0.350	0.001
Max	89,795	84,275	167,938	697	549	1,129			

[1] School Hours: 8:00 AM - 4:00 PM (Hour 9-16)

Peak Hour (CalTrans): Hour 17 (5PM - 6PM)
Peak Hour (AERMOD): Hour 18 (5PM - 6PM)

PeMS Report Description

	Report	Aggregates>Time Series
	Report link	http://pems.dot.ca.gov/?report_form=1&dnode=VDS&content=loops&statio
	Report generated	8/24/2016 13:37
	PeMS version	caltrans_pems-15.1.0

Report Parameters

Southbound Segment

Parameter	Value
Quantity	Vehicle Miles Traveled (VMT)
Data	36,288 Lane Points
Data Quality	0% Observed
Segment Type	VDS
Segment Name	Mainline VDS 817812 - KELLER RD OC S/O
start date	8/1/2015 0:00
end date	10/31/2015 23:59
Day of Week	Mo,Tu,We,Th,Fr
Granularity	hour

Report Parameters

Northbound Segment

Parameter	Value
Quantity	Vehicle Miles Traveled (VMT)
Data	36,288 Lane Points
Data Quality	0% Observed
Segment Type	VDS
Segment Name	Mainline VDS 817813 - KELLER RD OC S/O
start date	8/1/2015 0:00
end date	10/31/2015 23:59
Day of Week	Mo,Tu,We,Th,Fr
Granularity	hour

RTE	DIST	CNTY	POST MILE	LEG	DESCRIPTION	VEHICLE AADT TOTAL	TRUCK AADT TOTAL	TRUCK % TOT VEH	TRUCK AADT 2	TRUCK AADT 3	TRUCK AADT 4	TRUCK AADT 5+	TOTAL % 2	TOTAL % 3	TOTAL % 4	TOTAL % 5+	EAL 2-WAY (1000)	YEAR VER/ EST
079	11	SD	20.23	A	JCT. RTE. 78	2,800	314	11.20	219	48	21	26	69.60	15.40	6.80	8.20	24	88V
079	11	SD	27.37	B	JCT. RTE. 76 WEST	2,300	211	9.20	133	29	7	42	62.80	13.90	3.50	19.80	23	87V
079	11	SD	27.37	A	JCT. RTE. 76 WEST	2,350	277	11.80	176	39	18	44	63.60	14.10	6.40	15.90	28	87V
079	11	SD	31.7	A	SAN FELIPE RD	1,700	282	16.50	164	7	12	99	58.20	2.40	4.30	35.10	42	72V
079	08	RIV	2.27	B	JCT. RTE. 371 EAST	2,800	466	16.60	369	16	25	56	79.30	3.40	5.30	12.00	37	77E
079	08	RIV	2.27	A	JCT. RTE. 371 EAST	7,600	761	10.00	524	55	59	123	68.90	7.20	7.70	16.20	75	77E
079	08	RIV	R19.16	B	JCT. RTE. 74	7,800	663	8.50	414	78	13	158	62.40	11.80	1.90	23.90	78	91V
079	08	RIV	25.65	A	JCT. RTE. 74	16,500	1,568	9.50	1,032	196	249	91	65.80	12.50	15.90	5.80	122	87E
079	08	RIV	40.449	B	BEAUMONT, JCT. RTE. 10	28,000	2,912	10.40	1,482	280	93	1,057	50.90	9.60	3.20	36.30	456	91V
080	04	SF	3.951	A	SAN FRANCISCO, JCT. RTE. 101	167,000	4,842	2.90	2,208	586	179	1,869	45.60	12.10	3.70	38.60	802	94V
080	04	ALA	1.989	B	SAN FRANCISCO-OAKLAND BAY BRIDGE TOLL PLAZA	253,000	6,526	2.58	3,579	466	273	2,208	54.83	7.14	4.19	33.83	970	00V
080	04	ALA	1.989	A	SAN FRANCISCO-OAKLAND BAY BRIDGE TOLL PLAZA	253,000	6,350	2.51	2,836	447	201	2,866	44.66	7.04	3.17	45.13	1,159	03V
080	04	ALA	2.802	B	OAKLAND, JCT. RTE. 580 EAST	147,000	2,602	1.77	1,192	181	101	1,128	45.80	6.94	3.90	43.36	462	00V
080	04	ALA	3.786	A	EMERYVILLE, POWELL RD	277,000	13,267	4.79	5,041	1,165	491	6,570	37.99	8.78	3.70	49.52	2,622	03V
080	04	ALA	4.582	B	BERKELEY, JCT. RTE. 13 EAST	277,000	13,325	4.81	4,666	1,328	532	6,799	35.02	9.97	3.99	51.03	2,709	00V
080	04	ALA	4.582	A	BERKELEY, JCT. RTE. 13 EAST	269,000	12,831	4.77	4,927	1,125	512	6,267	38.40	8.77	3.99	48.84	2,513	03V

EMISSION FACTOR CALCULATIONS
EMFAC 2014

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Riverside
Calendar Year: 2017
Season: Annual
Vehicle Classification: EMFAC2007 Categories

TOTAL EMISSION RATES (g/mi)

Freeway Runex

Speed (mph)		TOG	PM10	PM2.5	CO	NOx
55	Gas	**0.0448**				
	DSL		**0.0539**			
	Total		**0.0065**	**0.0061**	**1.0849**	**0.4986**

		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	PM10 (g/mi)	PM10 Weighted	PM2.5 (g/mi)	PM2.5 Weighted	CO (g/mi)	CO Weighted	NOx (g/mi)	NOx Weighted
HHDT	GAS		1429	0.748388	1069	0.000654	1	0.00061	1	28.15313	40223	3.586412	5124
HHDT	DSL	0.570	320349	0.082947	26572	0.034726	11124	0.03322	10643	0.301776	96674	4.138121	1325643
LDA	GAS		2954677	0.021482	63471	0.001226	3622	0.00113	3333	0.753367	2225956	0.07394	218468
LDA	DSL	0.047	26173	0.021394	560	0.013014	341	0.01245	326	0.187999	4920	0.167448	4383
LDT1	GAS		242165	0.069218	16762	0.002575	624	0.00237	575	2.125997	514843	0.229188	55501
LDT1	DSL	0.000	202	0.184952	37	0.124146	25	0.11878	24	1.08804	219	1.193326	241
LDT2	GAS		1043715	0.028044	29270	0.001229	1283	0.00113	1180	0.992629	1036022	0.124223	129653
LDT2	DSL	0.003	1522	0.011387	17	0.005101	8	0.00488	7	0.079002	120	0.052455	80
LHDT1	GAS		80409	0.070715	5686	0.00111	89	0.00102	82	1.428689	114880	0.382455	30753
LHDT1	DSL	0.106	59628	0.130547	7784	0.026218	1563	0.02508	1496	0.783131	46696	5.07074	302358
LHDT2	GAS		13900	0.038903	541	0.000792	11	0.00073	10	0.773168	10747	0.261625	3636
LHDT2	DSL	0.041	22895	0.102244	2341	0.021432	491	0.02051	469	0.605508	13863	3.814546	87335
MCY	GAS		27239	2.322978	63276	0.001298	35	0.00122	33	20.26365	551968	1.145603	31205
MDV	GAS		771516	0.060201	46446	0.001346	1039	0.00124	957	1.795385	1385169	0.246489	190171
MDV	DSL	0.016	8837	0.01266	112	0.007329	65	0.00701	62	0.128844	1139	0.069158	611
MH	GAS		8896	0.204908	1823	0.001823	16	0.00169	15	5.412167	48146	0.785684	6989
MH	DSL	0.005	2550	0.080262	205	0.172419	440	0.16496	421	0.375558	958	5.539108	14127
MHDT	GAS		11320	0.165356	1872	0.000907	10	0.00084	9	3.549587	40180	0.909031	10290
MHDT	DSL	0.203	113931	0.153237	17458	0.140101	15962	0.13404	15271	0.514595	58628	3.515688	400545
OBUS	GAS		5414	0.079798	432	0.000552	3	0.00051	3	1.690257	9151	0.493771	2673
OBUS	DSL	0.006	3617	0.066727	241	0.03317	120	0.03173	115	0.205588	744	3.838335	13884
SBUS	GAS		683	0.064297	44	0.00046	0	0.00042	0	1.344031	918	0.393187	269
SBUS	DSL	0.003	1689	0.085544	144	0.054785	93	0.05242	89	0.213206	360	7.407689	12513
UBUS	GAS		595	0.529953	316	0.001257	1	0.00117	1	7.802398	4646	1.740284	1036
UBUS	DSL	0.001	605	1.159944	702	0.094222	57	0.09015	55	4.329371	2621	10.8084	6544
	Gas Total		5161959		231008		6733		6200		5444743		741898
	DSL Total	1.00	561998		56175		30288		28977		765048		2112135

Note: Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

EMISSION FACTOR CALCULATIONS
EMFAC 2014

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Riverside
Calendar Year: 2020
Season: Annual
Vehicle Classification: EMFAC2007 Categories

TOTAL EMISSION RATES (g/mi)

Speed (mph)
55

Freeway Runex

	TOG	PM10
Gas	**0.0328**	
DSL		**0.0270**

		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	PM10 (g/mi)	PM10 Weighted
HHDT	GAS		1583	0.527333	835	0.000579	1
HHDT	DSL	0.588	375857	0.056721	21319	0.016579	6231
LDA	GAS		3226909	0.013782	44473	0.001292	4168
LDA	DSL	0.053	33744	0.014838	501	0.008784	296
LDT1	GAS		238682	0.040427	9649	0.002113	504
LDT1	DSL	0.000	183	0.145643	27	0.097434	18
LDT2	GAS		1142600	0.018155	20744	0.001286	1470
LDT2	DSL	0.003	2054	0.009724	20	0.004127	8
LHDT1	GAS		66297	0.055533	3682	0.000991	66
LHDT1	DSL	0.086	54678	0.114315	6250	0.023338	1276
LHDT2	GAS		13010	0.023577	307	0.000717	9
LHDT2	DSL	0.034	22022	0.08164	1798	0.017924	395
MCY	GAS		28541	2.237881	63871	0.001443	41
MDV	GAS		746822	0.045103	33684	0.001344	1003
MDV	DSL	0.019	12099	0.010156	123	0.005667	69
MH	GAS		7529	0.137808	1038	0.001368	10
MH	DSL	0.003	2232	0.075606	169	0.162033	362
MHDT	GAS		12933	0.095949	1241	0.000768	10
MHDT	DSL	0.202	129208	0.062564	8084	0.065198	8424
OBUS	GAS		6060	0.047361	287	0.000628	4
OBUS	DSL	0.007	4477	0.038273	171	0.01465	66
SBUS	GAS		726	0.043835	32	0.000403	0
SBUS	DSL	0.003	1689	0.049854	84	0.030831	52
UBUS	GAS		639	0.419838	268	0.001175	1
UBUS	DSL	0.001	634	0.901999	572	0.058601	37
Gas Total			5492331		180109		7287
DSL Total		1.00	638878		39117		17234

Note: Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

EMISSION FACTOR CALCULATIONS
EMFAC 2014

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Riverside
Calendar Year: 2025
Season: Annual
Vehicle Classification: EMFAC2007 Categories

TOTAL EMISSION RATES (g/mi)

Speed (mph)
55

Freeway Runex

	TOG	PM10
Gas	**0.0235**	
DSL		**0.0058**

		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	PM10 (g/mi)	PM10 Weighted
HHDT	GAS		1807	0.367544	664	0.000702	1
HHDT	DSL	0.617	433536	0.032373	14035	0.004925	2135
LDA	GAS		3161811	0.008922	28210	0.001282	4052
LDA	DSL	0.055	38959	0.007389	288	0.004075	159
LDT1	GAS		220346	0.021773	4798	0.001649	363
LDT1	DSL	0.000	148	0.086591	13	0.057191	8
LDT2	GAS		1173322	0.011794	13838	0.001286	1508
LDT2	DSL	0.003	2443	0.008557	21	0.003479	8
LHDT1	GAS		45310	0.033079	1499	0.000883	40
LHDT1	DSL	0.065	45576	0.082999	3783	0.017515	798
LHDT2	GAS		11081	0.010795	120	0.000724	8
LHDT2	DSL	0.028	19836	0.051155	1015	0.012334	245
MCY	GAS		27161	2.159074	58642	0.001603	44
MDV	GAS		658712	0.024198	15940	0.00127	837
MDV	DSL	0.021	14711	0.006153	91	0.003158	46
MH	GAS		5566	0.070887	395	0.001025	6
MH	DSL	0.002	1648	0.063319	104	0.130436	215
MHDT	GAS		14273	0.037888	541	0.000757	11
MHDT	DSL	0.197	138512	0.01374	1903	0.002697	374
OBUS	GAS		6500	0.022016	143	0.000743	5
OBUS	DSL	0.008	5334	0.019025	101	0.003237	17
SBUS	GAS		792	0.028178	22	0.000442	0
SBUS	DSL	0.002	1690	0.037244	63	0.021987	37
UBUS	GAS		633	0.222602	141	0.000839	1
UBUS	DSL	0.001	624	0.589211	367	0.032439	20

	Fleet Mix Percentage	VMT (Mi/day)	TOG Weighted	PM10 Weighted
Gas Total		5327314	124952	6876
DSL Total	1.00	703016	21784	4064

Note: Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

EMISSION FACTOR CALCULATIONS
EMFAC 2014

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Riverside
Calendar Year: 2030
Season: Annual
Vehicle Classification: EMFAC2007 Categories

TOTAL EMISSION RATES (g/mi)

Speed (mph)
55

Freeway Runex

	TOG	PM10
Gas	**0.0193**	
DSL		**0.0047**

		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	PM10 (g/mi)	PM10 Weighted
HHDT	GAS		2100	0.339022	712	0.000789	2
HHDT	DSL	0.627	477023	0.031392	14975	0.004697	2241
LDA	GAS		3350529	0.006445	21594	0.000989	3314
LDA	DSL	0.058	44335	0.003663	162	0.001453	64
LDT1	GAS		232824	0.0127	2957	0.001159	270
LDT1	DSL	0.000	125	0.015171	2	0.007238	1
LDT2	GAS		1297811	0.008397	10898	0.000986	1280
LDT2	DSL	0.004	2808	0.008156	23	0.003255	9
LHDT1	GAS		36091	0.016935	611	0.000838	30
LHDT1	DSL	0.056	42794	0.056327	2410	0.012024	515
LHDT2	GAS		10938	0.00564	62	0.000784	9
LHDT2	DSL	0.026	19852	0.032671	649	0.008373	166
MCY	GAS		28977	2.118422	61385	0.001696	49
MDV	GAS		676922	0.015739	10654	0.001033	699
MDV	DSL	0.023	17401	0.00402	70	0.001643	29
MH	GAS		4750	0.025938	123	0.00084	4
MH	DSL	0.002	1342	0.048059	65	0.085376	115
MHDT	GAS		16014	0.018331	294	0.000793	13
MHDT	DSL	0.193	146738	0.013762	2019	0.002634	386
OBUS	GAS		7114	0.013359	95	0.000804	6
OBUS	DSL	0.008	5887	0.018291	108	0.003116	18
SBUS	GAS		817	0.015522	13	0.000533	0
SBUS	DSL	0.002	1690	0.024276	41	0.012616	21
UBUS	GAS		672	0.063579	43	0.000782	1
UBUS	DSL	0.001	653	0.412193	269	0.009738	6

	Fleet Mix Percentage	VMT (Mi/day)	TOG Weighted	PM10 Weighted
Gas Total		5665559	109440	5676
DSL Total	1.00	760649	20793	3572

Note: Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

EMISSION FACTOR CALCULATIONS
EMFAC 2014

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Riverside
Calendar Year: 2035
Season: Annual
Vehicle Classification: EMFAC2007 Categories

TOTAL EMISSION RATES (g/mi)

Speed (mph): 55

Freeway Runex

	TOG	PM10
Gas	**0.0174**	
DSL		**0.0042**

		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	PM10 (g/mi)	PM10 Weighted
HHDT	GAS		2924	0.347147	1015	0.000825	2
HHDT	DSL	0.637	601233	0.030656	18431	0.004511	2712
LDA	GAS		3733478	0.004939	18441	0.000722	2695
LDA	DSL	0.054	51018	0.002776	142	0.000856	44
LDT1	GAS		263368	0.007388	1946	0.000792	209
LDT1	DSL	0.000	144	0.009537	1	0.004062	1
LDT2	GAS		1492898	0.006423	9588	0.000721	1076
LDT2	DSL	0.003	3262	0.00808	26	0.003231	11
LHDT1	GAS		35738	0.00781	279	0.000804	29
LHDT1	DSL	0.052	48824	0.039507	1929	0.008169	399
LHDT2	GAS		12569	0.003876	49	0.000818	10
LHDT2	DSL	0.025	23791	0.025742	612	0.006415	153
MCY	GAS		33654	2.097121	70578	0.001752	59
MDV	GAS		763351	0.011254	8590	0.000793	606
MDV	DSL	0.022	20745	0.003277	68	0.001105	23
MH	GAS		5048	0.015906	80	0.000806	4
MH	DSL	0.002	1437	0.036109	52	0.049315	71
MHDT	GAS		22102	0.012489	276	0.000818	18
MHDT	DSL	0.194	182679	0.013664	2496	0.002576	471
OBUS	GAS		9167	0.011001	101	0.00083	8
OBUS	DSL	0.009	8032	0.016932	136	0.00288	23
SBUS	GAS		802	0.009209	7	0.000659	1
SBUS	DSL	0.002	1691	0.015763	27	0.005016	8
UBUS	GAS		843	0.046935	40	0.000815	1
UBUS	DSL	0.001	829	0.331707	275	0.003849	3

	Fleet Mix Percentage	VMT (Mi/day)	TOG Weighted	PM10 Weighted
Gas Total		6375943	110991	4717
DSL Total	1.00	943685	24196	3918

Note: Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

EMISSION FACTOR CALCULATIONS
EMFAC 2014

EMFAC2014 (v1.0.7) Emission Rates
Region Type: County
Region: Riverside
Calendar Year: 2040
Season: Annual
Vehicle Classification: EMFAC2007 Categories

TOTAL EMISSION RATES (g/mi)

Speed (mph)		Freeway Runex	
55		TOG	PM10
	Gas	**0.0163**	
	DSL		**0.0039**

		Fleet Mix Percentage	VMT (Mi/day)	TOG (g/mi)	TOG Weighted	PM10 (g/mi)	PM10 Weighted
HHDT	GAS		3201	0.353137	1131	0.000838	3
HHDT	DSL	0.641	649756	0.030507	19822	0.004476	2909
LDA	GAS		3978282	0.004206	16734	0.000568	2259
LDA	DSL	0.054	55107	0.002479	137	0.000635	35
LDT1	GAS		282188	0.005222	1474	0.000611	172
LDT1	DSL	0.000	156	0.008642	1	0.003577	1
LDT2	GAS		1607572	0.005414	8703	0.000567	911
LDT2	DSL	0.003	3527	0.008083	29	0.003242	11
LHDT1	GAS		35525	0.004274	152	0.000811	29
LHDT1	DSL	0.050	50779	0.030931	1571	0.006063	308
LHDT2	GAS		13409	0.003413	46	0.000835	11
LHDT2	DSL	0.025	25405	0.02369	602	0.005598	142
MCY	GAS		36197	2.089404	75629	0.001779	64
MDV	GAS		818343	0.008438	6905	0.000632	518
MDV	DSL	0.022	22735	0.002906	66	0.000815	19
MH	GAS		5182	0.010941	57	0.000815	4
MH	DSL	0.001	1438	0.02934	42	0.030192	43
MHDT	GAS		24136	0.010431	252	0.000833	20
MHDT	DSL	0.191	193966	0.013429	2605	0.002509	487
OBUS	GAS		9893	0.010499	104	0.000838	8
OBUS	DSL	0.008	8573	0.016977	146	0.002889	25
SBUS	GAS		777	0.009197	7	0.000793	1
SBUS	DSL	0.002	1691	0.012631	21	0.002364	4
UBUS	GAS		904	0.019349	18	0.000816	1
UBUS	DSL	0.001	890	0.285975	254	0.001198	1

	Fleet Mix Percentage	VMT (Mi/day)	TOG Weighted	PM10 Weighted
Gas Total		6815610	111210	4001
DSL Total	1.00	1014022	25295	3984

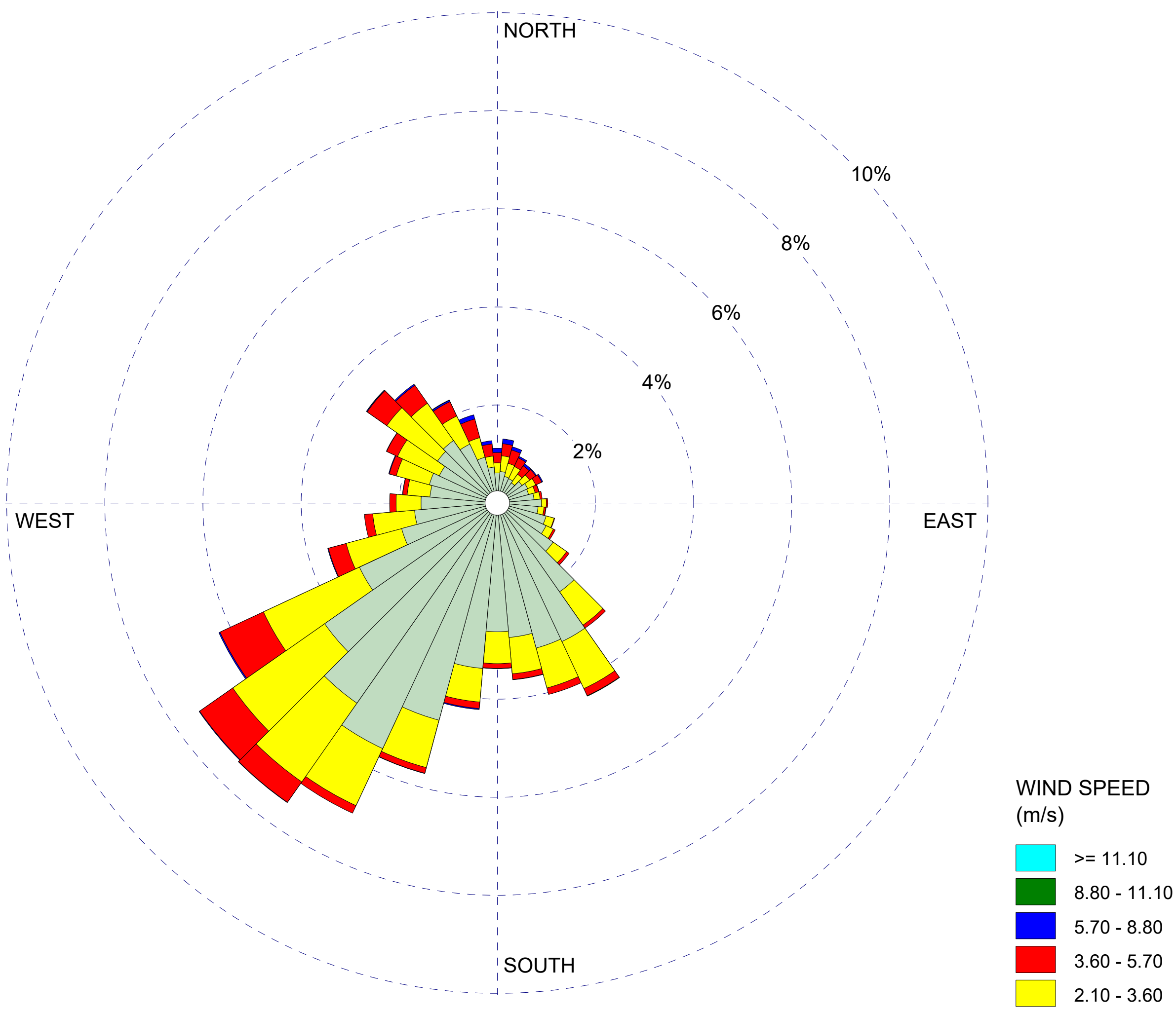
Note: Total Emission Rate (g/mi)=Sum of Weighted Emission Rates(g/day)/Sum of VMTs(mi/day)

WIND ROSE PLOT:

Lake Elsinore Met Data

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	Start Date: 1/1/2008 - 08:00 **End Date: 12/31/2012 - 15:00**	MODELER:	
	CALM WINDS: **0.02%**	TOTAL COUNT: **14476 hrs.**	
	AVG. WIND SPEED: **1.85 m/s**	DATE: **8/26/2016**	PROJECT NO.:

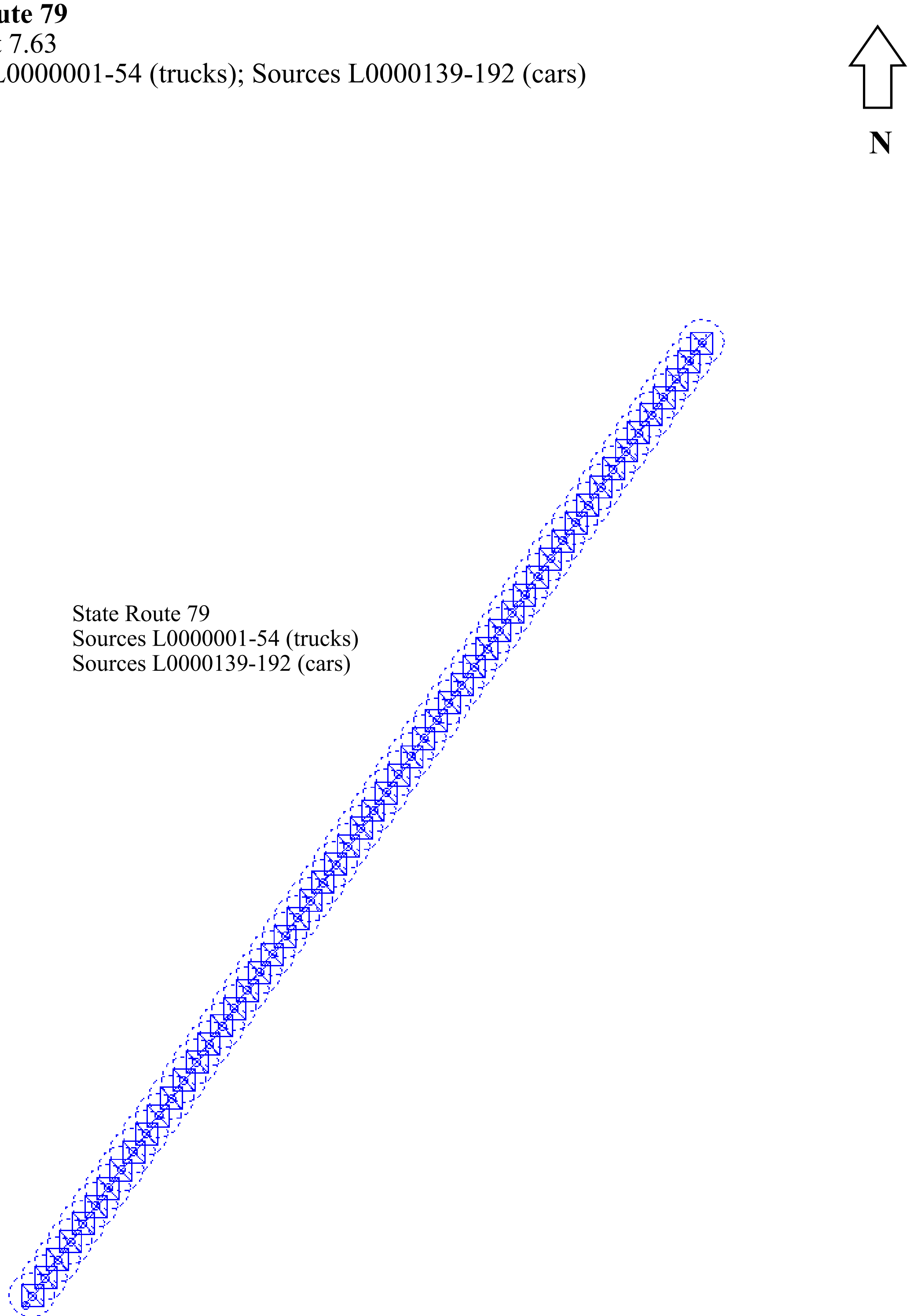
WRPLOT View - Lakes Environmental Software

Appendix

This page intentionally left blank.

Appendix B. Graphical Representations of Emitting Sources

State Route 79
Mile Post 7.63
Sources L0000001-54 (trucks); Sources L0000139-192 (cars)



- Release height of 4.15 m and initial vertical dimension (δy) of 1.93 m is based upon California Air Resources Board's "Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles" (2000). Release of 0.6 m used for gasoline-fueled vehicles.

Appendix C. Air Dispersion Modeling Output

Appendix

This page intentionally left blank.

Model Output Summary
Unit Emission Rates (1 g/s)

Results Summary

C:\Users\GraphicsBRK\Desktop\TVCS_HRA\TVCS_HRA.isc

Concentration - Source Group: 1A - Trucks

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	405.71762	ug/m^3	491119.30	3720583.78	432.83	0.00	575.00	12/21/2010, 16
8-HR	1ST	115.92715	ug/m^3	491009.74	3720425.54	432.77	0.00	521.00	12/21/2010, 16
24-HR	1ST	35.28218	ug/m^3	491009.74	3720425.54	432.77	0.00	521.00	12/21/2010, 24
PERIOD		6.87765	ug/m^3	491009.74	3720425.54	432.77	0.00	521.00	

Concentration - Source Group: 1B - Cars

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start Hour
1-HR	1ST	763.15851	ug/m^3	491009.74	3720425.54	432.77	0.00	521.00	12/21/2010, 16
8-HR	1ST	201.66174	ug/m^3	491009.74	3720425.54	432.77	0.00	521.00	12/21/2010, 16
24-HR	1ST	61.37531	ug/m^3	491009.74	3720425.54	432.77	0.00	521.00	12/21/2010, 24
PERIOD		10.41932	ug/m^3	491009.74	3720425.54	432.77	0.00	521.00	

```
*** AERMOD - VERSION  15181 ***   *** C:\Users\GraphicsBRK\Desktop\TVCS_HRA\TVCS_HRA.isc                  ***        08/26/16
*** AERMET - VERSION  14134 ***   ***                                                                     ***        10:24:31
                                                                                                                      PAGE   1
 **MODELOPTs:   RegDFAULT CONC      ELEV      RURAL

                                            ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.

 **Other Options Specified:
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  OTHER

 **Model Calculates  3 Short Term Average(s) of:   1-HR   8-HR  24-HR
     and Calculates PERIOD Averages

 **This Run Includes:    108 Source(s);       2 Source Group(s); and     364 Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:    108 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 OPENPIT source(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  14134

 **Output Options Selected:
          Model Outputs Tables of PERIOD Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours
```

```
**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                               ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.7 MB of RAM.

**Detailed Error/Message File:   TVCS_HRA.err
**File for Summary of Results:   TVCS_HRA.sum
```

Model Output
Unit Emission Rates (1 g/s)

**MODELOPTs: RegDFAULT CONC ELEV RURAL

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000001	0	0.18519E-01	490800.1	3720092.4	424.9	4.15	8.60	2.70	NO	HRDOW
L0000002	0	0.18519E-01	490810.8	3720107.5	425.1	4.15	8.60	2.70	NO	HRDOW
L0000003	0	0.18519E-01	490821.4	3720122.7	425.6	4.15	8.60	2.70	NO	HRDOW
L0000004	0	0.18519E-01	490832.0	3720137.8	426.0	4.15	8.60	2.70	NO	HRDOW
L0000005	0	0.18519E-01	490842.6	3720152.9	426.0	4.15	8.60	2.70	NO	HRDOW
L0000006	0	0.18519E-01	490853.3	3720168.1	426.0	4.15	8.60	2.70	NO	HRDOW
L0000007	0	0.18519E-01	490863.9	3720183.2	426.0	4.15	8.60	2.70	NO	HRDOW
L0000008	0	0.18519E-01	490874.5	3720198.4	426.1	4.15	8.60	2.70	NO	HRDOW
L0000009	0	0.18519E-01	490885.1	3720213.5	426.3	4.15	8.60	2.70	NO	HRDOW
L0000010	0	0.18519E-01	490895.8	3720228.7	426.2	4.15	8.60	2.70	NO	HRDOW
L0000011	0	0.18519E-01	490906.4	3720243.8	426.8	4.15	8.60	2.70	NO	HRDOW
L0000012	0	0.18519E-01	490917.0	3720258.9	427.7	4.15	8.60	2.70	NO	HRDOW
L0000013	0	0.18519E-01	490927.7	3720274.1	429.0	4.15	8.60	2.70	NO	HRDOW
L0000014	0	0.18519E-01	490938.3	3720289.2	430.8	4.15	8.60	2.70	NO	HRDOW
L0000015	0	0.18519E-01	490948.9	3720304.4	431.7	4.15	8.60	2.70	NO	HRDOW
L0000016	0	0.18519E-01	490959.5	3720319.5	432.1	4.15	8.60	2.70	NO	HRDOW
L0000017	0	0.18519E-01	490970.2	3720334.7	432.5	4.15	8.60	2.70	NO	HRDOW
L0000018	0	0.18519E-01	490980.8	3720349.8	432.4	4.15	8.60	2.70	NO	HRDOW
L0000019	0	0.18519E-01	490991.4	3720364.9	432.6	4.15	8.60	2.70	NO	HRDOW
L0000020	0	0.18519E-01	491002.0	3720380.1	432.9	4.15	8.60	2.70	NO	HRDOW
L0000021	0	0.18519E-01	491012.7	3720395.2	432.5	4.15	8.60	2.70	NO	HRDOW
L0000022	0	0.18519E-01	491023.3	3720410.4	431.9	4.15	8.60	2.70	NO	HRDOW
L0000023	0	0.18519E-01	491033.9	3720425.5	431.8	4.15	8.60	2.70	NO	HRDOW
L0000024	0	0.18519E-01	491044.6	3720440.7	431.4	4.15	8.60	2.70	NO	HRDOW
L0000025	0	0.18519E-01	491055.2	3720455.8	430.8	4.15	8.60	2.70	NO	HRDOW
L0000026	0	0.18519E-01	491065.8	3720470.9	430.4	4.15	8.60	2.70	NO	HRDOW
L0000027	0	0.18519E-01	491076.4	3720486.1	429.6	4.15	8.60	2.70	NO	HRDOW
L0000028	0	0.18519E-01	491087.1	3720501.2	429.2	4.15	8.60	2.70	NO	HRDOW
L0000029	0	0.18519E-01	491097.7	3720516.4	429.7	4.15	8.60	2.70	NO	HRDOW
L0000030	0	0.18519E-01	491108.3	3720531.5	430.2	4.15	8.60	2.70	NO	HRDOW
L0000031	0	0.18519E-01	491118.9	3720546.7	430.4	4.15	8.60	2.70	NO	HRDOW
L0000032	0	0.18519E-01	491129.6	3720561.8	430.9	4.15	8.60	2.70	NO	HRDOW
L0000033	0	0.18519E-01	491140.2	3720576.9	432.1	4.15	8.60	2.70	NO	HRDOW
L0000034	0	0.18519E-01	491150.8	3720592.1	433.3	4.15	8.60	2.70	NO	HRDOW
L0000035	0	0.18519E-01	491161.5	3720607.2	433.7	4.15	8.60	2.70	NO	HRDOW
L0000036	0	0.18519E-01	491172.1	3720622.4	433.7	4.15	8.60	2.70	NO	HRDOW
L0000037	0	0.18519E-01	491182.7	3720637.5	432.6	4.15	8.60	2.70	NO	HRDOW
L0000038	0	0.18519E-01	491193.3	3720652.7	431.4	4.15	8.60	2.70	NO	HRDOW
L0000039	0	0.18519E-01	491204.0	3720667.8	431.0	4.15	8.60	2.70	NO	HRDOW
L0000040	0	0.18519E-01	491214.6	3720682.9	431.0	4.15	8.60	2.70	NO	HRDOW

Model Output
Unit Emission Rates (1 g/s)

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000041	0	0.18519E-01	491225.2	3720698.1	430.5	4.15	8.60	2.70	NO	HRDOW
L0000042	0	0.18519E-01	491235.8	3720713.2	430.4	4.15	8.60	2.70	NO	HRDOW
L0000043	0	0.18519E-01	491246.5	3720728.4	430.7	4.15	8.60	2.70	NO	HRDOW
L0000044	0	0.18519E-01	491257.1	3720743.5	430.2	4.15	8.60	2.70	NO	HRDOW
L0000045	0	0.18519E-01	491267.7	3720758.7	429.9	4.15	8.60	2.70	NO	HRDOW
L0000046	0	0.18519E-01	491278.4	3720773.8	430.1	4.15	8.60	2.70	NO	HRDOW
L0000047	0	0.18519E-01	491289.0	3720788.9	430.0	4.15	8.60	2.70	NO	HRDOW
L0000048	0	0.18519E-01	491299.6	3720804.1	430.5	4.15	8.60	2.70	NO	HRDOW
L0000049	0	0.18519E-01	491310.2	3720819.2	431.1	4.15	8.60	2.70	NO	HRDOW
L0000050	0	0.18519E-01	491320.9	3720834.4	431.6	4.15	8.60	2.70	NO	HRDOW
L0000051	0	0.18519E-01	491331.5	3720849.5	432.2	4.15	8.60	2.70	NO	HRDOW
L0000052	0	0.18519E-01	491342.1	3720864.7	432.6	4.15	8.60	2.70	NO	HRDOW
L0000053	0	0.18519E-01	491352.8	3720879.8	432.8	4.15	8.60	2.70	NO	HRDOW
L0000054	0	0.18519E-01	491363.4	3720894.9	433.3	4.15	8.60	2.70	NO	HRDOW
L0000139	0	0.18519E-01	490800.1	3720092.4	424.9	0.60	8.60	2.70	NO	HRDOW
L0000140	0	0.18519E-01	490810.8	3720107.5	425.1	0.60	8.60	2.70	NO	HRDOW
L0000141	0	0.18519E-01	490821.4	3720122.7	425.6	0.60	8.60	2.70	NO	HRDOW
L0000142	0	0.18519E-01	490832.0	3720137.8	426.0	0.60	8.60	2.70	NO	HRDOW
L0000143	0	0.18519E-01	490842.6	3720152.9	426.0	0.60	8.60	2.70	NO	HRDOW
L0000144	0	0.18519E-01	490853.3	3720168.1	426.0	0.60	8.60	2.70	NO	HRDOW
L0000145	0	0.18519E-01	490863.9	3720183.2	426.0	0.60	8.60	2.70	NO	HRDOW
L0000146	0	0.18519E-01	490874.5	3720198.4	426.1	0.60	8.60	2.70	NO	HRDOW
L0000147	0	0.18519E-01	490885.1	3720213.5	426.3	0.60	8.60	2.70	NO	HRDOW
L0000148	0	0.18519E-01	490895.8	3720228.7	426.2	0.60	8.60	2.70	NO	HRDOW
L0000149	0	0.18519E-01	490906.4	3720243.8	426.8	0.60	8.60	2.70	NO	HRDOW
L0000150	0	0.18519E-01	490917.0	3720258.9	427.7	0.60	8.60	2.70	NO	HRDOW
L0000151	0	0.18519E-01	490927.7	3720274.1	429.0	0.60	8.60	2.70	NO	HRDOW
L0000152	0	0.18519E-01	490938.3	3720289.2	430.8	0.60	8.60	2.70	NO	HRDOW
L0000153	0	0.18519E-01	490948.9	3720304.4	431.7	0.60	8.60	2.70	NO	HRDOW
L0000154	0	0.18519E-01	490959.5	3720319.5	432.1	0.60	8.60	2.70	NO	HRDOW
L0000155	0	0.18519E-01	490970.2	3720334.7	432.5	0.60	8.60	2.70	NO	HRDOW
L0000156	0	0.18519E-01	490980.8	3720349.8	432.4	0.60	8.60	2.70	NO	HRDOW
L0000157	0	0.18519E-01	490991.4	3720364.9	432.6	0.60	8.60	2.70	NO	HRDOW
L0000158	0	0.18519E-01	491002.0	3720380.1	432.9	0.60	8.60	2.70	NO	HRDOW
L0000159	0	0.18519E-01	491012.7	3720395.2	432.5	0.60	8.60	2.70	NO	HRDOW
L0000160	0	0.18519E-01	491023.3	3720410.4	431.9	0.60	8.60	2.70	NO	HRDOW
L0000161	0	0.18519E-01	491033.9	3720425.5	431.8	0.60	8.60	2.70	NO	HRDOW
L0000162	0	0.18519E-01	491044.6	3720440.7	431.4	0.60	8.60	2.70	NO	HRDOW
L0000163	0	0.18519E-01	491055.2	3720455.8	430.8	0.60	8.60	2.70	NO	HRDOW
L0000164	0	0.18519E-01	491065.8	3720470.9	430.4	0.60	8.60	2.70	NO	HRDOW

```
*** AERMOD - VERSION  15181 ***   *** C:\Users\GraphicsBRK\Desktop\TVCS_HRA\TVCS_HRA.isc              ***        08/26/16
*** AERMET - VERSION  14134 ***   ***                                                                  ***        10:24:31
                                                                                                                  PAGE   4
**MODELOPTs:    RegDFAULT CONC      ELEV      RURAL
```

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000165	0	0.18519E-01	491076.4	3720486.1	429.6	0.60	8.60	2.70	NO	HRDOW
L0000166	0	0.18519E-01	491087.1	3720501.2	429.2	0.60	8.60	2.70	NO	HRDOW
L0000167	0	0.18519E-01	491097.7	3720516.4	429.7	0.60	8.60	2.70	NO	HRDOW
L0000168	0	0.18519E-01	491108.3	3720531.5	430.2	0.60	8.60	2.70	NO	HRDOW
L0000169	0	0.18519E-01	491118.9	3720546.7	430.4	0.60	8.60	2.70	NO	HRDOW
L0000170	0	0.18519E-01	491129.6	3720561.8	430.9	0.60	8.60	2.70	NO	HRDOW
L0000171	0	0.18519E-01	491140.2	3720576.9	432.1	0.60	8.60	2.70	NO	HRDOW
L0000172	0	0.18519E-01	491150.8	3720592.1	433.3	0.60	8.60	2.70	NO	HRDOW
L0000173	0	0.18519E-01	491161.5	3720607.2	433.7	0.60	8.60	2.70	NO	HRDOW
L0000174	0	0.18519E-01	491172.1	3720622.4	433.7	0.60	8.60	2.70	NO	HRDOW
L0000175	0	0.18519E-01	491182.7	3720637.5	432.6	0.60	8.60	2.70	NO	HRDOW
L0000176	0	0.18519E-01	491193.3	3720652.7	431.4	0.60	8.60	2.70	NO	HRDOW
L0000177	0	0.18519E-01	491204.0	3720667.8	431.0	0.60	8.60	2.70	NO	HRDOW
L0000178	0	0.18519E-01	491214.6	3720682.9	431.0	0.60	8.60	2.70	NO	HRDOW
L0000179	0	0.18519E-01	491225.2	3720698.1	430.5	0.60	8.60	2.70	NO	HRDOW
L0000180	0	0.18519E-01	491235.8	3720713.2	430.4	0.60	8.60	2.70	NO	HRDOW
L0000181	0	0.18519E-01	491246.5	3720728.4	430.7	0.60	8.60	2.70	NO	HRDOW
L0000182	0	0.18519E-01	491257.1	3720743.5	430.2	0.60	8.60	2.70	NO	HRDOW
L0000183	0	0.18519E-01	491267.7	3720758.7	429.9	0.60	8.60	2.70	NO	HRDOW
L0000184	0	0.18519E-01	491278.4	3720773.8	430.1	0.60	8.60	2.70	NO	HRDOW
L0000185	0	0.18519E-01	491289.0	3720788.9	430.0	0.60	8.60	2.70	NO	HRDOW
L0000186	0	0.18519E-01	491299.6	3720804.1	430.5	0.60	8.60	2.70	NO	HRDOW
L0000187	0	0.18519E-01	491310.2	3720819.2	431.1	0.60	8.60	2.70	NO	HRDOW
L0000188	0	0.18519E-01	491320.9	3720834.4	431.6	0.60	8.60	2.70	NO	HRDOW
L0000189	0	0.18519E-01	491331.5	3720849.5	432.2	0.60	8.60	2.70	NO	HRDOW
L0000190	0	0.18519E-01	491342.1	3720864.7	432.6	0.60	8.60	2.70	NO	HRDOW
L0000191	0	0.18519E-01	491352.8	3720879.8	432.8	0.60	8.60	2.70	NO	HRDOW
L0000192	0	0.18519E-01	491363.4	3720894.9	433.3	0.60	8.60	2.70	NO	HRDOW

**MODELOPTs: RegDFAULT CONC   ELEV   RURAL

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs							
1A	L0000001 ,	L0000002 ,	L0000003 ,	L0000004 ,	L0000005 ,	L0000006 ,	L0000007 ,	L0000008 ,
	L0000009 ,	L0000010 ,	L0000011 ,	L0000012 ,	L0000013 ,	L0000014 ,	L0000015 ,	L0000016 ,
	L0000017 ,	L0000018 ,	L0000019 ,	L0000020 ,	L0000021 ,	L0000022 ,	L0000023 ,	L0000024 ,
	L0000025 ,	L0000026 ,	L0000027 ,	L0000028 ,	L0000029 ,	L0000030 ,	L0000031 ,	L0000032 ,
	L0000033 ,	L0000034 ,	L0000035 ,	L0000036 ,	L0000037 ,	L0000038 ,	L0000039 ,	L0000040 ,
	L0000041 ,	L0000042 ,	L0000043 ,	L0000044 ,	L0000045 ,	L0000046 ,	L0000047 ,	L0000048 ,
	L0000049 ,	L0000050 ,	L0000051 ,	L0000052 ,	L0000053 ,	L0000054 ,		
1B	L0000139 ,	L0000140 ,	L0000141 ,	L0000142 ,	L0000143 ,	L0000144 ,	L0000145 ,	L0000146 ,
	L0000147 ,	L0000148 ,	L0000149 ,	L0000150 ,	L0000151 ,	L0000152 ,	L0000153 ,	L0000154 ,
	L0000155 ,	L0000156 ,	L0000157 ,	L0000158 ,	L0000159 ,	L0000160 ,	L0000161 ,	L0000162 ,
	L0000163 ,	L0000164 ,	L0000165 ,	L0000166 ,	L0000167 ,	L0000168 ,	L0000169 ,	L0000170 ,
	L0000171 ,	L0000172 ,	L0000173 ,	L0000174 ,	L0000175 ,	L0000176 ,	L0000177 ,	L0000178 ,
	L0000179 ,	L0000180 ,	L0000181 ,	L0000182 ,	L0000183 ,	L0000184 ,	L0000185 ,	L0000186 ,
	L0000187 ,	L0000188 ,	L0000189 ,	L0000190 ,	L0000191 ,	L0000192 ,		

Model Output
Unit Emission Rates (1 g/s)

**MODELOPTs: RegDFAULT CONC ELEV RURAL

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = Trucks (Sources L0000001 through L0000054) ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
DAY OF WEEK = WEEKDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.6460E+00	10	.5010E+00	11	.4660E+00	12	.5030E+00	13	.5900E+00	14	.6700E+00	15	.8520E+00	16	.9500E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
DAY OF WEEK = SATURDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
DAY OF WEEK = SUNDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

SOURCE ID = Cars (Sources L0000139 through L0000192) ; SOURCE TYPE = VOLUME :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
DAY OF WEEK = WEEKDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.8680E+00	10	.8160E+00	11	.8060E+00	12	.8270E+00	13	.8460E+00	14	.8640E+00	15	.9370E+00	16	.9850E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
DAY OF WEEK = SATURDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
DAY OF WEEK = SUNDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

Model Output
Unit Emission Rates (1 g/s)

**MODELOPTs: RegDFAULT CONC   ELEV   RURAL

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

**MODELOPTs: RegDFAULT CONC ELEV RURAL

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: elsi8.sfc Met Version: 14134
Profile file: elsi8.PFL
Surface format: FREE
Profile format: FREE
Surface station no.: 0 Upper air station no.: 3190
Name: LAKE_ELSINORE Name: UNKNOWN
Year: 2008 Year: 2008

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
08	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	284.2	5.5
08	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	0.54	999.00	999.	-9.0	283.8	5.5
08	01	01	1	09	27.2	-9.000	-9.000	-9.000	60.	-999.	-99999.0	0.23	1.00	0.33	999.00	999.	-9.0	285.9	5.5
08	01	01	1	10	74.6	-9.000	-9.000	-9.000	157.	-999.	-99999.0	0.23	1.00	0.25	999.00	999.	-9.0	288.1	5.5
08	01	01	1	11	107.4	-9.000	-9.000	-9.000	375.	-999.	-99999.0	0.23	1.00	0.23	999.00	999.	-9.0	289.9	5.5
08	01	01	1	12	122.7	-9.000	-9.000	-9.000	578.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	289.9	5.5
08	01	01	1	13	121.3	-9.000	-9.000	-9.000	714.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	291.4	5.5
08	01	01	1	14	102.1	-9.000	-9.000	-9.000	763.	-999.	-99999.0	0.23	1.00	0.23	999.00	999.	-9.0	292.0	5.5
08	01	01	1	15	65.8	-9.000	-9.000	-9.000	792.	-999.	-99999.0	0.23	1.00	0.27	999.00	999.	-9.0	291.4	5.5
08	01	01	1	16	16.0	-9.000	-9.000	-9.000	798.	-999.	-99999.0	0.23	1.00	0.36	999.00	999.	-9.0	290.4	5.5
08	01	01	1	17	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	0.63	999.00	999.	-9.0	288.8	5.5
08	01	01	1	18	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	287.5	5.5
08	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	286.4	5.5
08	01	01	1	20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	285.4	5.5
08	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	284.2	5.5
08	01	01	1	22	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	282.5	5.5

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
08	01	01	01	5.5	0	-999.	-99.00	284.3	99.0	-99.00	-99.00
08	01	01	01	9.1	1	-999.	-99.00	-999.0	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

```
 *** AERMOD - VERSION  15181 ***   *** C:\Users\GraphicsBRK\Desktop\TVCS_HRA\TVCS_HRA.isc                 ***        08/26/16
 *** AERMET - VERSION  14134 ***   ***                                                                    ***        10:24:31
                                                                                                                     PAGE 162
 **MODELOPTs:   RegDFAULT CONC      ELEV      RURAL

                                         *** THE SUMMARY OF MAXIMUM PERIOD ( 43848 HRS) RESULTS ***


                                     ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

                                                                                                              NETWORK
GROUP ID                       AVERAGE CONC               RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

1A        1ST HIGHEST VALUE IS       6.87765 AT (  491009.74,  3720425.54,   432.77,   521.00,    0.00)  DC
          2ND HIGHEST VALUE IS       6.87042 AT (  491064.52,  3720504.66,   430.04,   575.00,    0.00)  DC
          3RD HIGHEST VALUE IS       6.50259 AT (  491119.30,  3720583.78,   432.83,   575.00,    0.00)  DC
          4TH HIGHEST VALUE IS       6.32416 AT (  491082.78,  3720534.33,   430.28,   575.00,    0.00)  DC
          5TH HIGHEST VALUE IS       6.17968 AT (  491028.00,  3720455.21,   432.49,   521.00,    0.00)  DC
          6TH HIGHEST VALUE IS       5.81315 AT (  491046.26,  3720484.88,   431.10,   575.00,    0.00)  DC
          7TH HIGHEST VALUE IS       5.70071 AT (  491101.04,  3720564.00,   431.53,   575.00,    0.00)  DC
          8TH HIGHEST VALUE IS       5.47366 AT (  491064.52,  3720514.55,   430.02,   575.00,    0.00)  DC
          9TH HIGHEST VALUE IS       5.36867 AT (  491009.74,  3720435.43,   432.99,   521.00,    0.00)  DC
         10TH HIGHEST VALUE IS       5.35858 AT (  491101.04,  3720554.11,   430.93,   575.00,    0.00)  DC

1B        1ST HIGHEST VALUE IS      10.41932 AT (  491009.74,  3720425.54,   432.77,   521.00,    0.00)  DC
          2ND HIGHEST VALUE IS      10.26300 AT (  491064.52,  3720504.66,   430.04,   575.00,    0.00)  DC
          3RD HIGHEST VALUE IS       9.84406 AT (  491119.30,  3720583.78,   432.83,   575.00,    0.00)  DC
          4TH HIGHEST VALUE IS       9.27278 AT (  491028.00,  3720455.21,   432.49,   521.00,    0.00)  DC
          5TH HIGHEST VALUE IS       9.24877 AT (  491082.78,  3720534.33,   430.28,   575.00,    0.00)  DC
          6TH HIGHEST VALUE IS       8.49858 AT (  491046.26,  3720484.88,   431.10,   575.00,    0.00)  DC
          7TH HIGHEST VALUE IS       8.34538 AT (  491101.04,  3720564.00,   431.53,   575.00,    0.00)  DC
          8TH HIGHEST VALUE IS       7.84630 AT (  491064.52,  3720514.55,   430.02,   575.00,    0.00)  DC
          9TH HIGHEST VALUE IS       7.81836 AT (  491009.74,  3720435.43,   432.99,   521.00,    0.00)  DC
         10TH HIGHEST VALUE IS       7.75598 AT (  491101.04,  3720554.11,   430.93,   575.00,    0.00)  DC

 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

```
 *** AERMOD - VERSION  15181 ***   *** C:\Users\GraphicsBRK\Desktop\TVCS_HRA\TVCS_HRA.isc                 ***        08/26/16
 *** AERMET - VERSION  14134 ***   ***                                                                    ***        10:24:31
                                                                                                                     PAGE 163
 **MODELOPTs:   RegDFAULT CONC      ELEV      RURAL

                                          *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


                                    ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

                                                       DATE                                                                NETWORK
GROUP ID                         AVERAGE CONC      (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

1A       HIGH   1ST HIGH VALUE IS     405.71762  ON 10122116: AT (  491119.30,  3720583.78,   432.83,   575.00,    0.00)  DC

1B       HIGH   1ST HIGH VALUE IS     763.15851  ON 10122116: AT (  491009.74,  3720425.54,   432.77,   521.00,    0.00)  DC

 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

Model Output
Unit Emission Rates (1 g/s)

```
 *** AERMOD - VERSION  15181 ***   *** C:\Users\GraphicsBRK\Desktop\TVCS_HRA\TVCS_HRA.isc                  ***        08/26/16
 *** AERMET - VERSION  14134 ***   ***                                                                     ***        10:24:31
                                                                                                                      PAGE 164
 **MODELOPTs:   RegDFAULT CONC      ELEV      RURAL

                                              *** THE SUMMARY OF HIGHEST  8-HR RESULTS ***

                                    ** CONC OF OTHER    IN MICROGRAMS/M**3                          **

                                                       DATE                                                                NETWORK
GROUP ID                                  AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

1A       HIGH   1ST HIGH VALUE IS     115.92715m ON 10122116: AT (  491009.74,  3720425.54,   432.77,   521.00,    0.00)  DC

1B       HIGH   1ST HIGH VALUE IS     201.66174m ON 10122116: AT (  491009.74,  3720425.54,   432.77,   521.00,    0.00)  DC

 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

**MODELOPTs: RegDFAULT CONC ELEV RURAL

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID			AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
1A	HIGH	1ST HIGH VALUE IS	35.28218m	ON 10122124:	AT (491009.74, 3720425.54, 432.77, 521.00, 0.00)	DC	
1B	HIGH	1ST HIGH VALUE IS	61.37531m	ON 10122124:	AT (491009.74, 3720425.54, 432.77, 521.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

```
*** AERMOD - VERSION  15181 ***   *** C:\Users\GraphicsBRK\Desktop\TVCS_HRA\TVCS_HRA.isc                  ***        08/26/16
*** AERMET - VERSION  14134 ***   ***                                                                     ***        10:24:31
                                                                                                                     PAGE 166
**MODELOPTs:   RegDFAULT CONC      ELEV      RURAL

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of           0 Fatal Error Message(s)
A Total of           0 Warning Message(s)
A Total of        1916 Informational Message(s)

A Total of       43848 Hours Were Processed

A Total of          10 Calm Hours Identified

A Total of        1906 Missing Hours Identified (  4.35 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
              ***  NONE  ***


   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

Appendix

This page intentionally left blank.

Appendix D. Risk Calculation Worksheets

Appendix

This page intentionally left blank.

Table D1
MER Concentration Worksheet
Toxic Air Contaminants - Mobile Sources

Source No. (a)	Source (b)	Contaminant (c)	Weight Fraction (d)	Emission Rates[1] **Annual Avg** (g/s) (e)	AERMOD Output[2] **Annual Avg** (µg/m^3) (f)	Annual Average MER Concentration (µg/m^3) (g)	Emission Rates[1] **1-Hour** (g/s) (h)	AERMOD Output[2] **1-Hour** (µg/m^3) (i)	Acute (1-Hour) MER Concentration (µg/m^3) (j)
Staff Scenario									
1	SR-79 Trucks (DPM)	Diesel Particulate	1.00E+00	1.01E-03	6.88	0.00697	n/a		
	SR-79 Cars (TOG)	Acetaldehyde	2.80E-03	1.53E-02	10.4	0.00045	1.44E-02	763.2	0.0308
		Acrolein	1.30E-03			0.00021			0.0143
		Benzene	2.83E-02			0.00450			0.3110
		1,3-Butadiene	5.50E-03			0.00087			0.0604
		Ethyl benzene	1.17E-02			0.00186			0.1286
		Formaldehyde	1.58E-02			0.00251			0.1736
		Hexane	3.14E-02			0.00499			0.3450
		Methanol	1.20E-03			0.00019			0.0132
		Methyl Ethyl Ketone	2.00E-04			0.00003			0.0022
		Naphthalene	5.00E-04			0.00008			0.0055
		Propylene	3.06E-02			0.00487			0.3362
		Styrene	1.20E-03			0.00019			0.0132
		Toluene	7.46E-02			0.01186			0.8197
		Xylenes	5.38E-02			0.00856			0.5912
Student Scenario									
1	SR-79 Trucks (DPM)	Diesel Particulate	1.00E+00	1.39E-03	6.88	0.00957	n/a		
	SR-79 Cars (TOG)	Acetaldehyde	2.80E-03	1.33E-02	10.4	0.00039	1.44E-02	763.2	0.0308
		Acrolein	1.30E-03			0.00018			0.0143
		Benzene	2.83E-02			0.00393			0.3110
		1,3-Butadiene	5.50E-03			0.00076			0.0604
		Ethylbenzene	1.17E-02			0.00162			0.1286
		Formaldehyde	1.58E-02			0.00219			0.1736
		Hexane	3.14E-02			0.00436			0.3450
		Methanol	1.20E-03			0.00017			0.0132
		Methyl Ethyl Ketone	2.00E-04			0.00003			0.0022
		Naphthalene	5.00E-04			0.00007			0.0055
		Propylene	3.06E-02			0.00425			0.3362
		Styrene	1.20E-03			0.00017			0.0132
		Toluene	7.46E-02			0.01035			0.8197
		Xylenes	5.38E-02			0.00747			0.5912
Note: Maximum Exposed Receptor (MER)						For Cancer/Chronic Calculation			For Acute Calculation

[1] Emission Rates, per source, from Source Emissions Inventories (Appendix A).

[2] AERMOD Output (Appendix C) at the maximum exposed receptor (MER) are based on unit emission rates for emission sources (1 g/s per source).

Table D2
HARP2 Results for Cancer Risk and Chronic Hazards
School Scenario

No.	Source	Contaminant	Carcinogenic Risks		Chronic Non-Cancer Risks [2] - Toxicological Endpoints*											
			Staff	**Students**	CV	CNS	IMMUN	KIDNEY	GILV	REPRO	**RESP**	SKIN	EYE	BONE	ENDO	BLOOD
(a)	(b)	(c)	per million (j)	per million (j)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)
1	SR-79 Trucks (DPM)	Diesel Particulate	4.2E-01	1.0E+00							1.91E-03					
	SR-79 Cars (TOG)	Acetaldehyde	2.5E-04	3.9E-04							2.79E-06					
		Acrolein									5.14E-04					
		Benzene	2.5E-02	3.9E-02												1.31E-03
		1,3-Butadiene	3.0E-02	4.5E-02						3.80E-04						
		Ethylbenzene	9.1E-04	1.4E-03				8.10E-07	8.10E-07	8.10E-07					8.10E-07	
		Formaldehyde	3.0E-03	4.5E-03							2.43E-04					
		Hexane				6.23E-07										
		Methanol								4.25E-08						
		Methyl Ethyl Ketone														
		Naphthalene	5.4E-04	8.3E-04							7.78E-06					
		Propylene									1.42E-06					
		Styrene				1.89E-07										
		Toluene				3.45E-05				3.45E-05	3.45E-05					
		Xylenes				1.07E-05					1.07E-05		1.07E-05			
		Total - All Sources	**0.48**	**1.13**	0.00E+00	4.60E-05	0.00E+00	8.10E-07	8.10E-07	4.15E-04	**2.73E-03**	0.00E+00	1.07E-05	0.00E+00	8.10E-07	1.31E-03

Note: Health risks calculated using HARP2, Risk Assessment Standalone Tool, version 16057 (CARB, 2016).

Total Cancer Risk	**Staff**	**0.48**	per million
Total Cancer Risk	**Students**	**1.13**	per million
Maximum Chronic Hazard Index		**2.73E-03**	**RESP**

	Staff	Students	
	16 < 70 years	2 < 16 years	age bin
Dose Exposure Factors:	250	180	exposure frequency (days/year)
	230	520	8-hour inhalation rate (L/kg-8 hours) [1]
	1	1	inhalation absorption factor
Risk Calculation Factors:	1	3	age sensitivity factor
	25	9	exposure duration (years)
	70	70	averaging time (years)

* Key to Toxicological Endpoints

CV	Cardiovascular System
CNS	Central Nervous System
IMMUN	Immune System
KIDN	Kidneys
GILV	Gastrointestinal Tract and Liver/Alimentary Tract
RESP	Respiratory System
REPRO	Reproductive System
SKIN	Skin irritation and/or other effects
EYE	Eye irritation and/or other effects
BONE	Bones and Teeth
ENDO	Endocrine System
BLOOD	Hematological System

[1] 8-hour inhalation rate taken as the 95th percentile breathing rates for Moderate Intensity Activities (OEHHA, 2015).

[2] Student Scenario emission rates produced higher chronic hazard indices, compared to Staff Scenario emission rates.

Table D3
HARP2 Results for Acute Hazards

Source No.	Source	Contaminant	Acute Non-Cancer Risks - Toxicological Endpoints*											
			CV	CNS	IMMUN	KIDNEY	GILV	**REPRO**	RESP	SKIN	EYE	BONE	ENDO	BLOOD
(a)	(b)	(c)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)
1	SR-79 Trucks (DPM)	Diesel Particulate												
	SR-79 Cars (TOG)	Acetaldehyde							6.55E-05		6.55E-05			
		Acrolein							5.71E-03		5.71E-03			
		Benzene			1.15E-02			1.15E-02						1.15E-02
		1,3-Butadiene						9.16E-05						
		Ethylbenzene												
		Formaldehyde									3.16E-03			
		Hexane												
		Methanol		4.71E-07										
		Methyl Ethyl Ketone							1.69E-07		1.69E-07			
		Naphthalene												
		Propylene												
		Styrene	6.28E-07					6.28E-07	6.28E-07		6.28E-07			
		Toluene		2.22E-05				2.22E-05	2.22E-05		2.22E-05			
		Xylenes		2.69E-05					2.69E-05		2.69E-05			
		Total - All Sources	6.28E-07	4.95E-05	1.15E-02	0.00E+00	0.00E+00	**1.16E-02**	5.83E-03	0.00E+00	8.99E-03	0.00E+00	0.00E+00	1.15E-02

Note: Student Scenario emission rates produced higher acute (1-hour) hazard indices, compared to Staff Scenario emission rates.

Note: Health risks calculated using HARP2, Risk Assessment Standalone Tool, version 16057 (CARB, 2016).

Maximum Acute Hazard Index 1.16E-02 Repro

* Key to Toxicological Endpoints

CV	Cardiovascular System	RESP	Respiratory System
CNS	Central Nervous System	SKIN	Skin irritation and/or other effects
IMMUN	Immune System	EYE	Eye irritation and/or other effects
KIDN	Kidneys	BONE	Bones and Teeth
GILV	Gastrointestinal Tract and Liver/Alimentary Tract	ENDO	Endocrine System
REPRO	Reproductive System	BLOOD	Hematological System

Table D4
HARP2 Results for 8-Hour Hazards

Source No.	Source	Contaminant	8-Hour Non-Cancer Risks - Toxicological Endpoints*											
			CV	CNS	IMMUN	KIDNEY	GILV	REPRO	RESP	SKIN	EYE	BONE	ENDO	**BLOOD**
(a)	(b)	(c)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)
1	SR-79 Trucks (DPM)	Diesel Particulate												
	SR-79 Cars (TOG)	Acetaldehyde							1.48E-06					
		Acrolein							2.96E-04					
		Benzene												1.50E-03
		1,3-Butadiene						9.72E-05						
		Ethylbenzene												
		Formaldehyde							2.79E-04					
		Hexane												
		Methanol												
		Methyl Ethyl Ketone												
		Naphthalene												
		Propylene												
		Styrene												
		Toluene												
		Xylenes												
		Total - All Sources	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.72E-05	5.76E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	**1.50E-03**

Note: Staff Scenario emission rates produced higher 8-hour chronic hazard indices, compared to Student Scenario emission rates.

Note: Health risks calculated using HARP2, Risk Assessment Standalone Tool, version 16057 (CARB, 2016).

Maximum 8-Hour Hazard Index 1.50E-03 Blood

* Key to Toxicological Endpoints

CV	Cardiovascular System	RESP	Respiratory System
CNS	Central Nervous System	SKIN	Skin irritation and/or other effects
IMMUN	Immune System	EYE	Eye irritation and/or other effects
KIDN	Kidneys	BONE	Bones and Teeth
GILV	Gastrointestinal Tract and Liver/Alimentary Tract	ENDO	Endocrine System
REPRO	Reproductive System	BLOOD	Hematological System

Table D5
Mobile Source Pollutant Concentration Worksheet
Criteria Air Pollutants

Criteria Air Pollutants						
Pollutant (a)	Source (b)	Emission Rates [1] (g/s) (c)	AERMOD Output [2] (μg/m³) (d)	Mass GLC (μg/m³) (e)	AERMOD Output [2] (μg/m³) (f)	Mass GLC (μg/m³) (g)
PM_{10}			Max 24-hour		Annual Average	
	SR-79	2.72E-02	61.4	**1.67**	10.4	**0.28**
	LST Threshold (μg/m³)			2.50		1.00
	Exceeds Threshold?			**No**		**No**
$PM_{2.5}$			Max 24-hour			
	SR-79	6.38E-03	61.4	**0.39**		
	LST Threshold (μg/m³)			2.50		
	Exceeds Threshold?			**No**		
CO			Max 1-hour		Max 8-hour	
	SR-79	3.88E-01	763.2	2.96E+02	201.7	7.82E+01
	SR-79 (ppm) [3]			**0.26**		**0.07**
	Background Level (ppm)			2.00		1.40
	Total (ppm)			**2.26**		**1.47**
	CAAQS Threshold (ppm)			20.0		9.0
	Exceeds Threshold?			**No**		**No**
NOx			Max 1-hour		Annual Average	
	SR-79	1.78E-01	763.2	1.36E+02	10.4	1.86E+00
	SR-79 (ppm) [4]			7.23E-02		9.87E-04
NO_2	SR-79 (ppm) [5]			3.83E-03		5.23E-05
	Background Level (ppm)			0.048		0.010
	Total (ppm)			**0.052**		**0.010**
	CAAQS Threshold (ppm)			0.18		0.030
	Exceeds Threshold?			**No**		**No**

[1] Emission Rates from Source Emissions Inventory (Appendix A).

[2] AERMOD Output based on unit emission rates for roadway segments (1 g/s).

[3] CO conversion factor of 8.733E-04 ppm per μg/m³ was used to convert concentrations.

[4] NOx conversion factor of 5.3157E-04 ppm per μg/m³ was used to convert concentrations.

[5] NOx to NO_2 conversion rate was derived from a report entitled Final Localized Significance Threshold Methodology (SCAQMD, 2008)

Mobile Source	Distance from Roadway to Project Site (m)	NO_X to NO_2 Conversion Factor
SR-79	18.5	0.053

Appendix

This page intentionally left blank.

Appendix B Air Quality and Greenhouse Gas Background and Modeling Data

Air Quality and Greenhouse Gas Background and Modeling Data

AIR QUALITY

Climate/Meteorology

SOUTH COAST AIR BASIN

The project site lies within the South Coast Air Basin (SoCAB), which includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The SoCAB is in a coastal plain with connecting broad valleys and low hills and is bounded by the Pacific Ocean in the southwest quadrant, with high mountains forming the remainder of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild weather pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds (SCAQMD 2005).

Temperature and Precipitation

The annual average temperature varies little throughout the SoCAB, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station nearest to the project site is the Elsinore, California Monitoring Station (ID No. 042805). The average low is reported at 36.4°F in January, and the average high is 98.1°F in July and August (WRCC 2016).

In contrast to a very steady pattern of temperature, rainfall is seasonally and annually highly variable. Almost all rain falls from November through April. Summer rainfall is normally restricted to widely scattered thundershowers near the coast, with slightly heavier shower activity in the east and over the mountains. The historical rainfall average for the project area is 12.01 inches per year (WRCC 2016).

Humidity

Although the SoCAB has a semiarid climate, the air near the earth's surface is typically moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the SoCAB by offshore winds, the "ocean effect" is dominant. Periods of heavy fog, especially along the coast, are frequent. Low clouds, often referred to as high fog, are a characteristic climatic feature. Annual average humidity is 70 percent at the coast and 57 percent in the eastern portions of the SoCAB (SCAQMD 2005).

Wind

Wind patterns across the south coastal region are characterized by westerly or southwesterly onshore winds during the day and by easterly or northeasterly breezes at night. Wind speed is somewhat greater during the dry summer months than during the rainy winter season.

Between periods of wind, periods of air stagnation may occur, both in the morning and evening hours. Air stagnation is one of the critical determinants of air quality conditions on any given day. During the winter and fall months, surface high-pressure systems over the SoCAB, combined with other meteorological conditions, can result in very strong, downslope Santa Ana winds. These winds normally continue a few days before predominant meteorological conditions are reestablished.

The mountain ranges to the east affect the transport and diffusion of pollutants by inhibiting their eastward transport. Air quality in the SoCAB generally ranges from fair to poor and is similar to air quality in most of coastal southern California. The entire region experiences heavy concentrations of air pollutants during prolonged periods of stable atmospheric conditions (SCAQMD 2005).

Inversions

In conjunction with the two characteristic wind patterns that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. These are the marine/subsidence inversion and the radiation inversion. The combination of winds and inversions are critical determinants in leading to the highly degraded air quality in summer and the generally good air quality in the winter in the project area (SCAQMD 2005).

Air Quality Regulations

The Proposed Project has the potential to release gaseous emissions of criteria pollutants and dust into the ambient air; therefore, it falls under the ambient air quality standards promulgated at the local, state, and federal levels. The project site is in the SoCAB and is subject to the rules and regulations imposed by the South Coast Air Quality Management District (SCAQMD). However, SCAQMD reports to California Air Resources board (CARB), and all criteria emissions are also governed by the California and national Ambient Air Quality Standards (AAQS). Federal, state, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the Proposed Project are summarized below.

AMBIENT AIR QUALITY STANDARDS

The Clean Air Act (CAA) was passed in 1963 by the US Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS, based on even greater health and welfare concerns.

These National AAQS and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors" most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health-based AAQS for seven air pollutants. As shown in Table 1, *Ambient Air Quality Standards for Criteria Pollutants*, these pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table 1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Ozone (O_3)[3]	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.070 ppm	0.070 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	*	0.030 ppm	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	0.075 ppm	
	24 hours	0.04 ppm	0.14 ppm	
Respirable Coarse Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 μg/m^3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 μg/m^3	150 μg/m^3	
Respirable Fine Particulate Matter ($PM_{2.5}$)[4]	Annual Arithmetic Mean	12 μg/m^3	12 μg/m^3	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 μg/m^3	

Table 1 Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard[1]	Federal Primary Standard[2]	Major Pollutant Sources
Lead (Pb)	30-Day Average	1.5 μg/m³	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Calendar Quarter	*	1.5 μg/m³	
	Rolling 3-Month Average	*	0.15 μg/m³	
Sulfates (SO_4)[5]	24 hours	25 μg/m³	*	Industrial processes.
Visibility Reducing Particles	8 hours	ExCo =0.23/km visibility of 10≥ miles	No Federal Standard	Visibility-reducing particles consist of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt.
Hydrogen Sulfide	1 hour	0.03 ppm	No Federal Standard	Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation.
Vinyl Chloride	24 hour	0.01 ppm	No Federal Standard	Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites, due to microbial breakdown of chlorinated solvents.

Source: CARB 2016a.

Notes: ppm: parts per million; μg/m³: micrograms per cubic meter

* Standard has not been established for this pollutant/duration by this entity.

1 California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than O_3, PM, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m³ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

3 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

4 On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 μg/m³ to 12.0 μg/m³. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 μg/m³, as was the annual secondary standard of 15 μg/m³. The existing 24-hour PM_{10} standards (primary and secondary) of 150 μg/m³ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

5 On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. The 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

California has also adopted a host of other regulations that reduce criteria pollutant emissions, including:

- AB 1493: Pavley Fuel Efficiency Standards
- Title 20 California Code of Regulations (CCR): Appliance Energy Efficiency Standards
- Title 24, Part 6, CCR: Building and Energy Efficiency Standards
- Title 24, Part 11, CCR: Green Building Standards Code

CRITERIA AIR POLLUTANTS

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. Air pollutants are categorized as primary or secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb) are primary air pollutants. Of these, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are "criteria air pollutants," which means that ambient air quality standards (AAQS) have been established for them. VOC and oxides of nitrogen (NO_x) are air pollutant precursors that form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and NO_2 are the principal secondary pollutants. A description of each of the primary and secondary criteria air pollutants and their known health effects is presented below.

Carbon Monoxide (CO) is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. CO is a primary criteria air pollutant. CO concentrations tend to be the highest during winter mornings with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion, engines and motor vehicles operating at slow speeds are the primary source of CO in the SoCAB. The highest ambient CO concentrations are generally found near traffic-congested corridors and intersections. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation (SCAQMD 2005; USEPA 2015a). The SoCAB is designated under the California and National AAQS as being in attainment of CO criteria levels (CARB 2015a).

Volatile Organic Compounds (VOC) are compounds composed primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of VOCs include evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. There are no ambient air quality standards established for VOCs. However, because they contribute to the formation of ozone (O_3), SCAQMD has established a significance threshold for this pollutant (SCAQMD 2005).

Nitrogen Oxides (NO_x) are a byproduct of fuel combustion and contribute to the formation of O_3, PM_{10}, and $PM_{2.5}$. The two major forms of NO_x are nitric oxide (NO) and nitrogen dioxide (NO_2). The principal form of NO_2 produced by combustion is NO, but NO reacts with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 part per million (ppm). NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure (SCAQMD 2005; USEPA 2015a). The SoCAB is designated as an attainment area for NO_2 under the National AAQS California AAQS (CARB 2015a).

Sulfur Dioxide (SO_2) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. It enters the atmosphere as a result of burning high-sulfur-content fuel oils and coal and from chemical processes at chemical plants and refineries. Gasoline and natural gas have very low sulfur content and do not release significant quantities of SO_2 (SCAQMD 2005; USEPA 2015a). When sulfur dioxide forms sulfates (SO_4) in the atmosphere, together these pollutants are referred to as sulfur oxides (SO_X). Thus, SO_2 is both a primary and secondary criteria air pollutant. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. The SoCAB is designated as attainment under the California and National AAQS (CARB 2015a).

Suspended Particulate Matter (PM_{10} and $PM_{2.5}$) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized and regulated. Inhalable coarse particles, or PM_{10}, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns (i.e., 2.5 millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind action on arid landscapes also contributes substantially to local particulate loading (i.e., fugitive dust). Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in people who are naturally sensitive or susceptible to breathing problems (SCAQMD 2005).

The US Environmental Protection Agency's (EPA) scientific review concluded that $PM_{2.5}$, which penetrates deeply into the lungs, is more likely than PM_{10} to contribute to health effects and at concentrations that extend well below those allowed by the current PM_{10} standards. These health effects include premature death and increased hospital admissions and emergency room visits (primarily the elderly and individuals with cardiopulmonary disease); increased respiratory symptoms and disease (children and individuals with cardiopulmonary disease such as asthma); decreased lung functions (particularly in children and individuals with asthma); and alterations in lung tissue and structure and in respiratory tract defense mechanisms (SCAQMD 2005). There has been emerging evidence that even smaller particulates with an aerodynamic diameter of <0.1 microns or less (i.e., ≤0.1 millionths of a meter or <0.000004 inch), known as ultrafine particulates (UFPs), have human health implications, because UFPs toxic components may initiate or facilitate biological processes that may lead to adverse effects to the heart, lungs, and other organs (SCAQMD 2013). However, the EPA or CARB have yet to adopt AAQS to regulate these particulates. Diesel particulate matter (DPM) is classified by the CARB as a carcinogen (CARB 1998). Particulate matter can also cause environmental effects such as visibility impairment,[1] environmental damage,[2] and aesthetic damage[3]

[1] $PM_{2.5}$ is the main cause of reduced visibility (haze) in parts of the United States.

(SCAQMD 2005; USEPA 2015a). The SoCAB is a nonattainment area for $PM_{2.5}$ under California and National AAQS and a nonattainment area for PM_{10} under the California AAQS (CARB 2015a).[4]

Ozone (O_3) is commonly referred to as "smog" and is a gas that is formed when VOCs and NO_x, both by-products of internal combustion engine exhaust, undergo photochemical reactions in the presence of sunlight. O_3 is a secondary criteria air pollutant. O_3 concentrations are generally highest during the summer months when direct sunlight, light winds, and warm temperatures create favorable conditions for the formation of this pollutant. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Breathing O_3 can trigger a variety of health problems, including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground-level O_3 also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. O_3 also affects sensitive vegetation and ecosystems, including forests, parks, wildlife refuges, and wilderness areas. In particular, O_3 harms sensitive vegetation during the growing season (SCAQMD 2005; USEPA 2015a). The SoCAB is designated as extreme nonattainment under the California AAQS (1-hour and 8-hour) and National AAQS (8-hour) (CARB 2015a).

Lead (Pb) concentrations decades ago exceeded the state and federal AAQS by a wide margin, but have not exceeded state or federal air quality standards at any regular monitoring station since 1982 (SCAQMD 2005). However, in 2008 the EPA and CARB adopted more strict lead standards, and special monitoring sites immediately downwind of lead sources[5] recorded every localized violations of the new state and federal standards. As a result of these localized violations, the Los Angeles County portion of the SoCAB was designated in 2010 as nonattainment under the National AAQS for lead (SCAQMD 2012; CARB 2015a). The project is not characteristic of industrial-type projects that have the potential to emit lead. Therefore, lead is not a pollutant of concern for the project.

TOXIC AIR CONTAMINANTS

The public's exposure to air pollutants classified as toxic air contaminants (TACs) is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The California Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant (HAP) pursuant to Section 112(b) of the federal Clean

---

[2] Particulate matter can be carried over long distances by wind and then settle on ground or water, making lakes and streams acidic; changing the nutrient balance in coastal waters and large river basins; depleting the nutrients in soil; damaging sensitive forests and farm crops; and affecting the diversity of ecosystems.

[3] Particulate matter can stain and damage stone and other materials, including culturally important objects such as statues and monuments.

[4] CARB approved the SCAQMD's request to redesignate the SoCAB from serious nonattainment for PM_{10} to attainment for PM_{10} under the National AAQS on March 25, 2010, because the SoCAB has not violated federal 24-hour PM_{10} standards during the period from 2004 to 2007. In June 2013, the EPA approved the State of California's request to redesignate the PM_{10} nonattainment area to attainment of the PM_{10} National AAQS, effective on July 26, 2013.

[5] Source-oriented monitors record concentrations of lead at lead-related industrial facilities in the SoCAB, which include Exide Technologies in the City of Commerce; Quemetco, Inc., in the City of Industry; Trojan Battery Company in Santa Fe Springs; and Exide Technologies in Vernon. Monitoring conducted between 2004 through 2007 identified that the Trojan Battery Company and Exide Technologies exceed the federal standards (SCAQMD 2012).

Air Act (42 United States Code §7412[b]) is a toxic air contaminant. Under state law, the California Environmental Protection Agency (Cal/EPA), acting through CARB, is authorized to identify a substance as a TAC if it determines that the substance is an air pollutant that may cause or contribute to an increase in mortality or to an increase in serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure" for sources that emit designated TACs. If there is a safe threshold for a substance (i.e., a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. To date, CARB has established formal control measures for 11 TACs, all of which are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, toxic air contaminant emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

By the last update to the TAC list in December 1999, CARB had designated 244 compounds as TACs (CARB 1999). Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

In 1998, CARB identified particulate emissions from diesel-fueled engines (diesel PM) as a TAC. Previously, the individual chemical compounds in diesel exhaust were considered TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

CARB has promulgated the following specific rules to limit TAC emissions:

- CARB Rule 2485 (13 CCR Chapter 10, Section 2485), Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling
- CARB Rule 2480 (13 CCR Chapter 10, Section 2480), Airborne Toxic Control Measure to Limit School Bus Idling and Idling at Schools
- CARB Rule 2477 (13 CCR Section 2477 and Article 8), Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets and Facilities Where TRUs Operate

In addition, to reduce exposure to TACs, CARB developed and approved the *Air Quality and Land Use Handbook: A Community Health Perspective* (2005) to provide guidance regarding the siting of sensitive land uses in the vicinity of freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. This guidance document was developed to assess compatibility and associated health risks when placing sensitive receptors near existing pollution sources. CARB's recommendations on the siting of new sensitive land uses were based on a compilation of recent studies that evaluated data on the adverse health effects from proximity to air pollution sources. The key observation in these studies is that proximity to air pollution sources substantially increases exposure and the potential for adverse health effects. There are three carcinogenic toxic air contaminants that constitute the majority of the known health risks from motor vehicle traffic, DPM from trucks, and benzene and 1,3 butadiene from passenger vehicles. CARB recommendations are based on data that show that localized air pollution exposures can be reduced by as much as 80 percent by following CARB minimum distance separations.

Multiple Airborne Toxics Exposure Study (MATES)

The Multiple Air Toxics Exposure Study (MATES) is a monitoring and evaluation study on ambient concentrations of TACs and estimated the potential health risks from air toxics in the SoCAB. In 2008, SCAQMD conducted its third update to the MATES study (MATES III). The results showed that the overall risk for excess cancer from a lifetime exposure to ambient levels of air toxics was about 1,200 in a million. The largest contributor to this risk was diesel exhaust, accounting for 84 percent of the cancer risk (SCAQMD 2008a).

SCAQMD recently released the fourth update (MATES IV). The results showed that the overall monitored risk for excess cancer from a lifetime exposure to ambient levels of air toxics decreased to approximately 418 in one million. Compared to the 2008 MATES III, monitored excess cancer risks decreased by approximately 65 percent. Approximately 90 percent of the risk is attributed to mobile sources while 10 percent is attributed to TACs from stationary sources, such as refineries, metal processing facilities, gas stations, and chrome plating facilities. The largest contributor to this risk was diesel exhaust, accounting for approximately 68 percent of the air toxics risk. Compared to MATES III, MATES IV found substantial improvement in air quality and associated decrease in air toxics exposure. As a result, the estimated basin-wide population-weighted risk decreased by approximately 57 percent compared to the analysis done for the MATES III time period (SCAQMD 2015a).

The Office of Environmental Health Hazard Assessment (OEHHA) updated the guidelines for estimating cancer risks on March 6, 2015. The new method utilizes higher estimates of cancer potency during early life exposures, which result in a higher calculation of risk. There are also differences in the assumptions on breathing rates and length of residential exposures. When combined together, SCAQMD estimates that risks for a given inhalation exposure level will be about 2.7 times higher using the proposed updated methods identified in MATES IV (e.g., 2.7 times higher than 418 in one million overall excess cancer risk) (SCAQMD 2015a).

Air Quality Management Planning

SCAQMD is the agency responsible for preparing the air quality management plan (AQMP) for the SoCAB in coordination with the Southern California Association of Governments (SCAG). Since 1979, a number of AQMPs have been prepared.

2012 AQMP

On December 7, 2012 SCAQMD adopted the 2012 AQMP (Plan), which employs the most up-to-date science and analytical tools and incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, on-road and off-road mobile sources, and area sources. The Plan also addresses several state and federal planning requirements, incorporating new scientific information, primarily in the form of updated emissions inventories, ambient measurements, and new meteorological air quality models. The Plan builds upon the approach identified in the 2007 AQMP for attainment of federal PM and ozone standards, and highlights the significant amount of reductions needed and the urgent need to engage in interagency coordinated planning to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria air pollutant standards within the timeframes allowed under the Federal CAA. The Plan demonstrates attainment of federal 24-hour $PM_{2.5}$ standard by 2014 and the federal 8-hour ozone standard by 2023. Preliminary ambient air quality data suggests that meeting the 2016 federal 24-hour $PM_{2.5}$ standards by the end of 2014 is not likely, largely due to the usually extreme drought conditions in the SoCAB (SCAQMD 2015b). The Plan includes an update to the revised EPA 8-hour ozone control plan with new commitments for short-term NO_X and VOC reductions. In addition, it also identifies emerging issues of ultrafine ($PM_{1.0}$) particulate matter and near-roadway exposure, and an analysis of energy supply and demand.

2016 Draft AQMP

The SCAQMD is in the process of updating the AQMP and released a draft of the 2016 AQMP on June 30, 2016. The 2016 AQMP addresses strategies and measures to attain the 2008 federal 8-hour ozone standard by 2031, the 2012 federal annual $PM_{2.5}$ standard by 2025, the 2006 federal 24-hour $PM_{2.5}$ standard by 2019, the 1997 federal 8-hour ozone standard by 2023, and the 1979 federal 1-hour ozone standard by year 2022. It is projected that total NO_X emissions in the SoCAB would need to be reduced to 150 tons per day (tpd) by year 2023 and to 100 tpd in year 2031 to meet the 1997 and 2008 federal 8-hour ozone standards. The strategy to meet the 1997 federal 8-hour ozone standard would also lead to attaining the 1979 federal 1-hour ozone standard by year 2022 (SCAQMD 2016a), which requires reducing NO_X emissions in the SoCAB to 250 tpd. Reducing NO_X emissions would also reduce $PM_{2.5}$ concentrations within the SoCAB. However, as the goal is to meet the 2012 federal annual $PM_{2.5}$ standard no later than year 2025, SCAQMD is seeking to reclassify the SoCAB from “moderate” to “serious” nonattainment under this federal standard. A “moderate” non-attainment would require meeting the 2012 federal standard by no later than 2021. Overall, the 2016 AQMP is composed of stationary and mobile-source emission reductions from regulatory control measures, incentive-based programs, co-benefits from climate programs, mobile-source strategies, and reductions from federal sources such as aircrafts, locomotives, and ocean-going vessels. Strategies outlined in the 2016 AQMP would be implemented in collaboration between CARB and the EPA (SCAQMD 2016a).

LEAD STATE IMPLEMENTATION PLAN

In 2008 EPA designated the Los Angeles County portion of the SoCAB nonattainment under the federal lead (Pb) classification due to the addition of source-specific monitoring under the new federal regulation. This designation was based on two source-specific monitors in Vernon and the City of Industry exceeding the new standard. The rest of the SoCAB, outside the Los Angeles County nonattainment area remains in attainment of the new standard. On May 24, 2012, CARB approved the SIP revision for the federal lead standard, which the EPA revised in 2008. Lead concentrations in this nonattainment area have been below the level of the federal standard since December 2011. The SIP revision was submitted to EPA for approval.

AREA DESIGNATIONS

The AQMP provides the framework for air quality basins to achieve attainment of the state and federal ambient air quality standards through the State Implementation Plan (SIP). Areas are classified as attainment or nonattainment areas for particular pollutants, depending on whether they meet ambient air quality standards. Severity classifications for ozone nonattainment range in magnitude from marginal, moderate, and serious to severe and extreme.

- **Unclassified:** a pollutant is designated unclassified if the data are incomplete and do not support a designation of attainment or nonattainment.
- **Attainment:** a pollutant is in attainment if the CAAQS for that pollutant was not violated at any site in the area during a three-year period.
- **Nonattainment:** a pollutant is in nonattainment if there was at least one violation of a state AAQS for that pollutant in the area.
- **Nonattainment/Transitional:** a subcategory of the nonattainment designation. An area is designated nonattainment/transitional to signify that the area is close to attaining the AAQS for that pollutant.

The attainment status for the SoCAB is shown in Table 2, *Attainment Status of Criteria Pollutants in the South Coast Air Basin*. The SoCAB is designated in attainment of the California AAQS for sulfates. The SoCAB is designated as nonattainment for lead (Los Angeles County only) under the National AAQS.

Table 2 Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
Ozone – 1-hour	Extreme Nonattainment	No Federal Standard
Ozone – 8-hour	Extreme Nonattainment	Extreme Nonattainment
PM_{10}	Serious Nonattainment	Attainment/Maintenance
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead	Attainment	Nonattainment (Los Angeles County only)[1]
All others	Attainment/Unclassified	Attainment/Unclassified

Source: CARB 2015a.
[1] In 2010, the Los Angeles portion of the SoCAB was designated nonattainment for lead under the new federal and existing state AAQS as a result of large industrial emitters. Remaining areas within the SoCAB are unclassified.

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the vicinity of the project site are best documented by measurements taken by the SCAQMD. The project site is located within Source Receptor Area (SRA) 26 – Temecula Valley. The air quality monitoring station closest to the project site is the Winchester-33700 Borel Road Monitoring Station. This station monitors O_3. Data for CO, NO_2, and PM_{10} is supplemented by Lake Elsinore-W Flint Street Monitoring Station. Data for $PM_{2.5}$ is supplemented by Riverside-Magnolia Monitoring Station. Data for SO_2 is supplemented by Riverside-Rubidoux Monitoring Station. The most current five years of data monitored at these monitoring stations are included in Table 3, *Ambient Air Quality Monitoring Summary*. The data show recurring violations of both the state and federal O_3 standards and occasional violations of the federal $PM_{2.5}$ standard. The CO, SO_2, NO_2, and PM_{10} standards have not been violated in the last five years.

Table 3 Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels during Such Violations				
	2011	2012	2013	2014	2015
Ozone (O_3)[1]					
State 1-Hour ≥ 0.09 ppm (days exceed threshold)	1	1	0	1	1
State 8-hour ≥ 0.07 ppm (days exceed threshold)	27	21	12	14	23
Federal 8-Hour > 0.075 ppm (days exceed threshold)	14	4	3	4	6
Max. 1-Hour Conc. (ppm)	0.105	0.104	0.093	0.119	0.100
Max. 8-Hour Conc. (ppm)	0.089	0.083	0.079	0.100	0.087
Carbon Monoxide (CO)[2]					
State 8-Hour > 9.0 ppm (days exceed threshold)	0	0	0	*	*
Federal 8-Hour ≥ 9.0 ppm (days exceed threshold)	0	0	0	*	*
Max. 8-Hour Conc. (ppm)	0.67	0.52	*	*	*
Nitrogen Dioxide (NO_2)[2]					
State 1-Hour ≥ 0.18 ppm (days exceed threshold)	0	0	0	0	0
Federal 1-Hour ≥ 0.100 ppm (days exceed threshold)	0	0	0	0	0
Max. 1-Hour Conc. (ppb)	50	48	46	45	47
Sulfur Dioxide (SO_2)[4]					
State 24-Hour ≥ 0.04 ppm (days exceed threshold)	0	0	*	*	*
Federal 24-Hour ≥ 0.14 ppm (days exceed threshold)	0	0	*	*	*
Max 24-Hour Conc. (ppm)	0.001	0.001	*	*	*
Coarse Particulates (PM_{10})[2]					
State 24-Hour > 50 μg/m³ (days exceed threshold)	0	0	0	0	0
Federal 24-Hour > 150 μg/m³ (days exceed threshold)	*	*	*	*	*
Max. 24-Hour Conc. (μg/m³)	99.8	65.5	112.3	86.8	90.7
Fine Particulates ($PM_{2.5}$)[3]					
Federal 24-Hour > 35 μg/m³ (days exceed threshold)	2	0	1	0	*
Max. 24-Hour Conc. (μg/m³)	51.6	30.2	53.7	30.9	*

Source: CARB 2016b.
ppm: parts per million; parts per billion, μg/m³: micrograms per cubic meter
Notes: * Data not available.
[1] Data obtained from the Winchester-33700 Borel Road Monitoring Station.
[2] Data obtained from the Lake Elsinore-W Flint Street Monitoring Station.
[3] Data obtained from the Riverside-Magnolia Monitoring Station.
[4] Data obtained from the Riverside-Rubidoux Monitoring Station.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardio-respiratory diseases.

Residential areas are also considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Schools are also considered sensitive receptors, as children are present for extended durations and engage in regular outdoor activities. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

Methodology

Projected construction-related air pollutant emissions are calculated using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2, distributed by the California Air Pollutant Control Officers Association (CAPCOA). CalEEMod compiles an emissions inventory of construction(fugitive dust, off-gas emissions, onroad emissions, and offroad emissions), area sources, indirect emissions from energy use, mobile sources, indirect emissions from waste disposal (annual only), and indirect emissions from water/wastewater (annual only) use. The calculated emissions of the project are compared to thresholds of significance for individual projects using the SCAQMD's CEQA Air Quality Analysis Guidance Handbook.

Thresholds of Significance

The analysis of the Proposed Project's air quality impacts follows the guidance and methodologies recommended in SCAQMD's *CEQA Air Quality Handbook* and the significance thresholds on SCAQMD's website.[6] CEQA allows the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. SCAQMD has established thresholds of significance for regional air quality emissions for construction activities and project operation. In addition to the daily thresholds listed above, projects are also subject to the AAQS. These are addressed though an analysis of localized CO impacts and localized significance thresholds (LSTs).

REGIONAL SIGNIFICANCE THRESHOLDS

SCAQMD has adopted regional construction and operational emissions thresholds to determine a project's cumulative impact on air quality in the SoCAB. Table 4, *SCAQMD Significance Thresholds*, lists SCAQMD's regional significance thresholds that are applicable for all projects uniformly regardless of size or scope. There is growing evidence that although ultrafine particulates contribute a very small portion of the overall atmospheric mass concentration, they represent a greater proportion of the health risk from PM. However, the EPA or CARB have not yet adopted AAQS to regulate ultrafine particulates; therefore, SCAQMD has not developed thresholds for them.

[6] SCAQMD's Air Quality Significance Thresholds are current as of March 2011 and can be found here: http://www.aqmd.gov/ceqa/hdbk.html.

Table 4 SCAQMD Significance Thresholds

Air Pollutant	Construction Phase	Operational Phase
Reactive Organic Gases (ROGs)/ Volatile Organic Compounds (VOCs)	75 lbs/day	55 lbs/day
Nitrogen Oxides (NO_X)	100 lbs/day	55 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Sulfur Oxides (SO_X)	150 lbs/day	150 lbs/day
Particulates (PM_{10})	150 lbs/day	150 lbs/day
Particulates ($PM_{2.5}$)	55 lbs/day	55 lbs/day

Source: SCAQMD 2015c.

Projects that exceed the regional significance threshold contribute to the nonattainment designation of the SoCAB. The attainment designations are based on the AAQS, which are set at levels of exposure that are determined to not result in adverse health. Exposure to fine particulate pollution and ozone causes myriad health impacts, particularly to the respiratory and cardiovascular systems:

- Linked to increased cancer risk ($PM_{2.5}$, TACs)
- Aggravates respiratory disease (O_3, $PM_{2.5}$)
- Increases bronchitis (O_3, $PM_{2.5}$)
- Causes chest discomfort, throat irritation, and increased effort to take a deep breath (O_3)
- Reduces resistance to infections and increases fatigue (O_3)
- Reduces lung growth in children ($PM_{2.5}$)
- Contributes to heart disease and heart attacks ($PM_{2.5}$)
- Contributes to premature death (O_3, $PM_{2.5}$)
- Linked to lower birth weight in newborns ($PM_{2.5}$) (SCAQMD 2015d)

Exposure to fine particulates and ozone aggravates asthma attacks and can amplify other lung ailments such as emphysema and chronic obstructive pulmonary disease. Exposure to current levels of $PM_{2.5}$ is responsible for an estimated 4,300 cardiopulmonary-related deaths per year in the SoCAB. In addition, University of Southern California scientists responsible for a landmark children's health study found that lung growth improved as air pollution declined for children aged 11 to 15 in five communities in the SoCAB (SCAQMD 2015e).

Mass emissions in Table 4 are not correlated with concentrations of air pollutants but contribute to the cumulative air quality impacts in the SoCAB. Therefore, regional emissions from a single project do not single-handedly trigger a regional health impact. SCAQMD is the primary agency responsible for ensuring the health and welfare of sensitive individuals to elevated concentrations of air quality in the SoCAB. To achieve the health-based standards established by the EPA, SCAQMD prepares an AQMP that details regional programs to attain the AAQS.

CO HOTSPOTS

Areas of vehicle congestion have the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to ambient air quality standards is typically demonstrated through an analysis of localized CO concentrations. Hot spots are typically produced at intersections, where traffic congestion is highest because vehicles queue for longer periods and are subject to reduced speeds. Typically, for an intersection to exhibit a significant CO concentration, it would operate at level of service (LOS) E or worse without improvements (Caltrans 1997). However, at the time of the 1993 Handbook, the SoCAB was designated nonattainment under the California AAQS and National AAQS for CO.

With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations in the SoCAB and in the state have steadily declined. In 2007, the SoCAB was designated in attainment for CO under both the California AAQS and National AAQS. The CO hot spot analysis conducted for the attainment by SCAQMD for busiest intersections in Los Angeles during the peak morning and afternoon periods plan did not predict a violation of CO standards. [7] As identified in SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SoCAB in previous years, prior to redesignation, were a result of unusual meteorological and topographical conditions and not a result of congestion at a particular intersection. Under existing and future vehicle emission rates, a project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (BAAQMD 2011).

LOCALIZED SIGNIFICANCE THRESHOLDS

SCAQMD developed LSTs for emissions of NO_2, CO, PM_{10}, and $PM_{2.5}$ generated at the project site (offsite mobile-source emissions are not included in the LST analysis). LSTs represent the maximum emissions at a project site that are not expected to cause or contribute to an exceedance of the most stringent federal or state AAQS and are shown in Table 5, *SCAQMD Localized Significance Thresholds*.

[7] The four intersections were: Long Beach Boulevard and Imperial Highway; Wilshire Boulevard and Veteran Avenue; Sunset Boulevard and Highland Avenue; and La Cienega Boulevard and Century Boulevard. The busiest intersection evaluated (Wilshire and Veteran) had a daily traffic volume of approximately 100,000 vehicles per day with LOS E in the morning peak hour and LOS F in the evening peak hour.

Table 5 SCAQMD Localized Significance Thresholds

Air Pollutant (Relevant AAQS)	Concentration
1-Hour CO Standard (CAAQS)	20 ppm
8-Hour CO Standard (CAAQS)	9.0 ppm
1-Hour NO_2 Standard (CAAQS)	0.18 ppm
Annual NO_2 Standard (CAAQS)	0.03 ppm
24-Hour PM_{10} Standard – Construction (SCAQMD)[1]	10.4 μg/m^3
24-Hour $PM_{2.5}$ Standard – Construction (SCAQMD)[1]	10.4 μg/m^3
24-Hour PM_{10} Standard – Operation (SCAQMD)[1]	2.5 μg/m^3
24-Hour $PM_{2.5}$ Standard – Operation (SCAQMD)[1]	2.5 μg/m^3

Source: SCAQMD 2015c.
ppm – parts per million; μg/m^3 – micrograms per cubic meter
[1] Threshold is based on SCAQMD Rule 403. Since the SoCAB is in nonattainment for PM_{10} and $PM_{2.5}$, the threshold is established as an allowable change in concentration. Therefore, background concentration is irrelevant.

To assist lead agencies, SCAQMD developed screening-level LSTs to back-calculate the mass amount (lbs. per day) of emissions generated onsite that would trigger the levels shown in Table 5 for projects under 5-acres. These "screening-level" LSTs tables are the localized significance thresholds for all projects of five acres and less; however, it can be used as screening criteria for larger projects to determine whether or not dispersion modeling may be required to compare concentrations of air pollutants generated by the project to the localized concentrations shown in Table 5.

LST analysis for construction is applicable to all projects of five acres and less; however, it can be used as screening criteria for larger projects to determine whether or not dispersion modeling may be required. In accordance with SCAQMD's LST methodology, construction LSTs are based on the acreage disturbed per day based on equipment use. The construction LSTs for the project site in SRA 26 are shown in Table 6, *SCAQMD Screening-Level Construction Localized Significance Thresholds,* for receptors within 150 feet (46 meters).

Table 6 SCAQMD Construction Localized Significance Thresholds

	Threshold (lbs/day)[1]			
Acreage Disturbed	Nitrogen Oxides (NO_X)	Carbon Monoxide (CO)	Coarse Particulates (PM_{10})	Fine Particulates ($PM_{2.5}$)
≤1.00 Acre Disturbed Per Day	196	1,044	10.63	3.83
1.31 Acres Disturbed Per Day	218	1,184	12.86	4.40
1.81 Acres Disturbed Per Day	254	1,407	16.43	5.31
3.50 Acres Disturbed Per Day	338	2,038	26.58	7.66
4.00 Acres Disturbed Per Day	362	2,221	29.51	8.32

Source: SCAQMD 2008a, Based on receptors in SRA 26.
[1] LSTs are based on receptors within 150 feet (46 meters).

Because the project is not an industrial project that has the potential to emit substantial sources of stationary emissions, operational LSTs are not an air quality impact of concern associated with the project. The operational LSTs in SRA 26 are shown in Table 7, *SCAQMD Screening-Level Operational Localized Significance Thresholds*.

Table 7 SCAQMD Screening-Level Operational Localized Significance Thresholds

Air Pollutant	Threshold (lbs/day) Operational[1]
Nitrogen Oxides (NO_X)	408
Carbon Monoxide (CO)	2,586
Coarse Particulates (PM_{10})	8.97
Fine Particulates ($PM_{2.5}$)	2.83

Source: SCAQMD 2008a, Based on receptors in SRA 26.
[1] LSTs are based on receptors within 150 feet (46 meters) for a project site size of five acre.

HEALTH RISK THRESHOLDS

Whenever a project would require use of chemical compounds that have been identified in SCAQMD Rule 1401, placed on CARB's air toxics list pursuant to AB 1807, or placed on the EPA's National Emissions Standards for Hazardous Air Pollutants, a health risk assessment is required by the SCAQMD. Table 8, *Toxic Air Contaminants Incremental Risk Thresholds*, lists the TAC incremental risk thresholds for operation of a project. The purpose of this environmental evaluation is to identify the significant effects of the Proposed Project on the environment, not the significant effects of the environment on the Proposed Project. (*California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369 (Case No. S213478)*). CEQA does not require CEQA-level environmental document to analyze the environmental effects of attracting development and people to an area. However, the environmental document must analyze the impacts of environmental hazards on future users, when a proposed project exacerbates an existing environmental hazard or condition. Residential, commercial, and office uses do not use substantial quantities of TACs and typically do not exacerbate existing hazards, so these thresholds are typically applied to new industrial projects.

Table 8 SCAQMD Toxic Air Contaminants Incremental Risk Thresholds

Maximum Incremental Cancer Risk	≥ 10 in 1 million
Hazard Index (project increment)	≥ 1.0
Cancer Burden in areas ≥ 1 in 1 million	> 0.5 excess cancer cases

Source: SCAQMD 2015c.

GREENHOUSE GAS EMISSIONS

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHG, to the atmosphere. Climate change is the variation of Earth's climate over time, whether due to natural variability or as a result of human activities. The primary source of these GHG is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHG—water vapor,[8] carbon (CO_2), methane (CH_4), and ozone (O_3)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. Other GHG identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons (IPCC 2001).[9] The major GHG are briefly described below.

- **Carbon dioxide (CO_2)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g. manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.

- **Methane (CH_4)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.

- **Nitrous oxide (N_2O)** is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

- **Fluorinated gases** are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high global-warming-potential (GWP) gases.

  - ***Chlorofluorocarbons (CFCs***) are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are also ozone-

[8] Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant, but part of the feedback loop o rather than a primary cause of change.

[9] Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. Reducing black carbon emissions globally can have immediate economic, climate, and public health benefits. California has been an international leader in reducing emissions of black carbon, with close to 95 percent control expected by 2020 due to existing programs that target reducing PM from diesel engines and burning activities (CARB 2014). However, state and national GHG inventories do not yet include black carbon due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon.

depleting gases and are therefore being replaced by other compounds that are GHGs covered under the Kyoto Protocol.

- ***Perfluorocarbons (PFCs)*** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF_4] and perfluoroethane [C_2F_6]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they have a high global warming potential.

- ***Sulfur Hexafluoride (SF6)*** is a colorless gas soluble in alcohol and ether, slightly soluble in water. SF_6 is a strong GHG used primarily in electrical transmission and distribution systems as an insulator.

- ***Hydrochlorofluorocarbons (HCFCs)*** contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs. They have been introduced as temporary replacements for CFCs and are also GHGs.

- ***Hydrofluorocarbons (HFCs)*** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances to serve many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs (IPCC 2001; USEPA 2015b).

GHGs are dependent on the lifetime or persistence of the gas molecule in the atmosphere. Some GHGs have stronger greenhouse effects than others. These are referred to as high GWP gases. The GWP of GHG emissions are shown in Table 9, *GHG Emissions and Their Relative Global Warming Potential Compared to CO_2*. The GWP is used to convert GHGs to CO_2-equivalence (CO_2e) to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. For example, under IPCC's Second Assessment Report GWP values for CH_4, a project that generates 10 metric tons (MT) of CH_4 would be equivalent to 210 MT of CO_2.[10]

[10] CO_2-equivalence is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The global warming potential of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

Table 9 GHG Emissions and Their Relative Global Warming Potential Compared to CO_2

GHGs	Second Assessment Report Atmospheric Lifetime (Years)	Fourth Assessment Report Atmospheric Lifetime (Years)	Second Assessment Report Global Warming Potential Relative to CO_2[1]	Fourth Assessment Report Global Warming Potential Relative to CO_2[1]
Carbon Dioxide (CO_2)	50 to 200	50 to 200	1	1
Methane[2] (CH_4)	12 (±3)	12	21	25
Nitrous Oxide (N_2O)	120	114	310	298
Hydrofluorocarbons:				
HFC-23	264	270	11,700	14,800
HFC-32	5.6	4.9	650	675
HFC-125	32.6	29	2,800	3,500
HFC-134a	14.6	14	1,300	1,430
HFC-143a	48.3	52	3,800	4,470
HFC-152a	1.5	1.4	140	124
HFC-227ea	36.5	34.2	2,900	3,220
HFC-236fa	209	240	6,300	9,810
HFC-4310mee	17.1	15.9	1,300	1,030
Perfluoromethane: CF_4	50,000	50,000	6,500	7,390
Perfluoroethane: C_2F_6	10,000	10,000	9,200	12,200
Perfluorobutane: C_4F_{10}	2,600	NA	7,000	8,860
Perfluoro-2-methylpentane: C_6F_{14}	3,200	NA	7,400	9,300
Sulfur Hexafluoride (SF_6)	3,200	NA	23,900	22,800

Source: IPCC 1995; IPCC 2007.

Notes: The IPCC has published updated global warming potential (GWP) values in its Fifth Assessment Report (2013) that reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO_2 (radiative forcing is the difference of energy from sunlight received by the earth and radiated back into space). However, GWP values identified in the Second Assessment Report are still used by SCAQMD to maintain consistency in GHG emissions modeling. In addition, the 2008 Scoping Plan was based on the GWP values in the Second Assessment Report.

1 Based on 100-year time horizon of the GWP of the air pollutant relative to CO_2.

2 The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

Regulatory Settings

REGULATION OF GHG EMISSIONS ON A NATIONAL LEVEL

The U.S. Environmental Protection Agency (EPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements, but allow the EPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation (USEPA 2009).

The EPA's endangerment finding covers emissions of six key GHGs—CO_2, CH_4, N_2O, hydro fluorocarbons, per fluorocarbons, and SF_6—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world (the first three are applicable to the Proposed Project).

In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 metric tons (MT) or more of CO_2 per year are required to submit an annual report.

US Mandatory Report Rule for GHGs (2009)

In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 MT or more of CO_2 per year are required to submit an annual report.

Update to Corporate Average Fuel Economy Standards (2010/2012)

The current Corporate Average Fuel Economy (CAFE) standards (for model years 2011 to 2016) incorporate stricter fuel economy requirements promulgated by the federal government and California into one uniform standard. Additionally, automakers are required to cut GHG emissions in new vehicles by roughly 25 percent by 2016 (resulting in a fleet average of 35.5 miles per gallon [mpg] by 2016). Rulemaking to adopt these new standards was completed in 2010. California agreed to allow automakers who show compliance with the national program to also be deemed in compliance with state requirements. The federal government issued new standards in 2012 for model years 2017–2025, which will require a fleet average of 54.5 mpg in 2025.

EPA Regulation of Stationary Sources under the Clean Air Act (Ongoing)

Pursuant to its authority under the CAA, the EPA has been developing regulations for new stationary sources such as power plants, refineries, and other large sources of emissions. Pursuant to the President's 2013 Climate Action Plan, the EPA will be directed to also develop regulations for existing stationary sources.

REGULATION OF GHG EMISSIONS ON A STATE LEVEL

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Executive Order S-3-05, Executive Order B-30-15, Assembly Bill 32, Senate Bill 32, and Senate Bill 375.

Executive Order S-3-05

Executive Order S-3-05, signed June 1, 2005. Executive Order S-3-05 set the following GHG reduction targets for the State:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

Assembly Bill 32

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Assembly Bill 32 (AB 32), the Global Warming Solutions Act. AB 32 was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-3-05.

CARB 2008 Scoping Plan

The final Scoping Plan was adopted by CARB on December 11, 2008. AB 32 directed CARB to adopt discrete early action measures to reduce GHG emissions and outline additional reduction measures to meet the 2020 target. In order to effectively implement the emissions cap, AB 32 directed CARB to establish a mandatory reporting system to track and monitor GHG emissions levels for large stationary sources that generate more than 25,000 MT of CO_2e per year, prepare a plan demonstrating how the 2020 deadline can be met, and develop appropriate regulations and programs to implement the plan by 2012.

The 2008 Scoping Plan identified that GHG emissions in California are anticipated to be approximately 596 $MMTCO_2e$ in 2020. In December 2007, CARB approved a 2020 emissions limit of 427 $MMTCO_2e$ (471 million tons) for the state. The 2020 target requires a total emissions reduction of 169 $MMTCO_2e$, 28.5 percent from the projected emissions of the business-as-usual (BAU) scenario for the year 2020 (i.e., 28.5 percent of 596 $MMTCO_2e$) (CARB 2008).[11]

Key elements of CARB's GHG reduction plan that may be applicable to the project include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards (adopted and cycle updates in progress).
- Achieving a mix of 33 percent for energy generation from renewable sources (anticipated by 2020).
- A California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system for large stationary sources (adopted 2011). The cap-and-trade program was expanded in 2013 to include the electricity sector, and then again in 2015 to include fuels (including natural gas and gasoline).
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets (several Sustainable Communities Strategies have been adopted).

[11] CARB defines BAU in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions but did not adopt any measures to reduce emissions. Projections for each emission-generating sector were compiled and used to estimate emissions for 2020 based on 2002–2004 emissions intensities. Under CARB's definition of BAU, new growth is assumed to have the same carbon intensities as was typical from 2002 through 2004.

- Adopting and implementing measures pursuant to state laws and policies, including California's clean car standards (amendments to the Pavley Standards adopted 2009; Advanced Clean Car standard adopted 2012), goods movement measures, and the Low Carbon Fuel Standard (LCFS) (adopted 2009).

- Creating target fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation (in progress).

Table 10, *Scoping Plan Greenhouse Gas Reduction Measures and Reductions Toward 2020 Target,* shows the proposed reductions from regulations and programs outlined in the 2008 Scoping Plan. In recognition of the critical role that local governments play in the successful implementation of AB 32, CARB is recommending GHG reduction goals of 15 percent of today's levels by 2020 to ensure that municipal and community-wide emissions match the state's reduction target.[12] Measures that local governments take to support shifts in land use patterns are anticipated to emphasize compact, low-impact growth over development in greenfields, resulting in fewer VMT (CARB 2008).

[12] The Scoping Plan references a goal for local governments to reduce community GHG emissions by 15 percent from current (interpreted as 2008) levels by 2020, but it does not rely on local GHG reduction targets established by local governments to meet the state's GHG reduction target of AB 32.

Table 10 Scoping Plan Greenhouse Gas Reduction Measures and Reductions Toward 2020 Target

Recommended Reduction Measures	Reductions Counted toward 2020 Target of 169 MMT CO_{2e}	Percentage of Statewide 2020 Target
Cap and Trade Program and Associated Measures		
California Light-Duty Vehicle GHG Standards	31.7	19%
Energy Efficiency	26.3	16%
Renewable Portfolio Standard (33 percent by 2020)	21.3	13%
Low Carbon Fuel Standard	15	9%
Regional Transportation-Related GHG Targets[1]	5	3%
Vehicle Efficiency Measures	4.5	3%
Goods Movement	3.7	2%
Million Solar Roofs	2.1	1%
Medium/Heavy Duty Vehicles	1.4	1%
High Speed Rail	1.0	1%
Industrial Measures	0.3	0%
Additional Reduction Necessary to Achieve Cap	34.4	20%
Total Cap and Trade Program Reductions	**146.7**	**87%**
Uncapped Sources/Sectors Measures		
High Global Warming Potential Gas Measures	20.2	12%
Sustainable Forests	5	3%
Industrial Measures (for sources not covered under cap and trade program)	1.1	1%
Recycling and Waste (landfill methane capture)	1	1%
Total Uncapped Sources/Sectors Reductions	**27.3**	**16%**
Total Reductions Counted toward 2020 Target	**174**	**100%**
Other Recommended Measures – Not Counted toward 2020 Target		
State Government Operations	1.0 to 2.0	1%
Local Government Operations[2]	To Be Determined[2]	NA
Green Buildings	26	15%
Recycling and Waste	9	5%
Water Sector Measures	4.8	3%
Methane Capture at Large Dairies	1	1%
Total Other Recommended Measures – Not Counted toward 2020 Target	**42.8**	**NA**

Source: CARB 2008. Note: the percentages in the right-hand column add up to more than 100 percent because the emissions reduction goal is 169 $MMTCO_2e$ and the Scoping Plan identifies 174 $MMTCO_2e$ of emissions reductions strategies.

$MMTCO_{2e}$: million metric tons of CO_{2e}

1 Reductions represent an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target. A discussion of the regional targets for the Southern California Region and local land use changes recommended within the Southern California Association of Government's (SCAG) Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS) are included later in this section.

2 According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 million metric tons of CO_{2e} (or approximately 1.2 percent of the GHG reduction target). However, these reductions were not included in the Scoping Plan reductions to achieve the 2020 target.

2014 (First) Scoping Plan Update

CARB recently completed a five-year update to the 2008 Scoping Plan, as required by AB 32. The final Update to the Scoping Plan was released in May, and CARB adopted it at the May 22, 2014, board hearing. The Update to the Scoping Plan defines CARB's climate change priorities for the next five years and lays the groundwork to reach post-2020 goals in Executive Orders S-3-05 and B-16-2012. The update includes the latest scientific findings related to climate change and its impacts, including short-lived climate pollutants. The GHG target identified in the 2008 Scoping Plan is based on IPCC's GWPs identified in the Second and Third Assessment Reports (see Table 9). IPCC's Fourth and Fifth Assessment Reports identified more recent GWP values based on the latest available science. CARB recalculated the 1990 GHG emission levels with the updated GWPs in the Fourth Assessment Report, and the 427 $MMTCO_2e$ 1990 emissions level and 2020 GHG emissions limit, established in response to AB 32, is slightly higher, at 431 $MMTCO_2e$ (CARB 2014).

The update highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals defined in the original 2008 Scoping Plan. As identified in the Update to the Scoping Plan, California is on track to meeting the goals of AB 32. However, the Update to the Scoping Plan also addresses the state's longer-term GHG goals within a post-2020 element. The post-2020 element provides a high level view of a long-term strategy for meeting the 2050 GHG goals, including a recommendation for the state to adopt a mid-term target. According to the Update to the Scoping Plan, local government reduction targets should chart a reduction trajectory that is consistent with, or exceeds, the trajectory created by statewide goals (CARB 2014).

According to the Update to the Scoping Plan, reducing emissions to 80 percent below 1990 levels will require a fundamental shift to efficient, clean energy in every sector of the economy. Progressing toward California's 2050 climate targets will require significant acceleration of GHG reduction rates. Emissions from 2020 to 2050 will have to decline several times faster than the rate needed to reach the 2020 emissions limit (CARB 2014).

Executive Order B-30-15

Executive Order B-30-15, signed April 29, 2015, sets a goal of reducing GHG emissions within the state to 40 percent of 1990 levels by year 2030. Executive Order B-30-15 also directs CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the State and requires state agencies to implement measures to meet the interim 2030 goal of Executive Order B-30-15 as well as the long-term goal for 2050 in Executive Order S-3-05. It also requires the Natural Resources Agency to conduct triennial updates the California adaption strategy, Safeguarding California, in order to ensure climate change is accounted for in State planning and investment decisions.

Senate Bill 32 and Assembly Bill 197

In September 2016, Governor Brown signed Senate Bill 32 and Assembly Bill 197 into law, making the Executive Order goal for year 2030 into a statewide mandated legislative target. AB 197 established a joint legislative committee on climate change policies and requires the CARB to prioritize direction emissions reductions rather than the market-based cap-and-trade program for large stationary, mobile, and other sources.

2030 Target Scoping Plan

The new Executive Order B-30-15 requires CARB to prepare another update to the Scoping Plan to address the 2030 target for the state. The second Scoping Plan will address the new 2030 interim target to achieve a

40 percent reduction below 1990 levels by 2030. CARB released *the 2030 Target Scoping Plan Update Concept Paper* in June 2016 that identifies potential scenarios focusing on different emissions sectors with and without the Cap-and-Trade program, which is currently in litigation (CARB 2016c). Under AB 197, CARB is directed to prioritize direct emissions control strategies, which would emphasize implementing direct emissions reductions from large stationary source emitters such as power plants and refineries and also from mobile sources. Release of the second Scoping Plan Update that carries through the potential regulations and programs to achieve the 2040 target is anticipated in 2017.

Senate Bill 1383

On September 19, 2016, the Governor signed SB 1383 to supplement the GHG reduction strategies in the Scoping Plan to consider short-lived climate pollutants, including black carbon and CH_4. Black carbon is the light-absorbing component of fine particulate matter (PM) produced during incomplete combustion of fuels. SB 1383 requires the state board, no later than January 1, 2018, to approve and begin implementing that comprehensive strategy to reduce emissions of short-lived climate pollutants to achieve a reduction in methane by 40 percent, hydrofluorocarbon gases by 40 percent, and anthropogenic black carbon by 50 percent below 2013 levels by 2030, as specified. The bill also establishes targets for reducing organic waste in landfill. In April 2016, CARB adopted the *Proposed Short-Lived Climate Pollutant Strategy*, which identifies the state's approach to reducing anthropogenic and biogenic sources of short-lived climate pollutants. Anthropogenic sources of black carbon include on- and off-road transportation, residential wood burning, fuel combustion (charbroiling), and industrial processes. According to CARB, ambient levels of black carbon in California are 90 percent lower than in the early 1960s, despite the tripling of diesel fuel use (CARB 2016d). In-use on-road rules are expected to reduce black carbon emissions from on-road sources by 80 percent between 2000 and 2020. SCAQMD is one of the air districts that requires air pollution control technologies for chain-driven broilers, which reduces particulate emissions from these charbroilers by over 80 percent (CARB 2016d). Additionally, SCAQMD Rule 445, wood-burning devices limits installation of new fireplaces in the SoCAB.

SB 375 – Regional Transportation Plan (RTP) / Sustainable Communities Strategy (SCS)

In 2008, Senate Bill 375 (SB 375), the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPOs). Southern California Association of Governments (SCAG) is the MPO for the Southern California region, which includes the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial.

Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target. SCAG's targets are an 8 percent per capita reduction from 2005 GHG emission levels by 2020 and a 13 percent per capita reduction from 2005 GHG emission levels by 2035 (CARB 2010). SB 375 requires CARB to periodically update the targets, no later than every 8 years. CARB plans to propose updated targets for consideration in 2016, with the intent to make them effective in 2018. Sustainable communities strategies (SCSs) adopted in 2018 would be subject to the updated targets (CARB 2015b).

The 2020 targets are smaller than the 2035 targets because a significant portion of the built environment in 2020 has been defined by decisions that have already been made. In general, the 2020 scenarios reflect that more time is needed for large land use and transportation infrastructure changes. Most of the reductions in the interim are anticipated to come from improving the efficiency of the region's transportation network. The targets would result in 3 $MMTCO_2e$ of reductions by 2020 and 15 $MMTCO_2e$ of reductions by 2035. Based on these reductions, the passenger vehicle target in CARB's Scoping Plan (for AB 32) would be met (CARB 2010).

CARB is currently in the process of updating the next round of targets and methodology to comply with the requirement for updates every eight years. Considerations for the next round of targets include whether to change the nature or magnitude of the emissions reduction targets for each of the MPOs, and whether the target-setting methodology should account for advances in technologies that reduce emissions. Such changes in methodology would permit cities to account for emissions reductions from advances in cleaner fuels and vehicles and not only from land use and transportation planning strategies.

SCAG's 2016-2040 RTP/SCS

SB 375 requires the MPOs to prepare a sustainable communities strategy in their regional transportation plan. For the SCAG region, the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) was adopted on April 7, 2016 (SCAG 2016) and is an update to the 2012 RTP/SCS. In general, the SCS outlines a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce vehicle miles traveled from automobiles and light duty trucks and thereby reduce GHG emissions from these sources.

The 2016-2040 RTP/SCS projects that the SCAG region will meet or exceed the passenger per capita targets set in 2010 by CARB. It is projected that VMT per capita in the region for year 2040 would be reduced by 7.4 percent with implementation of the 2016-2040 RTP/SCS compared to a no-plan year 2040 scenario. Under the 2016-2040 RTP/SCS, SCAG anticipates lowering GHG emissions 8 percent below 2005 levels by 2020, 18 percent by 2035, and 21 percent by 2040. The 18 percent reduction by 2035 over 2005 levels represents a 2 percent increase in reduction compared to the 2012 RTP/SCS projection. Overall, the SCS is meant to provide growth strategies that will achieve the aforementioned regional GHG emissions reduction targets. Land use strategies to achieve the region's targets include planning for new growth around High Quality Transit Areas and Livable Corridors, and creating Neighborhood Mobility Areas to integrate land use and transportation and plan for more active lifestyles (SCAG 2016). However, the SCS does not require that local general plans, specific plans, or zoning be consistent with SCS; instead, it provides incentives to governments and developers for consistency.

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley I standards through a waiver granted to California by the EPA. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model year 2017 through 2025 light-duty vehicles (see also the discussion on the update to the CAFE standards under *Federal Laws*, above). In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

Executive Order S-1-07

On January 18, 2007, the state set a new low carbon fuel standard (LCFS) for transportation fuels sold within the state. Executive Order S-1-07 sets a declining standard for GHG emissions measured in carbon dioxide equivalent gram per unit of fuel energy sold in California. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applies to refiners, blenders, producers, and importers of transportation fuels, and would use market-based mechanisms to allow these providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods.

Executive Order B-16-2012

On March 23, 2012, the state identified that CARB, the California Energy Commission (CEC), the Public Utilities Commission, and other relevant agencies worked with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate zero-emissions vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations). The executive order also directs the number of zero-emission vehicles in California's state vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are zero-emission by 2015 and at least 25 percent by 2020. The executive order also establishes a target for the transportation sector of reducing GHG emissions from the transportation sector 80 percent below 1990 levels.

Senate Bills 1078, 107, and 350 and Executive Order S-14-08

A major component of California's Renewable Energy Program is the renewable portfolio standard (RPS) established under Senate Bills 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. CARB has now approved an even higher goal of 33 percent by 2020. In 2011, the state legislature adopted this higher standard in SBX1-2. Executive Order S-14-08 was signed in November 2008, which expands the state's Renewable Energy Standard to

33 percent renewable power by 2020. Senate Bill 350 (de Leon), signed into law September 2015, establishes tiered increases to the RPS of 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030.[13] Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral.

SENATE BILL 350

Senate Bill 350 (de Leon), was signed into law September 2015. SB 350 establishes tiered increases to the RPS of 40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

California Building Standards Code – Building Energy Efficiency Standards

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission in June 1977 and most recently revised in 2013 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. On May 31, 2012, the CEC adopted the 2013 Building Energy Efficiency Standards, which went into effect July 1, 2014. Buildings that are constructed in accordance with the 2013 Building Energy Efficiency Standards are 25 percent (residential) to 30 percent (nonresidential) more energy efficient than the 2008 standards as a result of better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

Most recently, the CEC adopted the 2016 Building Energy Efficiency Standards. The 2016 Standards will continue to improve upon the current 2013 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. These standards will go into effect on January 1, 2017. Under the 2016 Standards, residential buildings are 28 percent more energy efficient than the 2013 Standards while non-residential buildings are 5 percent more energy efficient than the 2013 Standards (CEC 2015a).

The 2016 standards will not get us to zero net energy (ZNE). However, they do get us very close to the State's goal and make important steps toward changing residential building practices in California. The 2019 standards will take the final step to achieve ZNE for newly constructed residential buildings throughout California (CEC 2015b).

California Green Building Standards Code – CALGreen

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11, Title 24, known as "CALGreen") was adopted as part of the California Building Standards Code (Title 24, CCR). CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.[14] The

[13] SB 350 also sets a goal of increasing energy efficiency in existing buildings by 50 percent by 2030.
[14] The green building standards became mandatory in the 2010 edition of the code.

mandatory provisions of the California Green Building Code Standards became effective January 1, 2011 and were updated most recently in 2013. The building efficiency standards are enforced through the local building permit process.

2006 Appliance Efficiency Regulations

The 2006 Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608) were adopted by the California Energy Commission on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non-federally regulated appliances. Though these regulations are now often viewed as "business-as-usual," they exceed the standards imposed by all other states and they reduce GHG emissions by reducing energy demand.

Solid Waste Regulations

California's Integrated Waste Management Act of 1989 (AB 939, Public Resources Code 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

AB 341 (Chapter 476, Statutes of 2011) increased the statewide goal for waste diversion to 75 percent by 2020 and requires recycling of waste from commercial and multifamily residential land uses.

The California Solid Waste Reuse and Recycling Access Act (AB 1327, California Public Resources Code §§ 42900 et seq.) requires areas to be set aside for collecting and loading recyclable materials in development projects. The act required the California Integrated Waste Management Board to develop a model ordinance for adoption by any local agency requiring adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model or an ordinance of their own.

Section 5.408 of the 2013 California Green Building Standards Code also requires that at least 50 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

In October of 2014 Governor Brown signed AB 1826 requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste.

Water Efficiency Regulations

The 20x2020 Water Conservation Plan was issued by the Department of Water Resources (DWR) in 2010 pursuant to Senate Bill 7, which was adopted during the 7th Extraordinary Session of 2009–2010 and therefore dubbed "SBX7-7." SBX7-7 mandated urban water conservation and authorized the DWR to prepare a plan implementing urban water conservation requirements (20x2020 Water Conservation Plan). In addition, it required agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 requires urban water providers to adopt a water conservation target of 20 percent reduction in urban per capita water use by 2020 compared to 2005 baseline use.

The Water Conservation in Landscaping Act of 2006 (AB 1881) requires local agencies to adopt the updated DWR model ordinance or equivalent. AB 1881 also requires the Energy Commission, in consultation with the department, to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

REGULATION OF GHG EMISSIONS ON A COUNTY LEVEL

County of Riverside Climate Action Plan

The County of Riverside adopted Climate Action Plan (CAP) in December of 2015. The CAP addresses the County's goal to reduce emissions attributable to Riverside County to levels consistent with the target reductions of AB 32. The purpose of the CAP is to: 1) create a GHG emissions baseline from which to benchmark GHG reductions; 2) provide a plan that is consistent with and complementary to: the GHG emissions reduction efforts being conducted by the State of California through AB 32, federal government through the actions of the EPA, and the global community through the Kyoto Protocol; 3) guide the development, enhancement, and implementation of actions that reduce GHG emissions; and 4) provide a policy document with specific implementation measures meant to be considered as part of the planning process for future development projects. The CAP provides a list of specific actions that will reduce GHG emissions, giving the highest priority to actions that provide the greatest reduction in GHG emissions and benefits to the community at the least cost. The CAP also establishes a qualified reduction plan for which future development within Riverside County can tier and thereby streamline the environmental analysis necessary under CEQA.

The CAP's Appendix F indicates that the development review process procedures for evaluating GHG impacts and determining significance for CEQA purposes will be streamlined by: 1) applying an emissions level that is determined to be less than significant for small projects, and 2) utilizing the Screening Tables to mitigate project GHG emissions that exceed the threshold level. A threshold level above 3,000 $MTCO_2e$ per year will be used to identify projects that require the use of Screening Tables or a project-specific technical analysis to quantify and mitigate project emissions. Projects that garner at least 100 points from the Screening Tables will be consistent with the reduction quantities anticipated in the County's GHG Technical Report and would not require quantification of project specific GHG emissions. Consistent with CEQA Guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions. Those projects that do not garnish 100 points using the Screening Table will need to provide additional analysis to determine the significance of GHG emissions (Riverside County 2015). Development projects are required to conduct a consistency evaluation with the CAP since the CAP represents the County's plan to reduce GHG emissions consistent with the statewide GHG emissions goals of AB 32.

Thresholds of Significance

The CEQA Guidelines recommend that a lead agency consider the following when assessing the significance of impacts from GHG emissions on the environment:

1. The extent to which the project may increase (or reduce) GHG emissions as compared to the existing environmental setting;
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project;
3. The extent to which the project complies with regulations or requirements adopted to implement an adopted statewide, regional, or local plan for the reduction or mitigation of GHG emissions.[15]

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, SCAQMD has convened a GHG CEQA Significance Threshold Working Group (Working Group). Based on the last Working Group meeting (Meeting No. 15) held in September 2010, SCAQMD is proposing to adopt a tiered approach for evaluating GHG emissions for development projects where SCAQMD is not the lead agency (SCAQMD 2010):

- **Tier 1.** If a project is exempt from CEQA, project-level and cumulative GHG emissions are less than significant.
- **Tier 2.** If the project complies with a GHG emissions reduction plan or mitigation program that avoids or substantially reduces GHG emissions in the project's geographic area (i.e., city or county), project-level and cumulative GHG emissions are less than significant.
- **Tier 3.** If GHG emissions are less than the screening-level threshold, project-level and cumulative GHG emissions are less than significant.

For projects that are not exempt or where no qualifying GHG reduction plans are directly applicable, SCAQMD requires an assessment of GHG emissions. SCAQMD is proposing a screening-level threshold of 3,000 $MTCO_2e$ annually for all land use types or the following land-use-specific thresholds: 1,400 $MTCO_2e$ for commercial projects, 3,500 $MTCO_2e$ for residential projects, or 3,000 $MTCO_2e$ for mixed-use projects. These bright-line thresholds are based on a review of the Governor's Office of Planning and Research database of CEQA projects. Based on their review of 711 CEQA projects, 90 percent of CEQA projects would exceed the bright-line thresholds identified above. Therefore, projects that do not exceed the bright-

[15] The Governor's Office of Planning and Research recommendations include a requirement that such a plan must be adopted through a public review process and include specific requirements that reduce or mitigate the project's incremental contribution of GHG emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable, notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

line threshold would have a nominal, and therefore, less than cumulatively considerable impact on GHG emissions:

- **Tier 4.** If emissions exceed the screening threshold, a more detailed review of the project's GHG emissions is warranted.

The SCAQMD Working Group has identified an efficiency target for projects that exceed the screening threshold of 4.8 $MTCO_2e$ per year per service population ($MTCO_2e$/year/SP) for project-level analyses and 6.6 $MTCO_2e$/year/SP for plan level projects (e.g., program-level projects such as general plans) for the year 2020.[16] The per capita efficiency targets are based on the AB 32 GHG reduction target and 2020 GHG emissions inventory prepared for CARB's 2008 Scoping Plan.[17]

For the purpose of this project, SCAQMD's project-level thresholds of 3,000 $MTCO_2e$ and 4.8 $MTCO_2e$/year/SP are used. If projects exceed the bright line and per capita efficiency targets, GHG emissions would be considered potentially significant in the absence of mitigation measures.

Life cycle emissions are not included in this analysis because not enough information is available for the proposed project, and therefore life cycle GHG emissions would be speculative.[18] Black carbon emissions are not included in the GHG analysis because CARB does not include this pollutant in the state's AB 32 inventory and treats this short-lived climate pollutant separately.[19]

---

[16] It should be noted that the Working Group also considered efficiency targets for 2035 for the first time in this Working Group meeting.

[17] SCAQMD took the 2020 statewide GHG reduction target for land use only GHG emissions sectors and divided it by the 2020 statewide employment for the land use sectors to derive a per capita GHG efficiency metric that coincides with the GHG reduction targets of AB 32 for year 2020.

[18] Life cycle emissions include indirect emissions associated with materials manufacture. However, these indirect emissions involve numerous parties, each of which is responsible for GHG emissions of their particular activity. The California Resources Agency, in adopting the CEQA Guidelines Amendments on GHG emissions found that lifecycle analyses was not warranted for project-specific CEQA analysis in most situations, for a variety of reasons, including lack of control over some sources, and the possibility of double-counting emissions (see Final Statement of Reasons for Regulatory Action, December 2009). Because the amount of materials consumed during the operation or construction of the proposed project is not known, the origin of the raw materials purchased is not known, and manufacturing information for those raw materials are also not known, calculation of life cycle emissions would be speculative. A life-cycle analysis is not warranted (OPR 2008).

[19] Particulate matter emissions, which include black carbon, are analyzed in Section 5.2, *Air Quality*. Black carbon emissions have sharply declined due to efforts to reduce on-road and off-road vehicle emissions, especially diesel particulate matter. The State's existing air quality policies will virtually eliminate black carbon emissions from on-road diesel engines within 10 years (CARB 2016c).

BIBLIOGRAPHY

Bay Area Air Quality Management District (BAAQMD). 2011, Revised. California Environmental Quality Act Air Quality Guidelines.

California Air Pollution Control Officers Association (CAPCOA). 2013. California Emissions Estimator Model (CalEEMod). Version 2013.2.2. Prepared by: ENVIRON International Corporation and the California Air Districts.

California Air Resources Board (CARB). 1998, April 22. The Report on Diesel Exhaust. http://www.arb.ca.gov/toxics/dieseltac/de-fnds.htm.

———. 1999. California Air Resources Board (CARB). Final Staff Report: Update to the Toxic Air Contaminant List.

———. 2008, October. Climate Change Proposed Scoping Plan, a Framework for Change.

———. 2010, August. Staff Report Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375.

———. 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006, http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm.

———. 2015a, December. Area Designations Maps: State and National. http://www.arb.ca.gov/desig/adm/adm.htm.

———. 2015b, September 15. ARB Process and Schedule for SB 375 Target Update. http://www.arb.ca.gov/cc/sb375/sb375.htm.

———. 2016a, October 1. Ambient Air Quality Standards. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf.

———. 2016b. Air Pollution Data Monitoring Cards (2011, 2012, 2013, 2014 and 2015). Accessed August 8, 2016, http://www.arb.ca.gov/adam/topfour/topfour1.php.

———. 2016c, June 17. State of California, 2030 Target Scoping Plan Update Concept Paper. http://www.arb.ca.gov/cc/scopingplan/document/2030_sp_concept_paper2016.pdf.

———. 2016d, April. Proposed Short-Lived Climate Pollutant Reduction Strategy. https://www.arb.ca.gov/cc/shortlived/meetings/04112016/proposedstrategy.pdf

California Department of Transportation (Caltrans). 1997, December. Transportation Project-Level Carbon Monoxide Protocol. UCD-ITS-RR-97-21. Prepared by Institute of Transportation Studies, University of California, Davis.

California Energy Commission (CEC). 2015a, June 10. 2016 Building Energy Efficiency Standards, Adoption Hearing Presentation. http://www.energy.ca.gov/title24/2016standards/rulemaking/documents.

———.2015b. 2016 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2016_Building_Energy_Efficiency_Standards_FAQ.pdf.

Intergovernmental Panel on Climate Change (IPCC). 1995. Second Assessment Report: Climate Change 1995.

———. 2001. Third Assessment Report: Climate Change 2001. New York: Cambridge University Press.

———. 2007. Fourth Assessment Report: Climate Change 2007. New York: Cambridge University Press.

Riverside County. 2015, December. County of Riverside Climate Action Plan. http://planning.rctlma.org/Portals/0/genplan/general_plan_2016/climate_action_plan/CAP_120815.pdf?ver=2016-04-01-101221-240.

South Coast Air Quality Management District (SCAQMD). 1993. California Environmental Quality Act Air Quality Handbook.

———. 2005, May. Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. http://www.aqmd.gov/home/library/documents-support-material/planning-guidance/guidance-document.

———. 2008a, September. Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES III). http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-iii.

———. 2008a, July. Final Localized Significance Threshold Methodology. http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf.

———. 2010, September 28. Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting 15. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf.

———. 2012, May 4. Final 2012 Lead State Implementation Plan: Los Angeles County. http://www3.aqmd.gov/hb/attachments/2011-2015/2012May/2012-May4-030.pdf.

———. 2013, February. Final 2012 Air Quality Management Plan. http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan.

———. 2015a, October 3. Final Report Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES IV). http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-iv.

———. 2015b, February 6. Supplement to 24-hour PM2.5 State Implementation Plan for South Coast Air Basin. http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2015/2015-feb6-022.pdf?sfvrsn=2.

———. 2015c, March (revised). SCAQMD Air Quality Significance Thresholds. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

———. 2015d. Health Effects of Air Pollution. http://www.aqmd.gov/home/library/public-information/publications.

———. 2015e, October. "Blueprint for Clean Air: 2016 AQMP White Paper." 2016 AQMP White Papers Web Page. http://www.aqmd.gov/home/about/groups-committees/aqmp-advisory-group/2016-aqmp-white-papers.

———. 2016a, June. Draft 2016 Air Quality Management Plan. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/DRAFT2016AQMP/draft2016aqmp-full.pdf?sfvrsn=2.

Southern California Association of Governments (SCAG). 2016, April. The 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): A Plan for Mobility, Accessibility, Sustainability, and a High Quality of Life. http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf.

US Environmental Protection Agency (USEPA). 2009, December. EPA: Greenhouse Gases Threaten Public Health and the Environment. Science overwhelmingly shows greenhouse gas concentrations at unprecedented levels due to human activity. http://yosemite.epa.gov/opa/admpress.nsf/0/08D11A451131BCA585257685005BF252.

———. 2015a. Six Common Air Pollutants. http://www3.epa.gov/airquality/urbanair/.

———. 2015b. Overview of Greenhouse Gases. http://www3.epa.gov/climatechange/ghgemissions/gases.html.

Western Regional Climate Center (WRCC). 2016. Western U.S. Historical Summaries – Elsinore, California Monitoring Station (Station ID No. 042805). Accessed August 8, 2016. http://www.wrcc.dri.edu/summary/Climsmsca.html.

Appendix

This page intentionally left blank.

Appendix C1 Habitat Assessment

Habitat Assessment
Temecula Valley Charter School
APNs 476-010-059, 476-010-013, 476-010-054
Winchester, Riverside County, California

Riverside County Planning Department
Received on:
May 25, 2017

Prepared For:

Mr. Dwayne Mears
PlaceWorks
3 MacArthur Place, Suite 1100
Santa Ana, CA 92707

Prepared By:

Phillip Brylski, Ph.D
61 Acacia Tree Lane
Irvine, California 92612

and

David Bramlet
Consulting Biologist
1691 Mesa Dr. No. A-2
Newport Beach CA 92660

April 4, 2017
Revised May 24, 2017

Table of Contents

List of Figures

List of Tables

Appendices

1. INTRODUCTION

This report describes the biological resources of the proposed Temecula Valley Charter School site and examines the proposed project's consistency with the Riverside County Multi-Species Habitat Conservation Plan. The proposed school site examined consists of two parcels (APNs 476-010-059 and 476-010-013) and a new access road (the Flossie Way Right-Of-Way, ROW) in the Winchester area of unincorporated Riverside County. The areas of the two parcels are 7.40 and 7.10 acres; the Row of the Flossie Way access road covers 1.78 acres, for a total project area of 16.27acres. These acreages are based on GIS analysis of the parcels, and differ somewhat from parcel acreages in the County website. The street address of the site is 34155 Winchester Road (Highway 79), approximately 630 ft. south of Keller Road. The project site includes an access road along an existing easement for the future development of Flossie Way. This easement is located in the northern area of APN 476-010-054 and would comprise approximately 1.78 acres.

Figure 1, *Topographic Map*, shows the project site location on the Bachelor Mtn. and Winchester 7.5' USGS topographic maps (T6S R2W Section 28). The UTM coordinates for the approximate center of the site are 11S 0491121mE x 3720624mN. Figure 2, *Aerial Photo*, shows the project site on an aerial photo. The elevation of the site ranges from 1,419 to 1,473 ft. above mean sea level. Site photos are found in Appendix A.

The parcel is within criteria cell 5275 (Southwest Area Plan, French Valley-Lower Sedco Hills subunit) of the western Riverside Multi-Species Habitat Conservation Plan (MSHCP; County of Riverside 2016b). Because the project site is found within a criteria cell, this report includes a habitat assessment for species and sensitive habitats identified by the MSHCP and an MSHCP Consistency Analysis (RCA 2007a, 2007b).

2. METHODS

Literature Review

A literature review was used to determine the potential special status species and communities found on the project site and proposed road easement. The review included previous biological surveys conducted in the project vicinity (Caltrans 2007, 2010; Dodson 2015; The Planning Center 2012; and SCE and AECOM 2014).The distribution of special status plant species that may occur on the project site was obtained from the California Natural Diversity Database (CNDDB; CDFW 2016a) RareFind Data Base for the Bachelor Mtn., Winchester, Murrieta, and Romoland Quadrangles and the CNPS online rare plant inventory (CNPS 2016).Collection records of the special status species known from the project region were reviewed (Consortium 2016).Details on phenology and habitats preferences was derived from the MSHCP species accounts (Dudek 2003), published floras and checklists (Baldwin et al. 2012, Munz 1974, Roberts et al. 2004, Roberts et al. 2007), RCA monitoring reports (RCA 2011b),and critical habitat designations (USFWS 2010a, 2010b, 2012) for the federally listed species. The presence of the special status plant species was documented by a voucher collection, photo documentation, and GPS waypoints using a Garmin 60CSX GPS receiver).

Information on the special status wildlife species consisted of a review of the CNDDB Rarefind Database (CDFW 2016a), MSHCP species accounts (Dudek 2003), biological studies in the project region (AMEC 2001a, 2001b; 2007; LSA 2003; PCR 2012b, Principe 2010b), and RCA monitoring reports (RCA 2009, 2012b; RCHCA 1995).

The soils on the site were determined using the Websoils website (NCRS 2016) with further detail obtained from the soil survey for western Riverside County (Knecht 1971).

The MCHCP requirements for the parcels were obtained from the county conservation summary report (County of Riverside 2016b) and from the County GIS website (County of Riverside 2016a). The information from these websites noted that the parcel is located in Criteria Cell #5275, and information on the County survey and reporting procedures was obtained. This included a review of the requirements for a Habitat Assessment (County of Riverside 2009), MSHCP Consistency Analysis (RCA 2007a and 2007b),HANS reporting procedures (County of Riverside 2006b), and burrowing owl survey protocols (County of Riverside 2005a, 2006a).

Field Surveys

The initial botanical and sensitive plant community assessments were performed by David Bramlet on August 19, 2016. The agricultural field along SR-79 in the lower elevations of the site had been disked prior to the survey, and little vegetation was present in this area. For the rest of the site, many plants were identified from dried remains and some annual plants may have been overlooked due to the late season conditions. Focused plant surveys were not conducted because it was too late in the season to locate any of the criteria area or narrow-endemic plant species required for the review of the proposed Flossie Way access road. Under the MSHCP, focused plant surveys are not required for the two parcels that comprise the main project site.

An updated habitat assessment for Narrow Endemic and Criteria Area Plant Species was conducted in March 2017 at the western end of the Flossie Road ROW. The survey in August of 2016 found this area had been disked and it was not fully possible to determine the potential of the habitat at this locality to support NEP or CAS species at this site. A survey was conducted on March 2, 2017 for approximately five hours on a clear, calm day with temperatures ranging from 59oF to 71oF.The site examination was conducted when most plants would be identifiable; the entire area was walked and all plant species observed were recorded in field notes. A general review of the entire project site was also conducted on this date, to determine the changes in floristic composition from the August 2016 site examination.

The second survey was performed on March 10, 2017 for a period of 2.5 hours on a calm, cool day with scattered clouds. The purposed of the site visit was to document the condition of the ponded road ruts within the Flossie Way ROW. The survey area for the NEP and CAS species was also examined on foot to determine if there were any changes in floristic diversity or phenology at this locality.

To document the condition of NEP and CAS species, five reference areas were examined in the western Riverside region during March 2017.These site visits documented the existing condition of various spineflower species, the smooth tarplant, Munz's onion, Coulter's goldfields, the San Jacinto Valley saltbush, and the San Diego ambrosia.

Plant communities were mapped by recording field observations on an aerial photograph. The nomenclature for the communities generally follow Holland (1986, CDFW 2010) with the exception of annual grassland, which was named "non-native grassland" and the addition of the non-vegetative mapping units (e.g. developed). Scientific and common names generally follow the Vascular Plants of western Riverside County: An annotated checklist (Roberts et al. 2004, 2007), although some nomenclature from the Jepson Manual (Baldwin et al. 2012) and other botanical publications (Allen and Roberts 2013) is followed. The names for the special status plant species (narrow endemic, and criteria area species) follow the CNPS online Rare Plant Inventory (CNPS 2016).

The evaluation of the potential presence of vernal pools and other ephemeral wetlands was conducted using aerial photos to supplement the field observations. The historical aerial photos used were dated 6/1/2002, 10/20/2003, 1/11/2007, 5/24/2009, and 4/26/2011.

The wildlife survey and burrowing owl habitat assessment study was carried out on November 5, 2016 by Phil Brylski, Ph.D. The project site and surrounding area was surveyed for wildlife generally and for sensitive species such as the burrowing owls and their sign (burrows, pellets, feathers, scat, and litter). The weather during the survey was mild temperatures (78F to 82F), clear skies, and low winds (0-3 mph). Due to the presence of burrows on the site that could potentially be used by burrowing owls, a protocol survey was carried out in accordance with the survey guidelines for the species (County of Riverside 2006a; CDFW 2012, Burrowing Owl Consortium 1993). The methods of the burrowing owl survey are included in Section 5 of this report.

3. Environmental Setting

The proposed school site contains agricultural and other vacant lands, as well as two residences. The surrounding areas are rural residential, agricultural, or open land, with off-site rural residences to the north and west of the site. High density suburban residential developments are located approximately 1,500 ft. south of the project site.

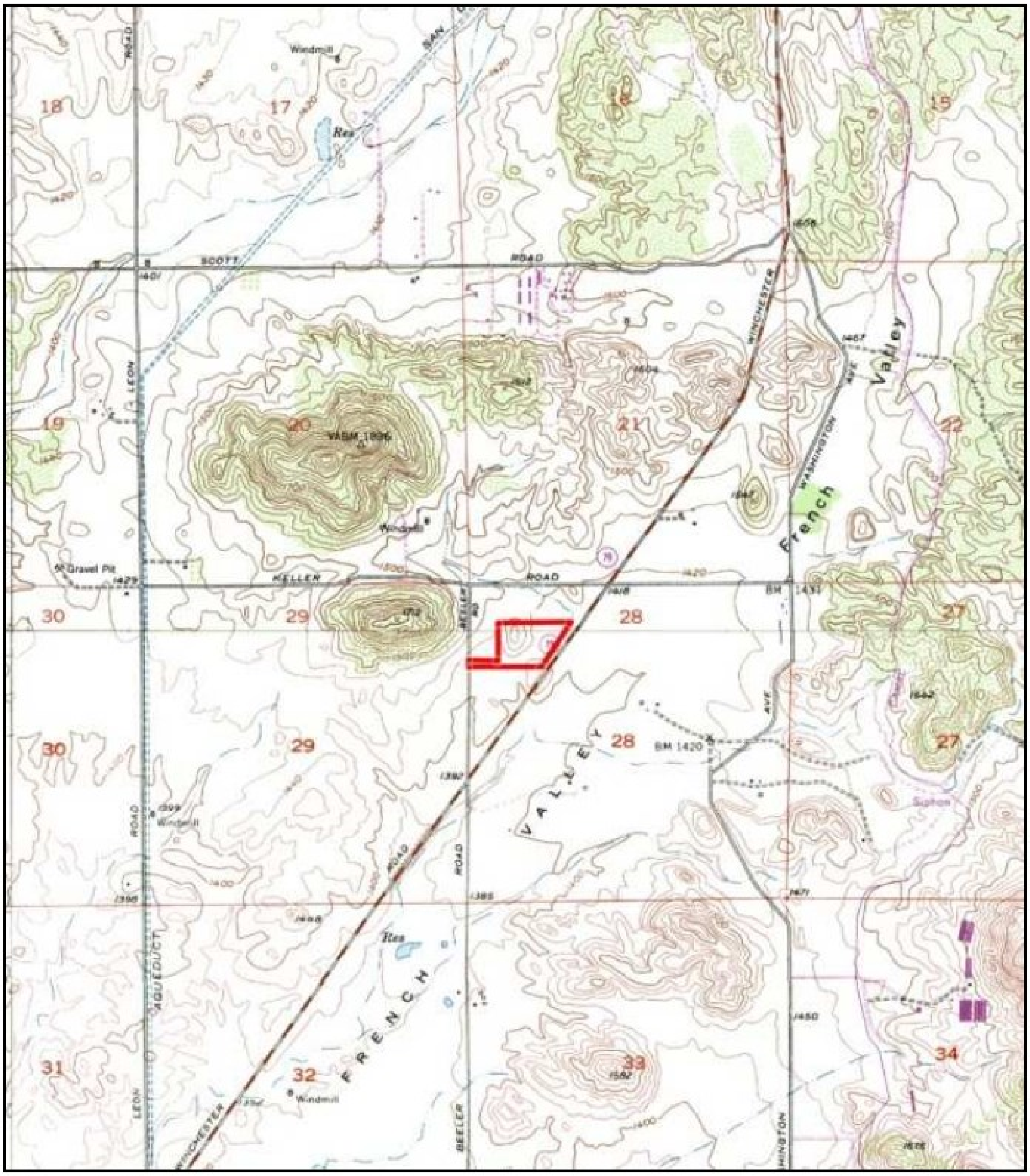


Figure 1. Topographic map

Figure 2. Aerial Photo

Topography and Hydrology

The project site contains a knoll in the western part where the residences are located, which slopes gently to the east to a flat area along SR-79 and to the west to the parcel boundary. The level lands on both sides are in agricultural use. There are no channels, erosion rills, or seasonal wetlands on the project site. There are two culverts on Highway 79 that drain storm flows from the property but there are no channels associated with these culverts. Ponding was observed in two road rut features within the Flossie Road ROW (Photo 13) on March 2, 2017, but the ruts were dry by March 8.

The precipitation in the French Valley area in 2015-2016 was approximately 9.3 inches. Although rainfall in 2015-2016 was above the average of 7.21 inches for the region, it was not a good year for many annual plant species. The rainfall for the 2016-2017 water year was approximately 15.9 inches on March 7, 2017. The temperatures during the rainy 2016-2017 season have been cooler, with some unusually high rainfall events (e.g., 1.92 inches of rain fell on February 27, 2017; Weather Currents 2017).

Soils

The soils on the project site consist of gravelly and sandy loams and one clay soil type. None of the soils are listed on the National Hydric Soils List as hydric. The soils units from the soils report (NRCS 2016) are as follows:

- Lodo gravelly loam (LoF2);
- Garretson very fine sandy loam (GaC);
- Friant fine sandy loam (FwE2); and
- Escondido fine sandy loam (EcC2).

The soils on the Flossie Way access road are as follows:

- Altmont clay (AaF),
- Escondido fine loamy sand (EcD2),
- Friant fine sandy loam (FwE2); and
- Lodo gravelly loam (LoF2).

The distribution of the soil types on the project site are shown in Figure 3, *Soils Map*.

Figure 3. Soils Map

Plant Communities

The plant communities found on the parcel include agricultural, disturbed annual grassland, Riversidian sage scrub/grassland ecotone, graded, and developed. Figure 4, *Plant Communities* shows the distribution of plant communities on the site. Appendix B lists the plant species observed. The following section describes the mapping units.

Agricultural

The eastern part of the project site is agricultural, which had been disked at the time of the initial survey and later was planted in wheat (*Triticum aestivum*). The margins of the field contain pockets of a disturbed annual grassland with ripgut brome (*Bromus diandrus*), wild oat (*Avena fatua*), red brome (*Bromus madritensis* ssp. *rubens*), schismus (*Schismus barbatus*), and foxtail barley (*Hordeum murinum* ssp. *leporinum*).Common forbs included cheeseweed (*Malva parviflora*), Russian thistle (*Salsola tragus*), common fiddleneck (*Amsinckia intermedia*), London rocket (*Sisymbrium irio*), red maids (*Calandrinia menziesii*), hare's ear cabbage (*Sisymbrium orientale*), rattlesnake weed (*Euphorbia albomarginata*), tocalote (*Centaurea melitensis*), pygmy sand weed (*Crassula connata*), white-stemmed filaree (*Erodium moschatum*), Shepherd's purse (*Capsella bursa-pastoris*), Persian knotweed (*Polygonum argyrocoleon*), hairy vetch (*Vicia villosa*), curly dock (*Rumex crispus*), and jimson weed (*Datura wrightii*).

Disturbed Annual Grassland

A disturbed annual grassland is the dominant plant community in the remaining parts of the project site. Grasses in this community include ripgut brome, foxtail barley, red brome, wild oat, rattail fescue (*Festuca myuros*), and schismus. Forbs consisted of red maids, white-stemmed filaree, common fiddleneck, miniature lupine (*Lupinus bicolor*), shiny peppergrass (*Lepidium nitidum*), bur clover (*Medicago polymorpha*), long-beaked filaree (*Erodium botrys*), summer mustard (*Hirschfeldia incana*), tocalote, London rocket, rattlesnake weed, red-stemmed filaree (*Erodium cicutarium*), dove weed (*Croton setiger*), vinegar weed (*Trichostema lanceolatum*), Russian thistle, paniculate tarplant (*Deinandra paniculata*), and jimson weed. A few shrubs including common sand aster (*Corethrogyne filaginifolia*), coastal isocoma (*Isocoma menziesii*), and interior California buckwheat (*Eriogonum fasciculatum* var. *foliolosum*) were uncommonly found in these grasslands.

Several small rocky sites on the project site had open patches dominated by Russian thistle. Other disturbed areas along Highway 79 had a grassland with patches of tocalote, telegraph weed (*Heterotheca grandiflora*), annual sunflower (*Helianthus annuus*), schismus, bur clover, Persian knotweed, grab lotus (*Acmispon micranthus*), common horseweed (*Conyza canadensis*), long-beaked filaree, summer cypress (*Kochia scoparia*), prickly lettuce (*Lactuca serriola*), dove weed, serrate-leaved saltbush (*Atriplex suberecta*), London rocket, and summer mustard.

The Flossie Road Right of Way (ROW) is a disturbed annual grassland that borders a field of planted cultivated oat (*Avena sativa*). Much of the ROW is a disturbed annual grassland where annual grasses such as foxtail barley, ripgut brome, red brome and shismus were more common than cultivated oat. Other annual plants found on the ROW include redmaids, black mustard (*Brassica nigra*), shiny pepper grass, red brome, foxtail barley, Sahara mustard (*Brassica tournefortii*), stink net (*Oncosiphon piluliferum*), Shepherd's purse, common fiddleneck, cheeseweed, bur clover, Russian thistle, scarlet pimpernel (*Anagallis arvensis*), miniature lupine, and pygmy sand weed.

Riversidian sage scrub-grassland ecotone

A few of the larger patches of interior California buckwheat on the project site were mapped as a Riversidian sage scrub/grassland ecotone. These sites had scattered shrub cover and were generally dominated by annual grasses and forbs. Other shrub species occasionally found in these ecotonal areas consisted of common sand aster, coastal isocoma, and California sagebrush (*Artemisia californica*).The sites were characterized by a cover of ripgut brome, wild oat, red brome, common fiddleneck, Russian thistle, tocalote, finger-leaved morning glory (*Calystegia macrostegia*), summer mustard, and dove weed.

Graded

The existing access road to the residences was mapped as graded. This unit consists of a hard packed earthen road and other disturbed areas that lack vegetation.

Developed

The area around the existing residences and garage was mapped as developed, which includes graded areas around the structures, a concrete basketball court, and driveways. This area includes a number of planted ornamental species including Aleppo pines (*Pinus halepensis*), Shamel ash (*Fraxinus uhdei*), olive (*Olea europea*), Silver dollar gum (*Eucalyptus polyanthemos*), pecan (*Carya illinoinensis*), and queen palms (*Syagrus romanzoffiana*).

Table 1 lists the acreages of the plant communities on the project site.

Table 1. Plant Community Areas

Plant Community	Area (acres)
Agricultural	7.33
Disturbed annual grassland	7.23
Riversidian sage scrub/annual grassland ecotone	0.10
Graded	0.36
Developed	1.24
total	**16.27**

Wildlife

The wildlife observed on the project site is typical for its developed and agricultural land uses. The birds observed on the site include the western meadowlark (*Sturnella neglecta*), Say's phoebe (*Sayornis saya*), common raven (*Corvus corax*), white-crowned sparrow (*Zonotrichia leucophrys*), and mourning dove (*Zenaida macroura*). Two mammal species observed included the California ground squirrel (*Otospermophilus beecheyi*) and Botta pocket gopher (*Thomomys bottae*). Appendix C lists the wildlife species observed on the site.

4. Special Status Species and Habitats

Special status plant species include those plants listed by the state or federal governments as endangered, threatened or rare, species that are candidates for future listing, and species determined by the California Department of Fish and Wildlife (CDFW) to meet the CEQA (Section 15380) criteria as "rare and endangered" even if they have not been officially listed by any agency (CDFW 2016b, c). The list also considers those species noted by the California Native Plant Society (CNPS 2016), by the County of Riverside as "rare or endangered" or of limited distribution and requiring consideration in CEQA or planning studies in the region (e.g., the Western Riverside County MSHCP, County of Riverside 2003a, Dudek 2003), or as species of special concern by local botanists in the region (Roberts et al. 2004, 2007).

Figure 4. Plant Communities

Communities of special interest are considered to be "depleted" habitats of special interest to the CDFW (CDFW 2010), the County of Riverside (County of Riverside 2003a), or potentially regulated by the Corps of Engineers, CDFW, Regional Water Quality Control Board or other agencies.It would also include the criteria areas of the western Riverside MSHCP, which are the potential reserve areas for this habitat conservation plan (County of Riverside 2003a).

Special Status Plant Species

Table 2 lists the Special Status plant species that have been recorded in the project area (CNDDB 2016a, Consortium 2016) and which potentially occur on the project site. Table 3 lists the plant species known from the project region but not expected to occur on the project site.

Table 2. Special Status Plant Species Potentially Occurring on the Project Site

Species	Federal/ State	CNPS/ MSHCP Other	Known or Expected Localities	Comments
Abroniavillosa var. *aurita* Chaparral sand verbena		CRPR 1B.1, NCS	Domenigoni-Diamond Valley, Winchester, Murrieta Creek, Temescal Valley, San Jacinto River, South of Hemet, Vail Lake, Gavilan Hills, Banning Bench, San Jacinto Mtns.	Found in Open sandy washes, sandy openings in coastal sage scrub. Blooms from January to September. Not anticipated on the project site.
Allium munzii Munz's onion	FT, SE	CRPR 1B.1, CS, NEPS	Paloma Valley, Lake Skinner Skunk Hollow, Paloma Valley, N. Domenigoni Hills, Temescal Valley, Gavilan Hills	Generally found in dense clay soils, but also on gabbronic substrates. Blooms from March to May. Not anticipated on the project site.
Ambrosia pumila San Diego ambrosia	FE	CRPR 1B.1, CS, NEPS	Skunk Hollow, South of Skunk Hollow, Nichols Road (Elsinore Area), Temescal Valley.	Found in annual grasslands. Blooms from April to October. Does not occur on the project site.
California macrophylla Large-leaf filaree		CRPR 1B.1, CS, ASNP, CAS	Bachelor Mtn., Gavilan Hills, Hills between Murrieta & Menifee Valley, Murrieta, Temescal Valley, Murrieta region & the Lake Elsinore region.	Found in clay soil grasslands. Blooms from March to May. Not anticipated on the project site.
Calochortus weedii var. *intermedius* Intermediate mariposa lily		CRPR 1B.2, CCS	Murrieta, French Valley, Crown Valley, Vail Lake, Corona, Santa Ana Mtns.	Found in coastal sage scrub or chaparral. Blooms from May to July. Not anticipated on the project site.
Centromadia pungens ssp. *laevis* Smooth tarplant		CRPR 1B.1, CS, ASNP, CAPS, RR/VP	French-Paloma Valleys, Murrieta Creek, Temecula Creek, Warm Springs Creek, Lake Elsinore region, San Jacinto River-Perris, Lakeview, SJWA, Upper Salt Creek, Diamond Valley, Tucalota Creek, San Jacinto Valley, Santa Ana River	Found in alkali meadows or grasslands. Also found on the margin of riparian habitats in the region. Blooms from April to September. Not anticipated on the project site.

Table 2. Special Status Plant Species Potentially Occurring on the Project Site				
Chorizanthe parryi var. *parryi* Parry's spineflower		CRPR 1B.1, CCS	French-Paloma Valleys, Lake Skinner, Sedco Hills, Menifee region, Bundy Canyon, Crown Valley, N. Domenigoni Hills, Lake Elsinore region, W. Hemet Hills, Gavilian Hills, Box Sprngs Mtn. Lakeview Mtns.	Found principally in alluvial fans and openings of coastal sage scrub. Blooms from April to June. Not anticipated on the project site.
Chorizanthe polygonoides var. *longispina* Long-spined spineflower		CRPR 1B.2, CS	Lake Skinner region, Menifee Valley, Warm Springs Creek, Murrieta region, Temecula region, Bundy Cyn. Skunk Hollow, Garner Valley, W. Hemet Area, Gavilan Hills, TemescalCyn., Alberhill, Santa Rosa Plateau	Found on clay soils or eroded loams in annual grasslands. This species is found scattered on clayish substrates throughout the Perris Basin. Blooms from April to July. Not anticipated on the project site.
Convolvulus simulans Small-flowered morning glory		CRPR 4.2, CS	Paloma Valley, Lake Skinner region, French Valley Skunk Hollow, TemescalCyn., Gavilan Hills, Vail Lake	Found on clay soils in clay grasslands, generally on heavy clays. Blooms from March to July. Observed on Flossie Rd ROW.
Deinandra paniculata Paniculate tar plant		CRPR 4.2, NCS	French-Paloma Valleys, Murrieta-Temecula-Lake Elsinore region, Menifee Valley, Perris Valley region, San Jacinto Valley, Moreno Valley, Gavilan Hills	Found in annual grasslands. Blooms from March to November. Observed on the project site.
Harpagonella palmeri Palmer's grappling hook		CRPR 4.2, CS	French Valley, Lake Skinner, Murrieta, Menifee Valley, Bundy Cyn., Temecula, Gavilan Hills, Alberhill, Skunk Hollow, TemescalCyn. W. Hemet Hills, Vail Lake	Found in clay soil grasslands. Blooms from March to May. Not anticipated on the project site.
Juglans californica California black walnut		CRPR 4.2, CS, RR/VP	French Valley, Paloma Valley Murrieta Creek, Lake Skinner region, Riverside, Santa Ana River, Moreno valley, Jurupa Hills	Found on margins of alluvial washes, margins of riparian woodland, oak woodland, and coastal sage scrub-chaparral. Blooms from March to August. Does not occur on the project site.
Lepidium virginicum var. *robinsonii* Robinson's pepper grass		CRPR 1B.2, NCS	French Valley, Lake Skinner-Crown Valley, N. Domenigoni Hills, W.Hemet Hills, Murrieta-Menifee Valley,Vail Lake, Gavilan Hills, Perris Valley, Sedco Hills, Box Springs Mtns.	Found uncommonly scattered throughout the Perris Basin, San Bernardino Basin. This peppergrass blooms from Jan. to March and can be difficult to identify after this period. Not anticipated on the project site
Microseris douglasii ssp. *platycarpha* Small-flowered microseris		CRPR 4.2, CCS	French Valley, Paloma Valley, Lake Skinner region, Menifee Valley, Warm Springs Creek, Gavilan Hills, Lake Elsinore region, W. Hemet Hills, Temescal Cyn., Perris Basin, Santa Rosa Plateau	Found on clay soil grasslands. Blooms from March to May. Not anticipated on the project site.

Table 2. Special Status Plant Species Potentially Occurring on the Project Site				
Pentachaeta aurea Golden-rayed pentachaeta		CRPR 4.2, NCS	Temecula, San Jacinto Mtns.	Found in openings of coastal sage scrub or in annual or perennial grassland habitats. Blooms from March to July. Poorly documented and anticipated to occur in grasslands and scrub habitats throughout the inland valley. Not anticipated on the project site.

Federal Designations:
FE = Listed by the Federal government as endangered.
FT = Listed by the Federal government as endangered
BLM = A BLM sensitive plant species.

State Designations:
SE =Listed as endangered by the State of California.
ST Listed by the State of California as threatened.
SR Listed by the State of California as rare

Western Riverside MSHCP
CS = Plant species covered w/in the MSHCP
CCS =Plant species conditionally covered w/in the MSHCP; coverage conditional on the plan meeting species specific objectives.
NCS =Plant species not covered w/ in the MSHCP
NEPS = Plant species on the list of Narrow endemic plant species.
ASNP=Plant species on the list of Additional Survey needs and procedures list.
RR/VP=Plant species on the Riparian/Riverine & Vernal pool list.
CAPS =Plant species included on the list of Criteria Area Species

California Native Plant Society (CNPS), Rare Plant Rank (RPR):
RPR 1A = Plants presumed extinct in California.
RPR 1B = Plants considered rare, threatened or endangered in California and elsewhere.
RPR 2 = Plants rare, threatened or endangered in California but more common elsewhere.
RPR 3 = Plants about which we need more information - A review list.
RPR 4 = Plants of limited distribution - A watch list.

CNPS Threat Code Extensions
.1 = Seriously endangered in California.
.2 = Fairly endangered in California.
.3 = Not very endangered in California.

Chaparral sand verbena (*Abronia villosa* var. *aurita*) is a perennial herb found in areas of fine sand, often on benches of alluvial habitats, but also in openings of scrub or grassland communities. In the project region the chaparral sand verbena has been recorded from the sandy wash areas of Murrieta Creek, Pechanga Creek, and Temescal Canyon. It is also known from the sandy areas of the Domenigoni-Diamond Valleys and the Winchester area. There are no records in the French Valley-Bachelor Mountain area. The chaparral sand verbena is a CRPR 1B.1 species that is not covered by the MSHCP. This species is not anticipated to occur on the project site due to the lack of fine sandy soils.

Munz's onion (*Allium munzii*) is found on clay soils from the Temescal Valley, Gavilan Plateau-Estelle Mtn., Santa Ana Mountains, and into the Perris Basin. In the study region this species is known from localities at Bachelor Mountain, the north Domenigoni Hills, near Skunk Hollow and a site on either side of Lindenberger road, and just north of Keller Road. Munz's onion is a federally threatened and a state endangered species and is covered under the MSHCP as a narrow endemic plant species. This onion occurs on deep clay soils and has been well documented in the Paloma Valley, Skunk Hollow, Bachelor Mountain, and the Domenigoni Hills.Other known localities include the Gavilan Hills, Temescal Valley, and Alberhill region. The Munz's onion is not anticipated to occur on the project site, due to the lack of deep, clay soils and the disturbed condition of the clay soil habitat.

San Diego ambrosia (*Ambrosia pumila*) is a federally listed perennial herb found in annual grasslands on floodplain terraces or the margin of ephemeral wetlands. This ambrosia is found in western Riverside and San Diego Counties, and in western Riverside the known localities are limited to the Skunk Hollow area, an area south of Skunk Hollow, the Nichols Road area, and Temecula Creek. The San Diego ambrosia is listed as federally endangered species, a California Rare Plant Rank 1B.1 species, and a covered plant species within the MSHCP. The MSHCP includes this species on the additional survey needs and procedures list as a narrow endemic plant species. In the French Valley region this species is only known from a locality south of Skunk Hollow. This species does not occur on the project site.

Large-leaved filaree (*California macrophylla*) is found on clay soils mostly in the Temescal Valley-Gavilan Hills region, Vail Lake area, and at scattered sites in the Perris Basin. In the general region this species has been documented from Bachelor Mountain, Skunk Hollow, Vail Lake, Nichols Road area, and the hills between Murrieta and Menifee Valley. The large-leaved filaree is a California Rare Plant Rank 1B.1 species and a covered species under the MSHCP. The MSHCP includes this species on the additional survey needs and procedures list, as a criteria area plant species. This species is not anticipated to occur on the project site due to the lack of deep clay soils and the disturbed condition of the clay soil habitat.

Intermediate mariposa lily (*Calochortus weedii* var. *intermedius*) is a late blooming mariposa lily found in rocky areas of Riversidian sage scrub. In western Riverside County this species has been recorded from the northeastern area of the Santa Ana Mountains (Corona area), Crown Valley, Vail Lake, and in the vicinity of the intersection of Clinton Keith Road and the I-215.The mariposa lily is a California Rare Plant Rank 1B.2 species and a conditionally covered species under the MSHCP. This mariposa lily is not anticipated to occur on the project site, due to the lack of rocky, Riversidian sage scrub at this locality.

Smooth tarplant (*Centromadia pungens* ssp. *laevis*) is broadly distributed in alkali grasslands, alkali wetlands and disturbed alkali soils within the Perris Basin, and Santa Ana River Basin. In the region this tarplant is known from Warm Springs Creek, Murrieta Creek, Lake Elsinore, Auld Valley, Menifee Valley, French-Paloma Valleys, and Temecula. This tarplant is a California Rare Plant Rank 1B.2 species and a covered species under the MSHCP. The MSHCP includes this species on the additional survey needs list as a criteria area plant species and is on the riparian/riverine/vernal pool plant species list. This species is not anticipated to occur on the project site, due to the lack of moist alkali soils.

Parry's spineflower (*Chorizanthe parryi* var. *parryi*) is a small, white-flowered, spineflower found in the openings of chaparral, sage scrub, alluvial fan sage scrub and Juniper woodland. This species is known to occur in Los Angeles, San Bernardino and Riverside Counties, principally in the alluvial fan areas along the San Gabriel and San Bernardino Mountains. In the inland valley area, the species is found in openings of Riversidian sage scrub and chaparral, usually on sandy soils. In the Inland Riverside-San Bernardino area, the species is known to occur from the Gavilan Hills to Banning-Palm Springs and from the base of the San Bernardino Mountains to Vail Lake area. In the study region it has been recorded from Sedco Hills, Murrieta, Menifee, French-Paloma Valleys, west Hemet Hills, Lake Skinner-Crown Valley, N. Domenigoni Hills, the Lakeview Mountains and Gavilan Hills. Parry's spineflower is a California Rare Plant Rank List 1B.1 species and is a conditionally covered species within the MSHCP. This spineflower is not anticipated to occur on the project site, due to the lack of open, sandy soils in Riversidian sage scrub.

Long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*) generally occurs on clay substrate, along with other clay soil species, such as the Palmer's grappling hook. However, it also located on heavy loams in open, dry sage scrub. The long-spined spineflower ranges from the inland valleys of Riverside County to San Diego County and into Baja California. In western Riverside County this species is known to occur in concentrations of clay soils including French-Paloma Valley, Bachelor Mtn.-Lake Skinner region, Bundy Canyon, Murrieta-Temecula region, Santa Rosa Plateau, Temescal Valley-Gavilan Hills, Vail Lake and the Santa Rosa Plateau. The long-spined spineflower is a California Rare Plant Rank List 1B.2 species and is a covered species under the MSHCP. The long-spined spineflower is not anticipated to occur on the project site, due to the disturbed condition of the clay soil area, lack of typical features of the preferred habitat, e.g. exposed red clay soils, and a lack of plant species typically associated with this spineflower.

Small-flowered morning glory (*Convolvulus simulans*) is restricted to clay soil areas from Central California and extending into Baja California. Currently most of the recent populations known from Inland Riverside County including Paloma Valley, Murrieta, Skunk Hollow, the Gavilan Hills (Temescal Valley), Temescal Valley, Lake Skinner County Park, Santa Rosa Plateau, and Vail Lake areas. The small-flowered morning glory is a California Rare Plant Rank 4.2 species, and is a covered species under the MSHCP. Eight individual plants were observed in the northwestern part of the Flossie Way ROW.

Paniculate tarplant (*Deinandra paniculata*) is found in cismontane Riverside, southern Orange and San Diego Counties. This species also extends into northern Baja California. The San Diego tarweed is found in grasslands and Riversidian sage scrub throughout the lower valleys of western Riverside County. In the project region this tarplant has been documented from French Valley, Paloma Valley, Domenigoni-Diamond Valley, Murrieta, Wildomar, Temecula, and other areas within the Perris basin. The paniculate tarplant is a California Rare Plant Rank 4.2 species, and is not a covered species under the MSHCP. This tarplant was documented from the southeastern edge of the property by Caltrans (2007) and was observed on the project site.

Palmer's grappling hook (*Harpagonella palmeri*) is a widely distributed, small annual species which occurs from Los Angeles County to Baja California. It generally occurs on clay slopes and burns at lower elevations. It is often associated with other clay soil species, especially the small-flowered microseris and the clay bindweed. Currently, populations are known to occur in the French Valley, Paloma Valley, Bachelor Mtn.-Lake Skinner area, Murrieta Hot Springs region, Santa Rosa Plateau, Temescal Valley-Gavilan Hills region, and the Vail Lake region. Palmer's grappling hook is a California Rare Plant Rank 4.2 species, and is a covered species within the MSHCP. This species is not anticipated to occur on the project site due to the disturbed conditions in the clay soil locality, lack of suitable conditions, e.g. open clayey habitat, and a lack of plant species typically associated with the Palmer's grappling hook.

Southern California black walnut (*Juglans californica*) is a shrub to small tree that occurs only in southern California.The center of distribution for this species appears to be in the Chino-La Puente Hills on the Los Angeles-Orange County border. Walnuts also extend along the base of the San Gabriel mountains in alluvial fan sage scrub in Los Angeles, San Bernardino and Riverside Counties. Since this species was used for disease resistance root stock for horticultural walnuts, it is often difficult to determine the origin of California walnut trees in rural and suburban areas. In western Riverside County this species is known to occur in Riverside, along the Santa Ana River, the Perris Basin, and Jurupa Hills-Reche Canyon area. It has also been documented from the San Gorgonio wash and in Millard Canyon in the Cabazon area. The California walnut is a California Rare Plant Rank 4.2 species, and is a covered species under the MSHCP. The species does not occur on the project site.

Robinson's peppergrass (*Lepidium virginicum* ssp. *robinsonii*) is an erect annual with white flowers. Dry openings in rocky coastal sage scrub are the preferred habitat for this peppergrass. This peppergrass species occurs in cismontane region of southern California, including the Channel Islands, south to northern Baja California.In western Riverside County this variety is known from: French Valley, Bachelor Mtn.-Lake Skinner region, Menifee Valley, West Hemet Hills, Domenigoni Hills, Menifee Valley, Temescal Valley-Gavilan Hills region, Box Springs Mtns., Corona, and Vail Lake region. Robinson's peppergrass is a California Rare Plant Rank 4.3 species and is not a covered species under the MSHCP. This species would not be anticipated to occur on the project site, due to the lack of sandy soils within Riversidian sage scrub.

Small-flowered microseris (*Microseris douglasii* ssp. *platycarpha*) is restricted to clay soils and has a limited distribution in southern California. In the region this species is known from French-Paloma Valley, Lake Skinner (Bachelor Mtn.), Gavilan Hills (Temescal Canyon), Lake Elsinore region (Alberhill), Santa Rosa Plateau, Big Oak Mountain, and Vail Lake. This microseris species is a California Rare Plant Rank 4.2 species and is a conditionally covered species under the MSHCP. This species is not anticipated to occur on the project site, due to the disturbed conditions in the clay soil locality, lack of suitable conditions, e.g. open clayey habitat, and a lack of plant species typically associated with this microseris species.

Golden-rayed pentachaeta (*Pentachaeta aurea*) is a small yellow flowered annual that is restricted to southern California, extending into Baja California. This early blooming annual is found in openings of coastal sage scrub, or grasslands and extends into mid-elevational chaparral and lower montane coniferous forest.In Riverside County this species has been recorded from Temecula, 7 miles east of Temecula along DePortola Road, Idlyllwild, Tahquitz meadow, Thomas Mountain, Garner Valley and Whitewater. This pentachaeta is a California Rare Plant Rank 4.2 species and is not a covered species under the MSHCP. This species would not be anticipated to occur on the project site, due to the lack of suitable habitat, current levels of disturbance, and a lack of documentation of the occurrence of this species in the French Valley area.

Table 3.Plant Species of Special Interest Known to Occurin the Region, but not Anticipated in the Vicinity of the Project Site

Species	Federal/ State	CNPS/MSHCP/ Other	Known or Expected Localities	Comments
Allium marvinii Marvin's onion		CRPR 1B.1, CS NEPS	Santa Rosa Plateau, Elsinore Peak, Vail Lake, San Jacinto Mtns, Yucaipa, Calimesa, Potrero Reserve, Banning (historic)	Found on clayish soils in openings of scrub or grassland communities. Formerly consisted restricted to the Yucaipa-Banning-Potrero areas. A recent revision of this species has expanded the range south in western Riverside and San Diego Counties.
Atriplex davidsonii Davidson's saltscale		CRPR 1B.2, CS, ASNP, CAPS,	San Jacinto Wildlife Area, San Jacinto River, Upper Salt Creek, Nichols Road	Found in alkali grasslands, alkali playa habitats.The Jepson manual identifies this material as *A. coulteri*, although these plants appear to be distinct from the coastal populations of *A. coulteri*.
Atriplex parishii Parish's brittlescale		CRPR 1B.1, CS, ASNP, CAPS	Upper Salt Creek, Winchester	Found in alkali grasslands. Also known from extant populations in San Diego County, and other historic localities along the desert margins.
Brodiaea filifolia Thread-leaved brodiaea	FT, CE	CRPR 1B.1, CS, ASNP, CAS, RR/VP	San Jacinto River, SJWA, Upper Salt Creek, Santa Rosa Plateau	Found in clay or silty clay soils in grassland habitats.
Calochortus plummerae Plummer's mariposa lily		CRPR 1B.2, CCS	Lake Skinner, Jurupa Hills, Box Springs Mtns. W. Hemet Hills, Foothills of the San Jacinto Mtns	Found in coastal sage scrub or chaparral, including alluvial fan areas.
Crypthantha wigginisi Wiggin's cryptantha		CRPR 1B.1, NCS	Temecula (Skunk Hollow), Carlsbad	Found on open gabbro soils on the margins of Riversidian sage scrub.
Dudleya multicaulis Many-stemmed dudleya		CRPR 1B.2,CS, NEPS	Gavilan Hills, Alberhill, La Sierra Hills, Temescal Canyon, SA Mtns. Serrano Spring	Found in clay soils or sandstone outcrops in sage scrub or native grasslands.
Hordeum inercedens Vernal barley		CRPR 3.2,CS, RR/VP	French Valley, San Jacinto River, SJWA, Upper Salt Creek, Lake Elsinore	Found in alkali wetlands, vernal pools, alkali grasslands.

Table 3.Plant Species of Special Interest Known to Occurin the Region, but not Anticipated in the Vicinity of the Project Site				
Lasthenia glabrata ssp. *coulteri* Coulter's goldfields		CRPR 1B.1, CS, ASNP,CAPS, RR/VP	Temecula, Upper Salt Creek, San Jacinto River, SJWA, San Jacinto, Nichols Road,Riverside, San Jacinto Mtns.	Found in alkali wetlands.
Mimulus diffusus Palomar monkey flower		CRPR 4.2, CS	Lake Skinner, San Jacinto Mtns, Bautista Cyn.	Found in the understory or openings of Riversidian sage scrub or chaparral.
Myosurus minimus ssp. *apus* Little mousetail		CRPR 3.1, CS, ASNP, CAPS, RR/VP	Menifee, Murrieta Creek area, Elsinore,Upper Salt Creek, TemescalCyn., Santa Rosa Plateau	Found in vernal pools, ephemeral wetlands
Navarretia fossalis Spreading navarretia	FT	CRPR 1B.1, CS, ASNP, NEPS, RR/VP	Menifee Valley,Paloma Valley, Murrieta, Wildomar Upper Salt Creek, San Jacinto River, SJWA,	Found in vernal pools, ephemeral wetlands.
Orcuttia californica California orcuttgrass	FE, CE	CRPR 1B.1, CS, NEPS, RR/VP	Menifee Valley, Wildomar, Skunk Hollow, Santa Rosa Plateau, Upper Salt Creek	Found in vernal pools
Quercus engelmani Engelmann's oak		CRPR 4.2, CS	Sedco Hills, Temecula, Santa Rosa Plateau, Gavilan Hills, Lake Skinner region, Murrieta region	Oak woodlands.
Trichochoronis wrightii Wright's trichochoronis		CRPR 2B.1, CS, NEPS	San Jacinto River.	Found in alkali wetlands.
See Table 2 for description of abbreviations.				

Rare Plant Survey Results

The initial survey found approximately 138 paniculate tarplant in the disturbed annual grasslands on the project site and in the Flossie Way access road. The locations of the paniculate tarplant on the project site are shown in Figure 5, *Biological Features*. The March 2017 field survey found eight small-flowered morning glory plants in the northwestern part of the Flossie Way ROW. No other special status plant species were observed or would be anticipated to occur on the project site and access road.

Special Status Wildlife Species

Special status wildlife are species that have been given special recognition by federal, state, or local conservation agencies and organizations due to limited, declining, or threatened population sizes and those species recognized by local and regional resource agencies as sensitive. Table 4 lists the animal special status species that have the potential to occur in the project area.

Table 4. Special Status Animal Species Known From Project Region

Species Name	Status*	Habitat Preference	MSHCP	Potential to Occur on Project Site
Invertebrates				
Riverside fairy shrimp	FE	Restricted to a few vernal pools in	Covered	No suitable habitat

Table 4. Special Status Animal Species Known From Project Region				
Species Name	**Status***	**Habitat Preference**	**MSHCP**	**Potential to Occur on Project Site**
Streptocephalus wootoni		southwestern Riverside, Orange, and San Diego counties.		on the main project site. Two road ruts located in the Flossie Way ROW were inundated for 8 days in March 2017, which are not considered sufficient for reproduction to occur.
Branchinecta lynchi vernal pool fairy shrimp	FT	Occurs mostly in vernal pools but also found other natural and artificial seasonal wetland habitats.	Covered	Same as for Riverside fairy shrimp
Quino checkerspot butterfly		Open areas within coastal sage scrub or chaparral below 5,000 feet elevation where food plants (*Plantago erecta* and/or *Orthocarpus purpurascens*) are present.	Covered	No potential due to lack of suitable habitat.
Amphibians				
Western spadefoot *Spea hammondii*	CSC	Open areas with sandy or gravelly soils, in a variety of habitats including grasslands, chaparral, and sandy washes. Shallow pools in these habitats are necessary for reproduction. Breeds in ponds, streams, and rain pools.	Covered	Known from project vicinity but low potential to occur onsite due to lack of suitable habitat.
Reptiles				
Orange-throated whiptail *Aspidoscelis hyperythrus*	CSC	Prefers coastal sage scrub and woodland habitats with sandy openings. Known from project vicinity (CNDDB).	Covered	Known from project vicinity but low potential to occur onsite due to lack of suitable habitat.
Coastal western whiptail (*Aspidoscelis tigris stejnegeri*)	CSC	Occurs in range of habitats, including ruderal road edges, agricultural margins, low, sparse grassland, and mature coastal sage scrub, chaparral, and big sagebrush scrub.	Covered	Moderate potential to occur on project site.
Northern red-diamond rattlesnake *Crotalus ruber ruber*	CSC	Arid scrub (including coastal sage scrub), chaparral, woodlands, and cultivated areas, often with large rocks or boulders.	Covered	Low potential due to lack of suitable habitat.
San Diego coast horned lizard *Phrynosoma coronatum blainvillei*	CSC	Occurs in variety of habitats including coastal sage, grassland, chaparral, oak woodland, and riparian woodland with loose sandy soils and abundant native ants or other insects.	Covered	Known from project vicinity, low potential to occur onsite due to disturbed habitat.
Birds				
Cooper's hawk *Accipiter cooperii*	CSC (nesting	Occurs in various woodland habitats, including riparian.	Covered	Moderate potential to forage on project

Table 4. Special Status Animal Species Known From Project Region				
Species Name	**Status***	**Habitat Preference**	**MSHCP**	**Potential to Occur on Project Site**
	only)			site, but no nests observed in ornamental trees on the site.
Southern California rufous-crowned sparrow *Aimophila ruficeps canescens*	CSC	Occurs in sparsely vegetated scrubland on hillsides and canyons, preferring coastal sage scrub dominated by California sagebrush (*Artemisia californica*) and grassy successional growth.	Covered	Sparse shrubs on project site provide low potential for nesting.
Bell's sage sparrow *Artemisiospiza belli belli*	CSC	Occurs in coastal sage scrub and chaparral, preferably semi-open with shrubs 1–2 m high.	Covered	No potential to occur on project site.
Burrowing owl *Athene cunicularia*	CSC	Open grassland, fallow fields, sparsely vegetated desert scrub, and edges of disturbed lands, where soil is friable for nesting burrows.	Covered	Suitable habitat occurs onsite. California ground squirrel burrows occur on site, but no burrowing owls or their sign observed.
California horned lark *Eremophila alpestris actia*	CSC	Occurs in a variety of open habitats, and in southern California breeds mainly in open fields, grasslands, and rangelands.	Covered	Low potential for nesting onsite due to discing of lowland grasslands.
Loggerhead shrike *Lanius ludovicianus*	CSC (nesting)	Occurs in grassland, open sage scrub, chaparral, and desert scrub. Species apparently has declined dramatically in coastal southern California in recent years.	Covered	Moderate potential for nesting in ornamental trees on project site, but nests not observed.
Coastal California gnatcatcher *Polioptila californica californica*	FT CSC	Occurs primarily in coastal sage scrub habitat, but also use chaparral, grassland, and riparian habitats where they occur in proximity to sage scrub.	Covered	No potential due to absence of suitable habitat. The coastal sage scrub habitat on project site is sparse and degraded.
Mammals				
San Diego black-tailed jackrabbit *Lepus californicus bennetti*	CSC	Occurs in a variety of habitats , including sage scrubs, chaparral, agricultural lands and other disturbed habitats, but prefers open grassland.	Covered	Moderate potential to occur onsite, but not observed during field survey.
Los Angeles pocket mouse *Perognathus longimembris brevinasus*	CSC	Inhabits coastal sage scrub and alluvial fan sage scrub habitats.	Covered	Low potential to occur onsite due to disturbed habitat conditions.
Northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	CSC	Occurs mainly in sage scrub, chaparral, and grassland habitats.	Covered	High potential to occur onsite.
Stephen's kangaroo rat	FE ST	Occurs in open grassland and sparse coastal sage scrub habitats on	Covered by SKR HCP	No suitable habitat onsite.

Table 4. Special Status Animal Species Known From Project Region				
Species Name	**Status***	**Habitat Preference**	**MSHCP**	**Potential to Occur on Project Site**
Dipodomys stephensi		friable well-drained soils.		
San Diego desert woodrat *Neotoma bryanti intermedia*	CSC	Occurs in scrub and desert habitats, usually in association with rock outcroppings, boulders, cacti, or areas of dense undergrowth.	Covered	Low potential to occur onsite due to sparse shrub and rock cover.
Southern grasshopper mouse *Onychomys torridus ramona*	CSC	Occurs in flat, sandy, valley floor habitats, in range of scrub and grassland habitats.	Covered	Low potential to occur onsite.
Federal FE Federally Endangered FT Federally Threatened FPT Federally Proposed Threatened FSC (=BCC) Federal Species of Concern BLM S Sensitive species		State SE State Endangered ST State Threatened	State Department of Fish and Wildlife (CDFW) CSC California Species of Concern CFP Species California Fully-Protected SA Special Animal	

Figure 5.Biological features. (RR, road ruts 1 &2; green circles: paniculate tarplant; red and blue squares: burrows with potential for use by burrowing owls, mapped during November 2016 and March 2017, respectively.)

Habitat Assessment for Sensitive Wildlife

Fairy Shrimp

Two listed species of fairy shrimp are known from the project region: the vernal pool fairy shrimp (*Branchinecta lynchi*), a federally threatened species, and the Riverside fairy shrimp (*Streptocephalus woottoni*), a federally endangered species. No vernal pools or seasonal wetlands were observed during the 2016 surveys of the site and Flossie Rd ROW. The criteria for seasonal wetlands and other ponded features to be considered potential fairy shrimp habitat was based on the following: (1) the feature is inundated to at least

3cm; and (2) the ponded feature should be inundated for a sufficient duration for a listed large branchiopod to complete its lifecycle (USFWS 2015).

During the survey for Narrow Endemic Plant Species on March 2, 2017, ponding was observed in two road rut features within the Flossie Road ROW (Photo 13). Figure 5, *Biological Features*, shows the locations of these road ruts. Rut #1 was located 300 ft. from Pourry Road and 35 ft. south of the northern boundary of the parcel, and on March 2, 2017 measured approximately 28 ft. in length, 1 ft. wide, and 6.8 cm deep. Rut #2 was located 890 ft. east of Pourry Rd. and 40 ft. south of the parcel boundary, and was ponded for 6 ft. in length, 8 inches wide, and 1.3 cm. deep. Only one of the tracks in the second rut was ponded, and the ponding extended for a length of 9 ft., 9 inches wide, and 3.8 cm deep.

The ponded road ruts were assessed for meeting the inundation criteria for fairy shrimp habitat (USFWS 2015). It is likely that these road ruts filled on February 27, 207 during an unusual rain event (Weather Currents 2017). The initial observations were conducted three days following that event (March 2, 2017). The road ruts within the Flossie Rd ROW were dry within 10 days of when the road ruts were assumed to have ponded (observed on March 10, 2017) and eight days following the first survey. These road ruts appeared to have actually dried within eight days, as observed by the wildlife biologist. Therefore, these road ruts would not be considered to have ponded for a sufficient duration to provide suitable habitat for listed fairy shrimp species. No ponding was observed on the two parcels that form the project site. These recent survey guidelines note a seven or ten day period for sampling period, which is assumed to represent the life cycle of some fairy shrimp species (USFWS 2015). However, the Riverside fairy shrimp cysts typically require at least seven to twenty one days to hatch and some eight weeks to mature (USFWS 2012b), while the vernal pool fairy shrimp requires some 18-147 days to mature (USFWS 2007, Caltrans 2007). Other recent studies (AMEC 2012) have used an eight day duration period as the criteria for a suitable period of duration for these seasonal wetlands.

Quino Checkerspot Butterfly

The Quino checkerspot butterfly occurs in chaparral, cismontane woodland, coastal scrub, and native and introduced grasslands. Larval food plants include dwarf plantain(*Plantago erecta*), *P. patagonica*, white snap dragon (*Antirrhinum coulterianum*), bird'sbeak(*Cordylanthus rigidus*), and owl's clover (*Castilleja exserta*). Nectar plants consist mainly of small annuals such as *Lasthenia* spp., *Cryptantha* ssp., *Gilia* ssp., *Linanthus dianthiflora*, *Salvia columbariae*, *Lotus* spp., and *Eriodictyon* spp. There is a CNDDB record (CDFW 2016) for this species approximately 3.65 miles north/northwest of the project site from 1997. The project site does not contain any of the host plant or nectar sources that are used by this species, and there is no potential for the species to occur there.

Burrowing Owl

See Chapter 5.

Special Status Communities

The project site lacks any special status habitats known to occur in the region.

Riversidian sage scrub. The Riversidian sage scrub-grassland ecotone found on the project site would not be considered a special status community due to the very low shrub cover found in this grassland.

Jurisdictional Waters and Wetlands. The project site does not contain riparian habitat, open drainages, erosional channels or other features that could contain plant species associated with riparian habitats. A blue-line channel is found on the property that adjoins the site to the north. The Highway 79 Natural Environmental Study (Caltrans 2004) indicates that this blue-line channel extends into the extreme northeastern tip of the project site. However, no channel was observed in this area during the 2016 field survey. Currently, it appears that the channel has been filled in on the adjacent property and only overland flows currently occur on the project site.

Ephemeral Wetlands and Vernal Pools. Seasonal wetlands, including vernal pools, are communities that could support special status plant or animal species. No seasonal wetlands were observed on the two parcels that form the project site. Two road rut features were noted to be ponded on March 2, 2017 within the Right of Way (ROW) of Flossie Road (Photo 13). However, these features were only ponded for eight days, and this would not be sufficient for these road ruts to be considered seasonal wetlands or habitat for listed fairy shrimp. In addition, seasonal wetlands were not noted in historical Google Earth aerial photographs reviewed for this study.

Wildlife Movement Corridors

Wildlife corridors link areas of suitable habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. Corridors link different populations of a species and mitigate the effects of habitat fragmentation by 1) allowing animals to move between remaining habitats (which allows replenishment of depleted populations and promotes genetic diversity); 2) providing escape routes from fire, predators, and human disturbances that put populations or local species at risk; and 3) serving as travel routes for individuals moving within their home ranges for food, water, mates, and shelter. Wildlife movement activities usually fall into one of three movement categories: dispersal, seasonal migration, or movements related to home range activities. Large open spaces will generally support a diverse wildlife community representing all types of movement. Wildlife movement may range from non-migratory movement of amphibians, reptiles, and some birds on a local level to the many-square-mile home ranges of large mammals moving at a regional level.

The project site is located in a rural residential and agricultural area of French Valley. The immediate neighborhood consists of rural residences and farmland. Extensive high density residential development occurs approximately 1,400 feet to the south. The open areas of Bachelor Mtn and the foothills around Diamond Lake Reservoir occur as close as one mile east of the project site. The project site is largely vacant, with two residences and plant communities dominated by grassland and agricultural lands with no riparian habitats. Winchester Ave (SR-79) borders the project site to the east. There are two culverts beneath Highway 79 but there are no channels associated with these culverts.

Landscape features in rural landscapes that support important wildlife movement functions include aquatic and riparian habitats, and ridgelines, particularly when they are in proximity to a known wildlife movement corridor. None of these features occur on the project site or adjoining areas. The project site is expected to support movement by coyotes and skunks and other local wildlife as a result of normal home range movements, possibly including some wildlife use of the culverts beneath SR-79 along the eastern project border. However, the project site does not contain a wildlife corridor or significantly contribute to wildlife movement.

A regionally important wildlife corridor identified in the MSHCP occurs in the project region: Proposed Constrained Linkage 18 is a narrow strip of riparian habitat along an unnamed drainage that links Paloma Valley (southwest of the project site) and the Bachelor Mountain area (east of the project site across SR-79). This linkage is approximately 1,400 feet south of the project site. The southern part of the linkage is adjoined by high density residential development. The MSHCP planning species for this linkage area are bobcat and Los Angeles pocket mouse.

5. BURROWING OWL SURVEY

The western burrowing owl is a ground-nesting owl that inhabits grassland habitats, often in areas that have been disturbed as a result of agriculture and suburban development. They frequently use burrows excavated by the California ground squirrel (*Otospermophilus beecheyi*) and use pipes and other natural and non-natural cavities at or below ground level. The entrances to burrows are often indicated by the presence of whitewash and other sign (scat, feathers, and litter). Burrowing owls require open fields with adequate food supply for foraging habitat, low vegetative cover to allow owls to watch for predators, and adequate roosting sites. These owls can often be seen perched or standing by their burrow or hunting insects, rodents, amphibians, or small birds in open fields. Nesting season is from February through August, with most pairs usually fledging 4 or 5 young. After the nesting season, most owls in California remain throughout the winter as year-round residents and owls from others areas augment resident California populations. Burrowing owls are susceptible to predators that can access their nest chamber, such as foxes, coyotes, skunks, raccoons, and snakes, and are also preyed upon by various other raptor species, such as hawks, eagles, and other species of owls.

The CNDDB (CDFW 2016) contains records of nesting burrowing owls in the project vicinity. A habitat assessment for burrowing owls on the project site identified potential burrows that could be used by burrowing owls. Burrows constructed by California ground squirrels were found on the project site. No western burrowing owls were observed or otherwise detected onsite or in adjoining areas during the survey. Based on the occurrence of potentially suitable burrowing owl habitat on the project site, a protocol survey was carried out in March 2017.

Methods

Literature Review. Prior to the field survey, the literature was reviewed for records of burrowing owl and other sensitive wildlife species on the project site and its vicinity. The literature included the California Natural Diversity Database (CDFW 2016), the Riverside County Multiple Species Habitat Conservation Plan (County of Riverside 2003), and population information on burrowing owls summarized in Center for Biological Diversity (2003).

Field Surveys. The project site and surrounding areas were surveyed for burrowing owls and their sign (burrows, pellets, feathers, scat, and litter) in accordance with the County's burrowing owl survey instructions (County of Riverside 2006). A habitat assessment carried out on November 5, 2016 by Phil Brylski, Ph.D found that all of the habitat on the project site is potentially suitable for burrowing owls. No western burrowing owls were observed or otherwise detected onsite or in adjoining areas during the habitat assessment but eight burrows constructed by California ground squirrels on the project site that could be used by burrowing owls for refuge or nesting were mapped. The foot-surveys included the project site and the adjoining agricultural field to the south of the project site. The fenced residences west and north of the project site, and the agricultural fields east of SR-79 were surveyed by visual inspection using binoculars. Potential burrowing owl burrows were mapped using a GPA (Garmin, 60CSx; accuracy +/- 3 meters).

A focused burrowing owl survey was carried out on five separate days (March 7-10, March 30, 2017) under mild weather conditions suitable for the survey (Table 5). The site received 100% survey coverage by systematically walking the project site. The distance between transect center lines was no more than 30 meters (100 feet). A buffer area that extended 500 feet around the site borders was also surveyed. Parts of the buffer that are private property were surveyed using binoculars from the project site, its borders, and local roads. These included the rural residential areas that adjoin the project site to the west and north, and the agricultural lands east of SR-79. Figure 6, *Burrowing owl survey information*, shows the locations of burrows that could be used by burrowing owls, the general locations of the 100-foot transects, and the perimeter of the 500-foot buffer area.

Results

The project site is within the historical range of the burrowing owl. In western Riverside County, burrowing owls are sparsely distributed throughout the region, occurring mainly in open lowland areas (County of Riverside 2003). The California Natural Diversity Database (CDFW 2016) contains several burrowing owl records from the project vicinity in 2006, including multiple pairs at burrows approximately 0.23 miles west and 0.77 miles west of the Flossie Rd ROW.

The weather during the burrowing owl habitat assessment and survey was warm temperatures, clear skies, and low winds.

Table 5. Weather data for the burrowing owl survey				
Date	**Time**	**Temperature (F)**	**Wind (mph)**	**Cloud (%)**
3/7	0645-1000	53-69	1-3	15
3/8	1630-1845	82-68	0	0
3/9	1700-1900	79-64	1-4	0
3/10	0715-0900	59-75	1-3	25-60%
3/30	1730-1930	74-80	0-1	0

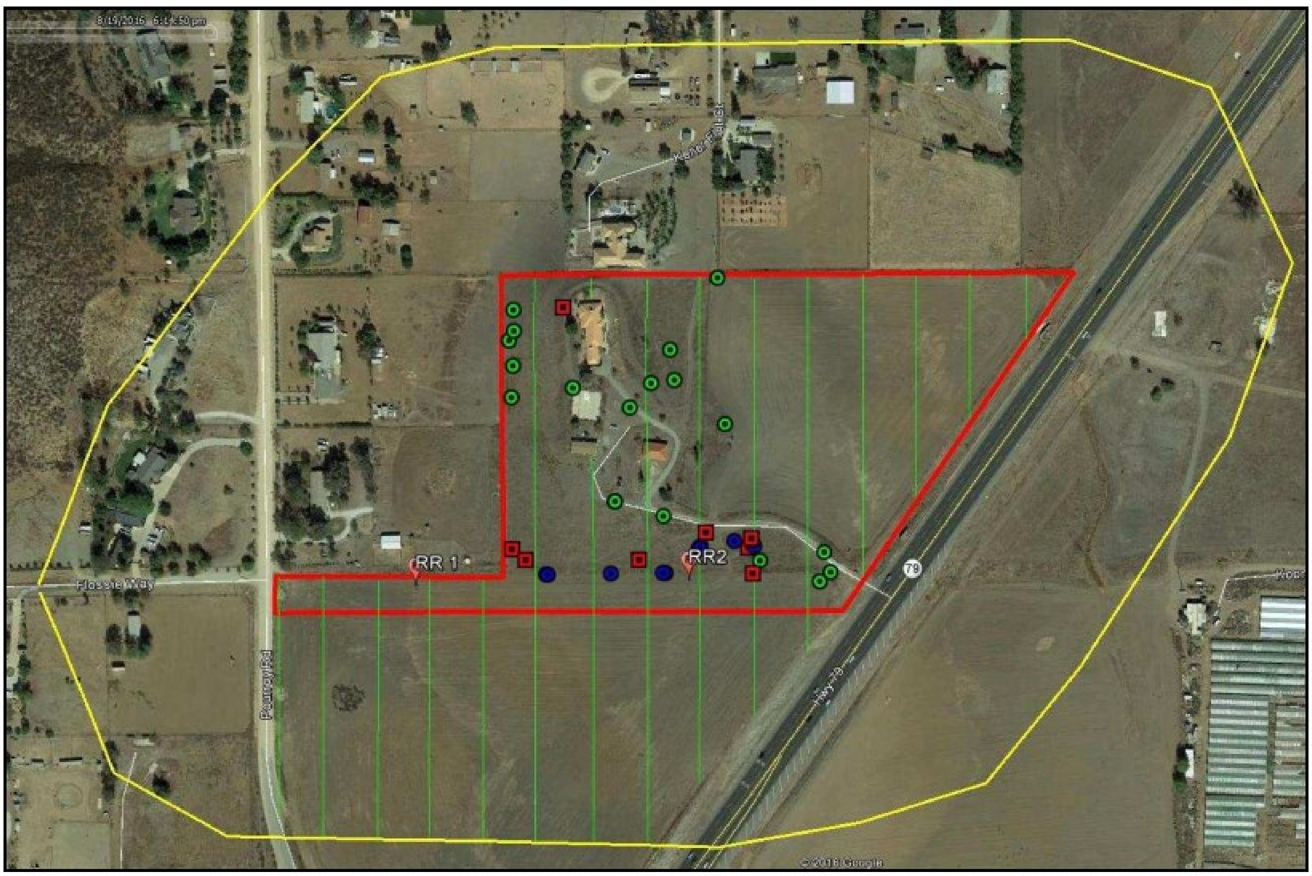


Figure 6.Burrowing owl survey information: potentially suitable burrows (blue and red squares), 100-foot transect intervals (green vertical lines), and 500-foot buffer (yellow line).

The burrows that could be used by burrowing owls were constructed by California ground squirrels (CGS). No potential burrows were observed in rock crevices, debris piles, or agricultural features such as well culverts. The CGS burrows on the site were typically 4-6 inches diameter. In November 2016, when the habitat assessment was carried out, the burrows were located in sparsely vegetated to barren areas. However, by late 2016 and early 2017, the habitat around the burrows was overgrown by dense non-native annual grasses. Photo 14 shows a typical CGS burrow on the project site during the burrowing owl survey.

The focused survey for burrowing owls did not find any burrowing owls or their sign on the project site or in the buffer area.

6. MSHCP Consistency Analysis

MSHCP Criteria Cell Issues

The project site and the Flossie Way access road are located in Criteria Cell #5275 within the French Valley - Lower Sedco Hills subunit of the Southwest Area Plan of the western Riverside MSHCP (County of Riverside 2016b).Biological issues and considerations for this subunit are as follows: (1) conserve a large block of habitat generally east of I-215 and south of Scott Road for narrow endemic species; (2) provide connection to the Southwestern Riverside County Multi Species Reserve, (3) conserve clay soils supporting long-spined spine flower, Munz's onion and Palmer's grappling hook, (4) maintain core and linkage habitat for bobcat, (5) determine presence of potential Core Area for Los Angeles pocket mouse along Warm Springs Creek, (6) maintain core and linkage habitat for Quino checkerspot butterfly, (7) maintain core area for western pond turtle, and (8) maintain core area for Riverside fairy shrimp.

Other goals for this subunit include conserving clay soil areas for narrow endemic plant species that are restricted to these soil types, including the Munz's onion, and habitat for the Quino checkerspot butterfly.

Table 6 lists the checklist information on the project site from the County Conservation Summary Report Generator. The project site is not within with survey requirements for any amphibians, or mammals, but is located within a habitat assessment area for the burrowing owl. The project site is not within an existing or proposed core area.

Table 6. MSHCP Review Summary	
Is the project located in Criteria Area or Public/Quasi-Public Land?	Yes
Is the project located in Criteria Area Species Survey Area(CASSA)?	Yes*
Is the project located in Amphibian Species Survey Area?	No
Is the project located in Mammal Species Survey Area?	No
Is the project located adjacent to MSHCP Conservation Areas?	No
Is the project located in Narrow Endemic Plant Species Survey Area (NEPSA)?	Yes*
Are riverine/riparian/wetland habitats or vernal pools present?	No
Is the project located in Burrowing Owl Survey Area?	Yes
* The main project site (APNs 476-010-059 and 476-010-013) is not within a CASSA or NEPSA . The Flossie Way access road area (part of APN 476-010-054) is within a CASSA and NEPSA.	

Criteria Cell Coverage

The project site is located in the north-central part of Cell #5275 in an area that is not proposed for conservation. Clay soils are absent from the two parcels where the school would be built, however a small area of clay soils mapped by NRCS (2016) occurs in part of the 1.78 acre easement for the Flossie Way access road. The MSHCP (County of Riverside 2003b) identifies the conservation objectives of Cell #5275 as follows:

> "Conservation within this Cell will contribute to assembly of Proposed Constrained Linkage 18. Conservation within this Cell will focus on riparian scrub, woodland and forest habitat and adjacent agricultural land. Areas conserved within this Cell will be connected to riparian scrub, woodland and forest habitat and agricultural land proposed for conservation in Cell #5376 to the south and to agricultural land proposed for conservation in Cell #5372 to the east. Conservation within this Cell will range from 10% to 20% of the Cell focusing in the southern part of the Cell".

A regionally significant wildlife corridor identified in the MSHCP is Constrained Linkage 18, which is located south of the project site (Figure 7, *Project Site in relation to MSHCP Criteria Cells and Constrained Linkage 18*). Constrained linkage 18 is a narrow strip of riparian habitat along an unnamed drainage that links Paloma Valley (southwest of the project site) and Bachelor Mountain (east of the project site across SR-79). The linkage is constrained by adjoining agricultural uses, which, along with the narrow width of the riparian area, contribute to a large edge effect. The planning species for this linkage area are bobcat and Los Angeles pocket mouse.

The MSHCP describes the linkage as follows:

> "Proposed Constrained Linkage 18 consists of an unnamed drainage located in the south-central region of the Plan Area. This Constrained Linkage connects Proposed Core 2 (Antelope Valley) to the west with Proposed Extension of Existing Core 7 (Lake Skinner/Diamond Valley Lake Extension). Existing agricultural use constrains the Linkage, and planned land uses surrounding the Linkage are limited nearly entirely to community Development. The Linkage also has a relatively high proportion of land affected by edge (approximately 250 acres of the total 310 acres) and will also be subject to Edge Effects also due to the widening or extension of several facilities including Washington Street, Briggs Road, and SR-79. Despite these issues, the Linkage nonetheless provides Live-In and movement Habitat for species. Guidelines Pertaining to Urban/Wildlands Interface for the management of edge factors such as lighting, urban runoff, toxics, and domestic predators are presented in Section 6.1 of this document. This Linkage likely provides for movement of common mammals such as bobcat. An adequate wildlife underpass or overpass may need to be implemented to insure movement of species in this area and to reduce the chance of mortality from vehicle collision."

MSHCP Implementation Structure

Section 6.1.2.Protection of Species Associated with Riparian/Riverine Areas andVernal Pools

The project site does not contain riparian habitat, open drainages, erosional channels or other features that could contain plant species associated with riparian habitats. There is no suitable habitat for riparian birds on the project site. A blue-line channel is found on the adjoining parcel to the north of the project site. The Highway 79 Natural Environmental Study (Caltrans 2004) indicated that this blue-line channel extends into the extreme northeastern corner of the project site. However, no channel was observed in this area during the field survey. It appears that the channel has been filled in on the adjacent property and only overland flows currently occur on the project site.

Ephemeral Wetlands and Vernal Pools. Seasonal wetlands, including vernal pools, are communities that could support special status plant or animal species. No seasonal wetlands were observed on the two parcels that form the project site. Two road rut features were noted to be ponded on March 2, 2017 within the Flossie Road Right of Way (ROW) (Photo 13). However, these features were ponded for only eight days, which would not be sufficient for these road ruts to be considered seasonal wetlands or listed fairy shrimp habitat(USFWS 2015, AMEC 2012).In addition, seasonal wetlands were not noted in historical Google Earth aerial photographs reviewed for this study.

Section 6.1.3 Compliance: Protection of Narrow Endemic Plant Species

The main project site (APNs 476-010-059 and 476-010-013) is not within a Narrow Endemic Plant Survey Area (NEPSA). However, the proposed Flossie Way access road (APN 476-010-054) is within a NEPSA. The NEPSA species that should be surveyed for are Munz's onion, San Diego ambrosia, many-stemmed dudleya, spreading navarretia, California orcutt grass, and Wright's trichocoronis. Additional botanical surveys were carried out on March 2 and 10, 2017 to survey for these species and further evaluate the potential for NEP species to occur within the survey area within the Flossie Way ROW. The surveys found that this area contained dense annual grasses and forbs, along with areas of cultivated oats. No suitable habitat for any of the NEP species was observed due to the lack of deep clay soils, and moist silt-clay alkali species, vernal pools, and summer inundated wetlands. The dense annual grass and forb cover within the Flossie Way ROW do not provide suitable habitat for the NEP species.

Section 6.3.2 Compliance: Additional Survey Needs and Procedures

The project site and the Flossie Way access road areas are within an area required for a habitat assessment for the western burrowing owl, which was carried out, followed by a protocol survey.

The main project site (APNs 476-010-059 and 476-010-013) is not within a Criteria Area Species Survey Area (CASSA). The Flossie Way proposed access route is within a CASSA for the following plant species: Davidson's saltscale, Parish's brittlescale, thread-leaved brodiaea, smooth tarplant, round-leaved filaree,Coulter's Goldfields, and little mousetail. Botanical assessments carried out on March 2 and 10, 2017 further evaluated the potential for the CAS species to occur within the Flossie Way ROW. The surveys found that the area contained dense annual grasses and forbs with areas of cultivated oats. No suitable habitat for any of the CAS species was observed due to the lack of deep clay soils, moist silt-clay alkali soils, vernal pools, and alkali playa wetlands. In addition, the dense annual grass and forb cover found at this locality does not provide suitable habitat for the CAS species.

The Riverside County Parcel Report for APN 476-010-054 states that a previously proposed development for this parcel had completed biological surveys for burrowing owl and a habitat assessment for 13 species, and had been approved under the HANS process. This report was not available online, but should be available from the County Planning Department.

Burrowing Owl

A habitat assessment for western burrowing owls was carried out on the project site on November 5, 2016. No burrowing owls were observed or otherwise detected onsite (i.e., sign or calls) or in adjoining areas during the survey. Burrows constructed by California ground squirrels were found on the project site that could potentially be used by burrowing owls. Figure 6, *Burrowing Owl Survey Information*, shows the locations of the ground squirrel burrows. A focused survey for the burrowing owl was carried out from March 7-30, 2017. No burrowing owls or their sign were detected on the project site or in the buffer area.

MSHCP Consistency for Impacts to Riparian/Riverine/Vernal Pools Habitat

Seasonal wetlands, including vernal pools, are communities that could support special status plant or animal species. No seasonal wetlands ponding was observed on the two parcels that form the project site. Two road rut features were noted to be ponded on March 2, 2017 within the Right of Way (ROW) of Flossie Road. However, these features were only ponded for only eight days, and this would not be sufficient for these road ruts to be considered seasonal wetlands or listed fairy shrimp habitat (AMEC 2012).

In addition, seasonal wetlands were not noted in historical Google Earth aerial photographs reviewed for this study.

Section 6.1.4.Urban/Wildlands Interface Guidelines

Section 6.1.4 of the MSHCP presents guidelines that reduce indirect impacts to MSHCPconservation areas at the Wildlands/Urban interface. The project site is not in the vicinity of a conservation area and the Urban/Wildlife Interface Guidelines are therefore not applicable.

Reserve Assembly

The project site is located in the northwestern part of Cell #5275 in an area that is not proposed for conservation. The project site is not located in a designated core area and is located approximately 1,400 feet north of Constrained Linkage 18.

The objectives of Cell #5275 and an analysis of the proposed project's impactson these are as follows:

<u>1. Contribute to assembly of Proposed Constrained Linkage 18.</u>

Proposed Constrained Linkage 8is located approximately 1,400feet south of the project site. The land between the project site and the linkage is in agricultural use and is crossed by SR-79. The proposed project would not impact the assembly or wildlife movement function of Constrained Linkage 18.

<u>2. Focus on coastal sage scrub (CSS), grassland, riparian scrub, woodland and forest habitat.</u>

The project site contains disturbed annual grassland, tilled agricultural fields, small areas of Riversidian sage scrub/grassland ecotone, and developed uses. The proposed project would impact 41% of the disturbed annual grassland on the project site, leaving the remaining 59% in its existing condition. The Riversidian sage scrub-grassland ecotone found on the project site would not be considered a special status community due to the very low shrub cover found in this grassland.

<u>3. Areas conserved within this Cell will be connected to riparian scrub, woodland and forest habitat and agricultural land proposed for conservation in Cell #5376 to the south and to agricultural land proposed for conservation in Cell #5279 to the east.</u>

Since adoption of the MSHCP, Cell #5376 has been largely developed with residential land uses. The project site occurs in the northwestern corner of Cell #5275, separated from Cell #5279 by SR-79 and the agricultural lands in the northeastern corner of Cell #5275. This cell objective is not furthered by the habitats and location of the project site.

<u>4. Conservation within this Cell will range from 10%-20% of the Cell focusing in the southern portion of the Cell.</u>

The project site is located in the northwestern part of the Cell. This objective is not relevant to the project site. Nonetheless, the proposed project would develop approximately 63.6% of the site, leaving the two residences and surrounding habitats (36.4% of the site) undeveloped.

Figure 7.Project Site (red) in relation to MSHCP Criteria Cells and Constrained Linkage 18 (green line).

7. IMPACTS

The proposed project would convert part of the existing habitats of the proposed project site and access road to K-8 school land uses. The one-story school buildings totaling about 45,000 square feet of building area and associated school roads, playfields, and other infrastructure would be clustered in the eastern part of the site. Figure 8, *Project Impacts*, shows the development area of the proposed school on the plant communities map. The developed campus would cover approximately 10.35 acres, approximately 63.6% of the site. Table 7 summarizes the permanent impacts to the plant communities on the project site. There are no additional temporary impacts.

Table 7. Plant Community Impacts*

Plant Community	Existing	Impact % of existing in ()
Agricultural	7.33	7.22 (98.4)
Disturbed annual grassland	7.23	2.98 (41.2)
Riversidian sage scrub/annual grassland ecotone	0.10	.01 (7.1)
Graded	0.36	.15 (41.5)
Developed	1.24	0 (0)
total	**16.27**	**10.35 (63.6%)**

* All impacts are permanent. There are no temporary impacts onsite or offsite

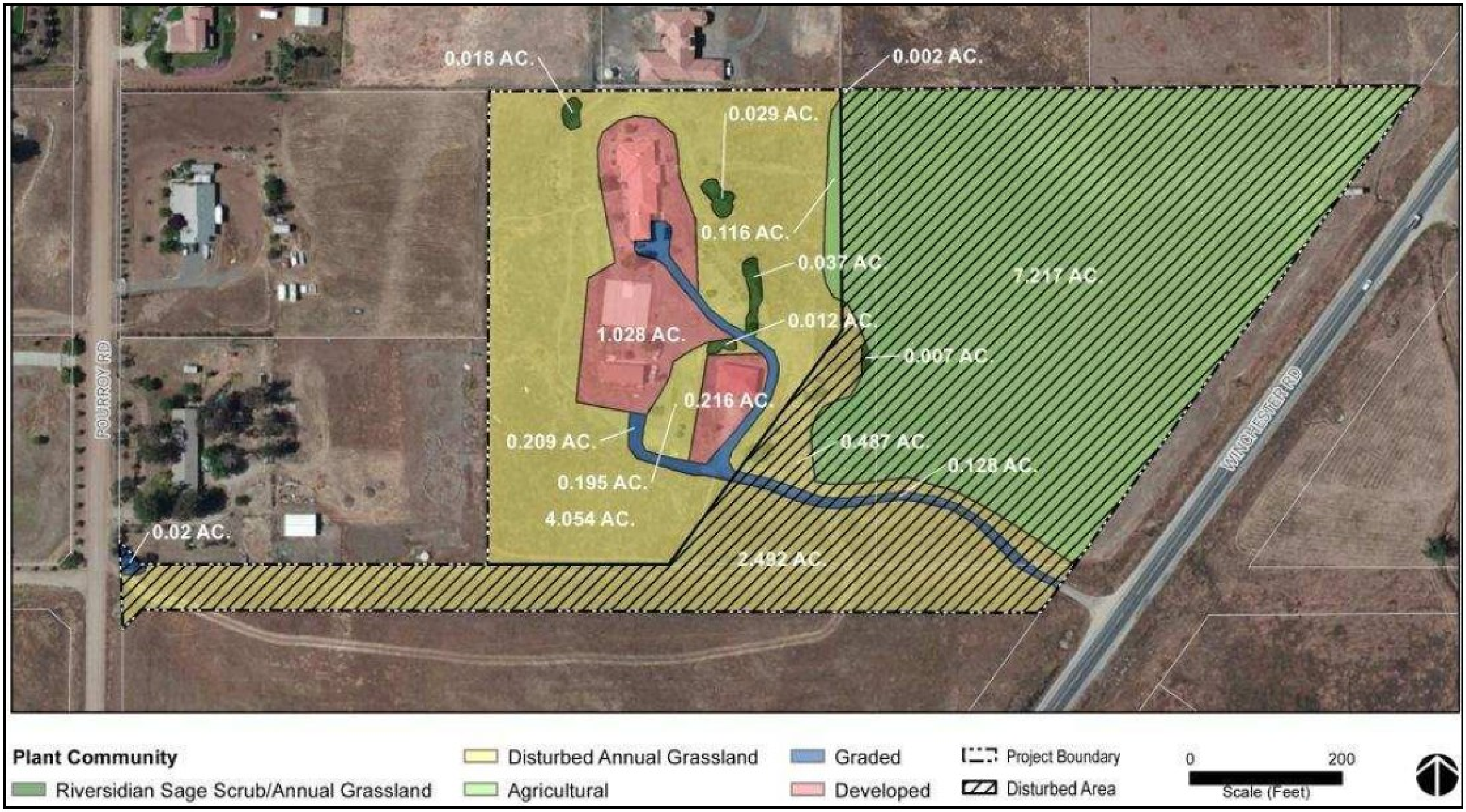


Figure 8. Project impacts (hatched area)

Would the project:

a) **Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Less Than Significant Impact with Mitigation Incorporated.

Sensitive Plants

No plant species that are listed as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) or the California Department of Fish and Wildlife (CDFW) were observed on the project site or have the potential to occur there. The proposed project would not impact any listed plant species. Two special status plant species were observed on the project site or in the Flossie Way ROW. The first species, the paniculate tarplant is not covered by the MSHCP. The proposed project would impact 32 of the estimated 138 (23%) paniculate tarplants on the site. The paniculate tarplant is a CNPS "watchlist" (CRPR 4.2) species that is common in western Riverside County. Therefore, potential impacts to this species are not considered significant and no mitigation is needed. The other special status species is the small-flowered morning glory which was observed in the Flossie Way ROW. Eight small-flowered morning glory plants would be impacted by the proposed project, which would not be significant because this species is common in western Riverside County and is covered by the MSHCP.

All of the other special status plant species known from the project area have very low or low potential to occur on the project site, and therefore would not be impacted by the proposed project.

Sensitive Animals

The conversion of the habitats on the project site to developed uses would adversely impact five sensitive wildlife species that have moderate or high potential to occur there. These are as follows:

- Coastal western whiptail
- Burrowing owl
- Loggerhead shrike
- San Diego black-tailed jackrabbit; and
- Northwestern San Diego pocket mouse.

All of the wildlife species that could be adversely impacted are covered under the MSHCP.

The habitat assessment for the burrowing owl yielded no observations of burrowing owls or sign but identified burrows created by California ground squirrels that could be used by burrowing owls for refuge and/or nesting. Although the focused survey found no burrowing owls on the project site, they could establish nests on the site or in the buffer prior to project initiation. The burrowing owl is a covered species under the MSHCP. Potential impacts to the burrowing owl would be mitigated to a less than significant level with implementation of Mitigation Measure BIO-1.

Nesting Birds

The proposed project would involve ground disturbance, grading and construction in habitats that have nesting birds. If construction or site preparation activities occur in or near vegetation during the bird nesting season (February 1 to August 31), the project could impact nesting birds. The Federal Migratory Bird Treaty Act prohibits direct impacts to nesting birds and their nests and the California Fish and Wildlife Code (Section 3503.5) prohibits activities that take, possess, or destroy nests or eggs. The developer is required to comply with the Migratory Bird Treaty Act.

b) **Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

No impact. The project site lacks special status habitats. The Riversidian sage scrub-grassland ecotone found on the project site would not be considered a special status community due to the very low shrub cover found in this grassland. The project site does not contain riparian habitat, open drainages, erosional channels or other features that could contain plant species associated with riparian habitats.

c) **Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?**

No impact. The project site does not contain any blue line streams, seasonal wetlands, or other jurisdictional waters. The proposed project would not impact wetlands or other jurisdictional waters. No mitigation measures are needed.

d) **Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

No impact. The project site is located in a rural residential and agricultural area of French Valley. The immediate neighborhood consists of rural residences and farmland. Extensive high density residential development occurs approximately 1,400 feet to the south. The open areas of Bachelor Mtn and the foothills around Diamond Lake Reservoir occur as close as one mile east of the project site. The project site is mostly vacant with two residence and plant communities dominated by grassland and agricultural lands with no riparian habitats. Winchester Ave (SR-79) borders the project site to the east.

Landscape features in rural landscapes that support important wildlife movement functions include aquatic and riparian habitats and ridgelines, particularly when they are in proximity to a known wildlife movement corridor. None of these features occur on the project site or adjoining areas. The project site probably supports local home range movement by common wildlife but does not contain a wildlife corridor or significantly contribute to wildlife movement. There are two culverts outside the eastern site border beneath Winchester Ave (SR-79) but there are no channels associated with these culverts. Medium-sized carnivores such as coyote and skunk could cross SR-79 through the culverts or on the highway surface during the night-time. The proposed project and would not impact existing paths for local wildlife movement. The proposed project would increase use of the agricultural lands on the project site and increase traffic in the vicinity. These changes would occur largely during the day-time and would not significantly impact local wildlife movement.

An important wildlife corridor occurs in the project region: the Proposed Constrained Linkage 18 is a narrow strip of riparian habitat along an unnamed drainage that links Paloma Valley (southwest of the project site) and the Bachelor Mountain area (east of the project site across SR-79). This linkage is approximately 1,400 feet south of the project site. The southern part of the linkage is adjoined by high density residential development. The planning species for this linkage area are bobcat and Los Angeles pocket mouse. The project site is distant from Proposed Constrained Linkage 18 and is separated from it by SR-79. The proposed project would not impact wildlife movement in this regional corridor.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No impact. The preservation policies of the County's Multiple Open Space Element of the General Plan rely strongly on implementation of the MSHCP for achieving biological conservation objectives. The proposed project is consistent with the provisions of the Riverside County MSHCP, and is consistent with the General Plan in this respect.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No impact. The proposed project is consistent with the MSHCP, as examined in the following section.

MSHCP Criteria Cell Issues

The project site and Flossie Way access road are located in Criteria Cell #5275 within the French Valley - Lower Sedco Hills subunit of the Southwest Area Planof the western Riverside MSHCP (County of Riverside 2016b). Biological issues and considerations for this subunit are as follows: (1) conserve a large block of habitat generally east of I-215 and south of Scott Road for narrow endemic species; (2) provide connection to the Southwestern Riverside County Multi Species Reserve, (3) conserve clay soils supporting long-spined spine flower, Munz's onion and Palmer's grapplinghook, (4) maintain core and linkage habitat for bobcat, (5) determine presence of potential Core Area for Los Angeles pocket mouse along Warm Springs Creek, (6) maintain core and linkage habitat for Quino checkerspot butterfly, (7) maintain core area for western pond turtle, and (8) maintain core area for Riverside fairy shrimp.

Other goals for this subunit include conserving clay soil areas for narrow endemic plant species that are restricted to these soil types, including the Munz's onion, and habitat for the Quino checkerspot butterfly.

Table 8 lists the checklist information on the project site from the County Conservation Summary Report Generator. The project site is not within with survey requirements for any amphibians, or mammals, but is located within a habitat assessment area for the burrowing owl. The project site is not within an existing or proposed core area.

Table 8. MSHCP Review Summary

Is the project located in Criteria Area or Public/Quasi-Public Land?	Yes
Is the project located in Criteria Area Species Survey Area (CASSA)?	Yes*
Is the project located in Amphibian Species Survey Area?	No
Is the project located in Mammal Species Survey Area?	No
Is the project located adjacent to MSHCP Conservation Areas?	No
Is the project located in Narrow Endemic Plant Species Survey Area (NEPSA)?	Yes*
Are riverine/riparian/wetland habitats or vernal pools present?	No
Is the project located in Burrowing Owl Survey Area?	Yes
* The main project site (APNs 476-010-059 and 476-010-013) is not within a CASSA or NEPSA . The Flossie Way access road area (part of APN 476-010-054) is within a CASSA and NEPSA.	

Criteria Cell Coverage

The project site is located in the north-central part of Cell #5275 in an area that is not proposed for conservation. Clay soils are absent from the two parcels where the school would be built, however a small area of clay soils mapped by NRCS (2016) occurs in part of the 1.78 acre easement for the Flossie Way access road. The MSHCP (County of Riverside 2003b) identifies the conservation objectives of Cell #5275 as follows:

> "Conservation within this Cell will contribute to assembly of Proposed Constrained Linkage 18. Conservation within this Cell will focus on riparian scrub, woodland and forest habitat and adjacent agricultural land. Areas conserved within this Cell will be connected to riparian scrub, woodland and forest habitat and agricultural land proposed for conservation in Cell #5376 to the south and to agricultural land proposed for conservation in Cell #5372 to the east. Conservation within this Cell will range from 10% to 20% of the Cell focusing in the southern part of the Cell".

A regionally significant wildlife corridor identified in the MSHCP is Constrained Linkage 18, which is located south of the project site (Figure 7, *Project Site in relation to MSHCP Criteria Cells and Constrained Linkage 18*). Constrained linkage 18 is a narrow strip of riparian habitat along an unnamed drainage that links Paloma Valley (southwest of the project site) and Bachelor Mountain (east of the project site across SR-79). The linkage is constrained by adjoining agricultural uses, which, along with the narrow width of the riparian area, contribute to a large edge effect. The planning species for this linkage area are bobcat and Los Angeles pocket mouse.

The MSHCP describes the linkage as follows:

> "Proposed Constrained Linkage 18 consists of an unnamed drainage located in the south-central region of the Plan Area. This Constrained Linkage connects Proposed Core 2 (Antelope Valley) to the west with Proposed Extension of Existing Core 7 (Lake Skinner/Diamond Valley Lake Extension). Existing agricultural use constrains the Linkage, and planned land uses surrounding the Linkage are limited nearly entirely to community Development. The Linkage also has a relatively high proportion of land affected by edge (approximately 250 acres of the total 310 acres) and will also be subject to Edge Effects also due to the widening or extension of several facilities including Washington Street, Briggs Road, and SR-79. Despite these issues, the Linkage nonetheless provides Live-In and movement Habitat for species. Guidelines Pertaining to Urban/Wildlands Interface for the management of edge factors such as lighting, urban runoff, toxics, and domestic predators are presented in Section 6.1 of this document. This Linkage likely provides for movement of common mammals such as bobcat. An adequate wildlife underpass or overpass may need to be implemented to insure movement of species in this area and to reduce the chance of mortality from vehicle collision."

MSHCP Implementation Structure

Section 6.1.2.Protection of Species Associated with Riparian/Riverine Areas andVernal Pools

The project site does not contain riparian habitat, open drainages, erosional channels or other features that could contain plant species associated with riparian habitats. A blue-line channel is found on the adjoining parcel to the north of the project site. The Highway 79 Natural Environmental Study (Caltrans 2004) indicated that this blue-line channel extends into the extreme northeastern corner of the project site. However, no channel was observed in this area during the field survey. It appears that the channel has been filled in on the adjacent property and only overland flows currently occur on the project site.

Ephemeral Wetlands and Vernal Pools. Seasonal wetlands, including vernal pools, are communities that could support special status plant or animal species. No seasonal wetlands were observed on the two parcels that form the project site. Two road rut features were noted to be ponded on March 2, 2017 within the Right of Way (ROW) of Flossie Road. However, these features were only ponded for only eight days, and this would not be sufficient for these road ruts to be considered seasonal wetlands or listed fairy shrimp habitat. In addition, seasonal wetlands were not noted in historical Google Earth aerial photographs reviewed for this study.

Section 6.1.3 Compliance: Protection of Narrow Endemic Plant Species

The main project site (APNs 476-010-059 and 476-010-013) is not within a Narrow Endemic Plant Survey Area (NEPSA). However, the proposed Flossie Way access road (APN 476-010-054) is within a NEPSA. The NEPSA species that should be surveyed for are: Munz's onion, San Diego ambrosia, many-stemmed dudleya, spreading navarretia, California orcutt grass, and Wright's trichocoronis. The botanical habitat assessment of the Flossie Way access route found that the area has been regularly disked for agricultural uses and concluded that NEP species have low potential to occur there. A habitat evaluation for the six Narrow Endemic Plant species was conducted on March 2, 2017. It was determined that the Flossie Way ROW does not contain potential habitat for these species due to the lack of suitable soils (deep clays), continued disturbance, and the lack of suitable seasonal wetlands, such as vernal pools, that are the potential habitat for these species. Based on this assessment, further surveys are not warranted.

Section 6.3.2 Compliance: Additional Survey Needs and Procedures

The main project site (APNs 476-010-059 and 476-010-013) is not within a Criteria Area Species Survey Area (CASSA). The Flossie Way proposed access route is within a CASSA for the following plant species: Davidson's saltscale, Parish's brittlescale, thread-leaved brodiaea, smooth tarplant, round-leaved filaree, Coulter's Goldfields, and little mousetail. The botanical habitat assessment concluded these species have low potential to occur within the Flossie Way proposed access route. The botanical habitat assessment concluded that these species would not be expected to occur on the project site or that the potential for their occurrence is very low. Based on this assessment, further surveys are not warranted.

A Riverside County Parcel Report for APN 476-010-015 states that a previously proposed development for this parcel had completed biological surveys for burrowing owl and a habitat assessment for 13 species, and had been approved under the HANS process. This report was not available online, but should be available from the County Planning Department.

Burrowing Owl

A habitat assessment for burrowing owls was carried out on the project site on November 5, 2016. No western burrowing owls were observed or otherwise detected onsite (i.e., sign or calls) or in adjoining areas during the survey. Burrows constructed by California ground squirrels were found on the project site that could potentially be used by burrowing owls. A focused survey was carried out on five site visits from March 7-30, 2017. The focused survey for burrowing owls did not find any burrowing owls or their sign on the project site or in the buffer area.

MSHCP Consistency for Impacts to Riparian/Riverine/Vernal Pools Habitat

There are no riparian or riverine habitats on the project site. No seasonal wetlands were observed on the two parcels that form the project site, and there is no opportunity for riparian-dependent species to occur on the site. Two road rut features were noted to be ponded on March 2, 2017 within the Right of Way (ROW) of Flossie Road. However, these features were ponded for only eight days, which is not be sufficient for these road ruts to be considered seasonal wetlands or listed fairy shrimp habitat. In addition, seasonal wetlands were not noted in historical Google Earth aerial photographs reviewed for this study.

Section 6.1.4.Urban/Wildlands Interface Guidelines

Section 6.1.4 of the MSHCP presents guidelines that reduce indirect impacts to MSHCP conservation areas at the Wildlands/Urban interface. The project site is not in the vicinity of a conservation area and the Urban/Wildlife Interface Guidelines are therefore not applicable.

Reserve Assembly

The project site is located in the northwestern part of Cell #5275 in an area that is not proposed for conservation. The project site is not located in a designated core area and is located approximately 1,400 feet north of Constrained Linkage 18.

The objectives of Cell #5275 and an analysis of the proposed project's impactson these are as follows:

<u>1. Contribute to assembly of Proposed Constrained Linkage 18.</u>

Proposed Constrained Linkage 8is located approximately 1,400 feet south of the project site. The land between the project site and the linkage is in agricultural use and is crossed by SR-79. The proposed project would not impact the assembly or wildlife movement function of Constrained Linkage 18.

<u>2. Focus on coastal sage scrub (CSS), grassland, riparian scrub, woodland and forest habitat.</u>

The project site contains disturbed annual grassland, tilled agricultural fields, small areas of Riversidian sage scrub/grassland ecotone, and developed uses. The proposed project would impact 39% of the disturbed annual grassland on the project site, leaving the remaining 61% in its existing condition. The Riversidian sage scrub-grassland ecotone found on the project site would not be considered a special status community due to the very low shrub cover found in this grassland.

<u>3. Areas conserved within this Cell will be connected to riparian scrub, woodland and forest habitat and agricultural land proposed for conservation in Cell #5376 to the south and to agricultural land proposed for conservation in Cell #5279 to the east.</u>

Since adoption of the MSHCP, Cell #5376 has been largely developed with residential land uses. The project site occurs in the northwestern corner of Cell #5275, separated from Cell #5279 by SR-79 and the agricultural lands in the northeastern corner of Cell #5275. This cell objective is not furthered by the habitats and location of the project site.

<u>4. Conservation within this Cell will range from 10%-20% of the Cell focusing in the southern portion of the Cell.</u>

The project site is located in the northwestern part of the Cell. This objective is not relevant to the project site. Nonetheless, the proposed project would develop approximately 63.6% of the site, leaving the two residences and surrounding habitats (36.4% of the site) undeveloped.

Mitigation Measures

BIO-1 A preconstruction clearance survey for burrowing owls shall be carried out by a qualified biologist within 30 days prior to ground disturbance, pursuant to California Department of Fish and Wildlife protocols (California Burrowing Owl Consortium 1993). Between February 1 and August 31 (nesting season), the preconstruction survey will include a 300-foot buffer; outside of this period, it will include a 100-foot buffer. If owls are found within the survey area during the nesting season, construction activities will not occur within 300 feet of the occupied burrows until nesting is completed. A qualified biologist must confirm that nesting has been completed prior to the removal of the work buffer restriction. If owls are found within the disturbance footprint outside of the February 1 through August 31 period, passive relocation (e.g., use of one-way doors and collapse of burrows) will occur.

Certification

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

Date:__May 4, 2017_____Signed:___ Phil Brylski

Date:__May 4, 2017_____Signed:_______ David Bramlet

8. References

Allen, R.L. and F.M. Roberts.2013.Wildflowers of Orange County, and the Santa Ana Mountains.Laguna Wilderness Press, Laguna Beach, California.

AMEC.2007.Burrowing owl survey report for the Valley-Ivy Glen transmission line project, Riverside County, California.Prepared for Southern California Edison.

AMEC. 2012. Draft Results of Focused surveys for Listed fairy shrimp species for the Valley-Ivy Glen transmission line project Phase II, Riverside County, California. Prepared for Southern California Edison.

Baldwin, BG, D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, Editors.2012.The Jepson manual: Vascular plants of California, second edition. University of California Press, Berkeley, California.

Brown, S.2003.Western Riverside County ephemeral pool table.U.S. Fish and Wildlife Service, Carlsbad Field Office.

California Burrowing Owl Consortium. 1993. Burrowing owl survey protocol and mitigation guidelines.

California Department of Fish and Wildlife (CDFW).2009. Protocols for surveying and evaluating impacts to special status native plant populations and natural communities.

California Department of Fish and Wildlife (CDFW).2010.Hierarchial list of natural communities with Holland types.

California Department of Fish and Wildlife (CDFW).2012. Staff report on burrowing owl mitigation.

California Department of Fish and Wildlife (CDFW), Natural Diversity Database.2016a.California Natural Diversity (RareFind) Database Element report for theBachelor Mtn., Winchester, Murrieta, Romoland 7.5' quadrangles.California Department of Fish and Wildlife, Natural Heritage Division, Sacramento, California.

California Department of Fish and Wildlife (CDFW), Natural Diversity Database.2016b.Special Vascular Plants, Bryophytes, and Lichens List.Wildlife and Habitat Data Analysis Branch, Sacramento, California (July).

California Department of Fish and Wildlife (CDFW), Natural Diversity Database.2016c.Special Animals List.Wildlife and Habitat Data Analysis Branch, Sacramento, California (July).

California Native Plant Society (CNPS).2001.Botanical survey guidelines.California Native Plant Society, Sacramento, California.

California Native Plant Society (CNPS).2016.Inventory of rare and endangered vascular plants of California, 8th Ed. California Native Plant Society, Sacramento, California.

Caltrans.2007.State Route 79 Widening Study: Thompson Road to Domenigoni Parkway, Draft Natural Environment Study.

Caltrans.2010.State Route 79 Realignment Project: Domenigoni Parkway to Gilman Springs Road.Final Natural Environment Study.

Consortium of California Herbaria (Consortium) (Consortium).2016.Consortium of California herbaria website, an online herbaria database: A review of collections from the French Valleyarea.University of California, Berkeley and the Jepson Herbarium.http://ucjeps.berkeley.edu/consortium

County of Riverside.2003a.Western Riverside County multiple species habitat conservation plan (MSHCP).Prepared by Dudek and Associates.

County of Riverside 2003b.Section 3.3.15 Southwest Area Plan; Subunit 5 French Valley/Lower Sedco Hills, plus the criteria for Cell 5275, In Section 3.0 Conservation Planning Process, Western Riverside MSHCP.

County of Riverside.2004.Errata to the MSHCP.Prepared by Dudek and Associates.

County of Riverside.2005a.Burrowing owl survey protocol.Environmental Planning Department, County of Riverside.

County of Riverside.2005c. What being in an MSHCP Criteria Cell means, the HANS process.

County of Riverside.2005d.Determination of Biologically Equivalent or Superior Report guidelines (MSHCP Section 6.1.2).

County of Riverside.2006a.Burrowing owl survey instructions for the Western Riverside Multiple Species Habitat Conservation Plan Area.http://rctlma.org/Portals/1/EPD/consultant/burrowing_owl_survey_instructions.pdf

County of Riverside.2006b.MSHCP 30-Day Pre-Construction Burrowing Owl Report Format.

County of Riverside.2006c.HANS application guide.

County of Riverside.2009.Draft Biological policies and procedures.County of Riverside Planning Department .

County of Riverside.2016a.Riverside County TLMA GIS information on parcels No. 476-010-059, 476-010-013 and 476-010-054.

County of Riverside.2016b.MSHCP conservation summary report for assessor's parcels No.476-010-059, 476-010-013 and 476-010-054.

Dudek& Associates.2003.Species Accounts for the Western Riverside Multiple Species Habitat Conservation Plan.

Google Earth.2016.Aerial photographs of the property dated:February 9, 2016.Other photos dated from: 6/1/2002,10/20/2003,1/11/2007,5/24/2009, and 4/26/2011.

Holland, R. F.1986.Preliminary Descriptions of the Terrestrial Natural Communities of California. Sacramento, California.

Klein, A. and J. Evans.2005.Vegetation alliances of western Riverside County, California.California Native Plant Society, Sacramento California.Report prepared for the California Dept. of Fish and Wildlife, Contract No. P0185404.

Knecht, A.A.1971.Soil survey of western Riverside area, California.U.S. Department of Agriculture, Soil Conservation Service.

Morton, D.M, and M.P. Kennedy2003.Preliminary geologic map of the Bachelor Mountain 7.5' USGS Quadrangle, Riverside County, California.

Munz, P. A.1974.A Flora of Southern California.University of California Press, Berkeley, California.

NRCS (Natural Resources Conservation Service).2016.Custom soil resource report for Western Riverside area, California: French Valley.

RCA (Western Riverside County, Regional Conservation Authority).2007a.MSHCP permittee implementation guidance manual.

RCA (Western Riverside County, Regional Conservation Authority).2007b.MSHCP permittee implementation guidance manual, Appendix D Example, MSHCP Consistency assessment (Faux Willow Creek Project).

RCA (Western Riverside County, Regional Conservation Authority)2012.Western Riverside County MSHCP, Biological Monitoring Program, Burrowing Owl, and grassland bird survey report, 2011.

RCA (Western Riverside County, Regional Conservation Authority).2009.Western Riverside County MSHCP, Biological Monitoring Program, Stephen's kangaroo rat survey report, 2008.

RCA(Western Riverside County, Regional Conservation Authority).2011a.MSHCP Wildlife Corridors, Presentation to the RCA board.

RCA (Western Riverside County, Regional Conservation Authority). 2011b.Western Riverside County MSHCP, Biological Monitoring Program, Rare Plant Surveys 2006, 2007, 2008, 2009 and 2010.

RCA (Western Riverside County, Regional Conservation Authority).2012a.Western Riverside County MSHCP, Biological Monitoring Program, Burrowing owl survey report, 2011.

RCA (Western Riverside County, Regional Conservation Authority).2012b.Western Riverside County MSHCP, Biological Monitoring Program, Coastal Sage Scrub Bird Surveys and Nest Monitoring,2011.

RCA(Western Riverside County, Regional Conservation Authority).2013.2013 RCA Board Workshop, Presentation to the RCA board.

Roberts, F.M, S.D. White, A.C. Sanders, D.E. Bramlet, and S.D. Boyd.2004. The vascular plants of western Riverside County: An annotated checklist. F.M. Roberts Publications, San Luis Rey, California.

Roberts, F.M, S.D. White, A.C. Sanders, D.E. Bramlet, and S.D. Boyd.2007.Additions to the flora of western Riverside County.Crossosoma 33 (2): 55-69.

SCE and AECOM.2014.Biological Resources Assessment Addendum for the Valley South 115 KV subtransmissionproject.Prepared for Southern California Edison, Monrovia, California.

Simpson, M.G., J.P. Rebman, K.E. Hasenstab-Lehman, C.M. Guilliams, and P.O. McConnell.2013.*Cryptanthawigginsii*(Boraginanceae): A presumed extinct species rediscovered.Madrono 60 (1): 24-34.

The Planning Center.2013. City of Menifee General Plan, Environmental Impact Report (DEIR).Prepared for the City of Menifee.

Tom Dodson and Associates (Dodson).2015.MSHCP Consistency Analysis, French Valley 170, Riverside County, California.Prepared for the County of Riverside

U.S. Fish and Wildlife Service (USFWS).2010a.Endangered and threatened wildlife and plants:Revised critical habitat for *Navarretiafossalis* (Spreading navarretia). Federal Register 75(194): 62192-62255.

U.S. Fish and Wildlife Service.2010b.Endangered and threatened wildlife and plants: Final rule designating critical habitat for *Ambrosia pumila* (San Diego ambrosia). Federal Register 75(229): 74546-74604.

U.S. Fish and Wildlife Service.2011.Endangered and threatened wildlife and plants: Final revised critical habitat for *Brodiaeafilifolia*) Thread-leaved brodiaea.Federal Register 76(26): 6848-6925.

U.S. Fish and Wildlife Service.2012a.Endangered and threatened wildlife and plants: Designation of revised critical habitat for *Allium munzii* (Munz's onion), and San Jacinto Valley crownscale (*Atriplexcoronata* var. *notatior*).Federal Register 77(74): 23008-23055

U.S. Fish and Wildlife Service. 2012b. Endangered and threatened wildlife and plants: Revised critical habitat for the Riverside fairy shrimp, Final Rule. Federal Register 77(233): 72070-72140.

U.S. Fish and Wildlife Service. 2015. Survey guidelines for the listed large brachiopods.

USFWS. 2007. Vernal pool fairy shrimp (*Branchinecta lynchi*):Five year review: vernal pool fairy shrimp.

Weather Currents.2017.Precipitation totals for the 2016-2017 water year, to February 2017, and the 2015-2016 water year. http://weathercurrents.com/frenchvalley/

Appendix A. Site photographs

Photo 1.Looking west from the northeast corner of the property. (November 2016)

Photo 2. Looking north from the southeast corner of the project site. (November 2016)

Photo 3. Looking west along the driveway to the existing residences from Hwy 79. (March 2017)

Photo 4.Looking west from the south east corner of the project site. (November 2016)

Photo 5. Looking north, from the southwest corner of the project site. (November 2016)

Photo 6. Looking south, from the northwest corner of the project site. (November 2016)

Photo 7. Looking southeast, from the knoll in the northern area of the project site. (November 2016)

Photo 8. Looking south at the secondary residence and basketball court. (November 2016)


Photo 9.Looking north, along the Hwy 79 easement from the existing access road. (November 2016)


Photo 10.Looking south, along the Hwy 79 easement. (November 2016)


Photo 11.Looking west, along the Flossie Road easement. (March 2017)


Photo 12:Looking east, along the Flossie Road easement. (November 2016)

Photo 13. Road rut ephemeral wetland along the Flossie Road easement. (view looking west, March 2017)

Photo 14. California ground squirrel burrow in southwestern part of proposed school site (March 2017).

Appendix B. Plant Species Observed

*-Non-native species
†-Special status plant species

GYMNOSPERMS
CONIFEROPHYTA, CONE-BEARING PLANTS

Pinaceae (Pine Family)
Aleppo pine (**Pinus halepensis*)

MAGNOLIOPHYTA, Flowering Plants

EUDICOTYLEDONES, EUDICOTS

Amaranthaceae (Amaranth Family)
Tumbling pigweed (**Amaranthus albus*)

Asteraceae (Sunflower Family)
western ragweed (*Ambrosia psilostachya*)
California sagebrush (*Artemisia californica*)
tocalote (**Centaurea melitensis*)
common horseweed (*Conyza canadensis*)
common sand aster (*Corethrogyne filaginifolia*)
Australian brass buttons (**Cotula australis*)
paniculatetarplant (†*Deinandra paniculata*)
eurypos (**Euryops pectinatus*)
annual sunflower (*Helianthus annuus*)
telegraph weed (*Heterotheca grandiflora*)
smooth cat's ears (**Hypochaeris glabra*)
coastalisocoma (*Isocoma menziesii*)
prickly lettuce (**Lactuca serriola*)
narrow-leaved filago (**Logfia gallica*)
stink net (**Oncosiphon piluliferum*)
groundsel (**Senecio vulgaris*)
prickly sow thistle (**Sonchus asper*)
common sow thistle (**Sonchu soleraceus*)

Boraginaceae (Forget-Me-Not Family)
common fiddleneck (*Amsinckia intermedia*)
gray fiddleneck (*Amsinckia retrosa*)
narrow-toothcombseed (*Pectocarya linearis*)

Brassicaceae (Mustard Family)
black mustard (**Brassica nigra*)
Sahara mustard (**Brassica tournefortii*)
shepherd's purse (**Capsella bursa-pastoris*)
summer mustard (**Hirschfeldia incana*)
shiny pepper grass (*Lepidium nitidum*)
wild radish (**Raphanus sativa*)
London rocket (**Sisymbrium irio*)
hare's ear cabbage (**Sisymbrium orientale*)

Caryophyllaceae (Pink Family)
windmill pink (**Silene gallica*)

Chenopodiaceae (Goosefoot Family)
serrate-leaved saltbush (**Atriplex suberecta*)
pitseed goosefoot (**Chenopodiumber landieri*)
nettle-leaved goosefoot (**Chenopodium murale*)
summer cypress (**Kochia scoparia*)
Russian thistle (**Salsola tragus*)

Convolvulaceae (Morning glory Family)
finger-leaved morning glory (*Calystegia macrostegia*)
small-flowered morning glory (*†Convolvulus simulans*)

Crassulaceae (Stone crop Family)
pygmy stone crop (*Crassula connata*)

Euphorbiaceae (Spurge Family)
dove weed (*Croton setiger)*
rattlesnake spurge (*Euphorbia albomarginata*)
petty spurge (**Euphorbia peplus*)

Fabaceae (Pea Family)
Acacia (**Acacia* sp.)
grab lotus (*Acmispon micranthus*)
miniature lupine (*Lupinus bicolor*)
bajada lupine (*Lupinus concinnus*)
arroyo lupine (*Lupinus succulentus*)
bur clover (**Medicago polymorpha*)
hairy vetch (**Vicia villosa*)

Geraniaceae (Geranium Family)
long-beakedfilaree (**Erodium botrys*)
red-stemmedfilaree (**Erodium cicutarium*)
white-stemmedfilaree (**Erodium moschatum*)

Juglandaceae (Walnut Family)
pecan (**Carya illinoinensis*)

Lamiaceae (Mint Family)
rosemary (**Rosmarinus officinalis*)
vinegar weed (*Trichostema lanceolatum*)

Lythraceae (Loosestrife Family)
pomegranate (**Punica granatum*)

Malvacea (Mallow Family)
cheeseweed (**Malva parviflora*)

Montiaceae (Miner's Lettuce Family)
red maids (*Calandrinia menziesii*)

Myrtaceae (Myrtle Family)
silver dollar gum (**Eucalyptus polyanthemos*)

Oleaceae (Olive Family)
shamel ash (**Fraxinus udehi*)
olive (**Olea europea*)

Oxalidaceae (Wood-Sorrel Family)
yellow sorrel (**Oxalis corniculata*)

Polygonaceae (Buckwheat Family)
interior California buckwheat (*Eriogonum fasciculatum* var. *foliolosum*)
Persian knotweed (**Polygonum argycoleon*)
curly dock (**Rumex crispus*)

Primulaceae (Primrose Family)
scarlet pimpernel (**Anagallisarvensis*)

Solanaceae (Nightshade Family)
jimson weed (*Datura wrightii*)
tree tobacco (**Nicotiana glauca*)

MONOCOTYLEDONES, MONOCOTS

Arecaceae (Palm Family)
queen palm (**Syagrus romanzoffiana*)

Juncaceae (Rush Family)
toad rush (*Juncus bufonius*)

Poaceae (Grass Family)
wild oat (**Avena fatua*)
cultivated oat (**Avena sativa*)
rescue grass (**Bromus catharticus*)
ripgut brome (**Bromus diandrus*)
red brome (**Bromus madritensis ssp. rubens*)
foxtail fescue (**Festuca myuros*)
foxtail barley (**Hordeum murinum* ssp.*leporinum*)
goldentop (**Lamarkia aurea*)
schismus (**Schismus barbatus*)
wheat (**Triticum aestivum*)

Themidaceae (Brodiaea Family)
blue dicks (*Dichelostemma capitatum*)

Appendix C. Wildlife Species Observed

Birds

westernmeadowlark (*Sturnella neglecta*)
westernbluebird (*Sialia mexicana*)
northernmockingbird (*Mimus polyglottos*)
common raven (*Corvuscorax*)
westernkingbird (*Tyrannus verticalis*)
ash-throatedflycatcher (*Myiarchus cinerascens*)
Say's phoebe(*Sayornis saya*)
rockpigeon (*Columba livia*)
mourningdove (*Zenaida macroura*)
savannahsparrow (*Passerculus sandwichensis*)
larksparrow (*Chondestes grammacus*)
white-crowned sparrow (*Zonotrichia leucophrys*)
housefinch (*Carpodacus mexicanus*)
red-tailed hawk (*Buteo jamaicensis*)
American kestrel (*Falco sparverius*)

Mammals

Botta pocket gopher (*Thomomys bottae*) (sign)
Beechey ground squirrel (*Otospermophilus beecheyi*)
coyote(*Canis latrans*) (sign)

Reptiles

side-blotched lizard (*Uta stansburiana*)

Harness, Teresa

From: David Bramlet <davebramlet7@gmail.com>
Sent: Wednesday, May 24, 2017 6:44 PM
To: Harness, Teresa
Subject: HANS 2343/ PUP 931 / JPR 17-04-11-01 Temecula Valley Charter

The updated version of the Habitat Assessment for the Temecula Valley Charter School site, HANS 2343/ PUP 931 / JPR 17-04-11-01, has been uploaded to the County's ftp site.

David Bramlet
Consulting Biologist

Harness, Teresa

From: Harness, Teresa
Sent: Thursday, May 25, 2017 8:21 AM
To: 'pbrylski@gmail.com'
Subject: Planning Department has received a biological report

This email is to inform you that the Planning Department has received a biological report regarding the below referenced case:

Report Name: HABITAT ASSESSMENT TEMECULA VALLEY CHARTER SCHOOL
Report Date: 5/24/17
Case Number: PUP00931
Assessor's Parcel Number(s): 476-010-059, 476-010-013, 476-010-054
PDB Number: PDB06444 Revised 4-052417
Biologist Assigned: Given to biologist staff for review

Submit along with proper identification title of report and case number, assessor parcel numbers to be viewed in PDF format through:

The County of Riverside; RCIT Secure File Transfer
Server located at website: https://ftp.co.riverside.ca.us/
Public: Log in using the username of: rivcodocs
Password is: P@ssw0rd (the "0" is zero)
In search (it's labeled "Filter") box type in: Biology
Check the box: Find
It will bring up a folder: BB_Planning/Biology

- **It is important to submit directly to: BB_Planning/Biology**
- **If not then it cannot be confirmed that the report has been submitted correctly.**

Upload each biological report individual with a Title name of report.
(Use same title in the email subject line; one at a time: see below)
NO ZIP files or locked files accepted.

Select Green button to: "Add Files" from your computer; select your file(s) to be added, hit "Open."
Select Gray button (labeled "Start") to upload your report.
Hit the "Logout" button in the top right when completed with the upload.
Once report has been submitted then please notify me: THarness@RIVCO.org
Place the report's title and case number in the SUBJECT line of your email

****** Please call the RCIT-Helpdesk for any assistance (951) 955-9900.**

The PDB number will be given as the reference number and will be used to track the review status of the report. Should you have any questions, please do not hesitate to call or via email.

Thank you,

Teresa Harness, Office Assistant III

County of Riverside
Planning Department
4080 Lemon Street, 12th Floor
Riverside, CA 92501
Telephone: (951) 955-6892
Fax: (951) 955-1811
Email: tharness@rivco.org
Planning Department Website: http://planning.rctlma.org/
County of Riverside California

Follow us on Twitter!
How are we doing? Click the Link and tell us

Harness, Teresa

From: Microsoft Outlook
To: pbrylski@gmail.com
Sent: Thursday, May 25, 2017 8:21 AM
Subject: Relayed: Planning Department has received a biological report

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

pbrylski@gmail.com (pbrylski@gmail.com)

Subject: Planning Department has received a biological report

Appendix

This page intentionally left blank.

Appendix C2 Fairy Shrimp Survey

SUMMITWEST
ENVIRONMENTAL, INC
2683 NW Rainbow Ridge Dr
Bend OR 97703
(858) 220-5674
SummitWestEnv.com

Collection and Processing of Dry Samples for the Presence of Fairy Shrimp Cysts and Culturing of Cysts for Species Determination for Species Identification at Temecula Charter School Site.

29 May, 2017

Introduction

Chuck Black, 10(a)(1)(A) permit number TE835549-7, of Ecological Restoration Service, San Diego, CA, was contracted in April 2017 by Chezzie Brungraber of SummitWest Environmental, Inc., Bend Oregon for assistance with collection and processing of dry samples for the determination of the presence of fairy shrimp cysts, and for culturing of *Branchinecta* cysts for identification to the species level of any cysts found for dry samples from 2 road ruts on the Temecula Charter School site (Figures 1 and 2).

Project Description

The Temecula Charter School parcel has UTM coordinates for the approximate center of the site as 11S 0491121mE x 3720624mN (Figures 1, 2). The parcel is located within criteria cell 5275 (Southwest Area Plan, French Valley-Lower Sedco Hills subunit) of the western Riverside Multi-Species Habitat Conservation Plan (MSHCP; County of Riverside 2016b). Because the project site is found within a criteria cell, this report includes a habitat assessment for species and sensitive habitats identified by the MSHCP and an MSHCP Consistency Analysis (RCA 2007a, 2007b).

During a 2016-17 habitat assessment of the site by Phillip Brylski and David Bramlet, observed was ponding in two road ruts, approximately 28 sq ft (RR1) and approximately 7 sf (RR2) in size.

The ponded road ruts were assessed for meeting the inundation criteria for fairy shrimp habitat (USFWS 2015). It is likely that these road ruts filled on February 27, 207 during an unusual rain event (Weather Currents 2017). The initial observations were conducted three days following that event (March 2, 2017). The road ruts within the Flossie Rd ROW were dry within 10 days of when the road ruts were assumed to have ponded (observed on March 10, 2017) and eight days following the first survey. These road ruts appeared to have actually dried within eight days, as observed by the wildlife biologist. Therefore, these road ruts would not be considered

2683 NW Rainbow Ridge Dr
Bend OR 97703

(858) 220-5674
SummitWestEnv.com

to have ponded for a sufficient duration to provide suitable habitat for listed fairy shrimp species. No ponding was observed on the two parcels that form the project site. These recent survey guidelines note a seven or ten day period for sampling period, which is assumed to represent the life cycle of some fairy shrimp species (USFWS 2015).

In a review of the habitat assessment plan, the Riverside County Environmental Programs Department and the Regional Conservation Authority (RCA) for Joint Project Review stated that the casual observations of ponding were not sufficient for fairy shrimp presence sampling, and that a wet or dry season survey needed to be performed on the basins. The current request represents a dry season sampling to satisfy these requirements.

Methods

Sample Collection

After receiving a notice of permission to proceed by the Service, Chuck Black collected samples on May 28, 2017. Ruts were located by gps locations and the presence of previously placed pin flags by the ruts. Estimates of size during ponding at the time of the habitat assessment gave 28 square feet for Road Rut 1 and 4 square feet for Road Rut 2. Unvegetated area of the ruts at time of sample collections were much smaller. Ten approximately 50 ml samples were collected along a single transect through each rut were collected.

No obligate or facultative wetland plants were noted in ruts, and there was a dense stand of non-native *Bromus diandrus* on the site, including in most of the rut areas.

Soil Processing for Cyst Presence

Samples were processed by Chuck Black of Ecological Restoration Service, who is authorized by the U.S. fish and Wildlife Service to process dry samples for the presence of fairy shrimp cysts and to culture cysts to identify to species level as special conditions of his 10(a)(1)(A) permit. The bulk samples were divided and hydrated for approximately 1-2 hours in tap water, then washed through a set of sieves. Material passing through a Number 45 (.0139”) USA Standard Testing Sieve, A.S.T.M.E.-11 specification and caught on a Number 70 (.0083”) Sieve was rinsed into a container with approximately 50 ml of a saturated brine solution to float organic material, including fairy shrimp cysts. The material floating on the brine was decanted onto a paper filter on a filter funnel, and water was removed through the filter paper by vacuum suction. The material left on the paper was examined under a 6.3-570x power Olympus SZX9 Zoom Stereo Microscope. Distinctive fairy shrimp cysts, if present, were individually counted (if less than approximately 50) or estimated (for larger numbers) by examining ¼ or ½ subsections of the filter and multiplying the subset by the appropriate factor. The presences and numbers of ostracod shells and cladoceran ephippia were also noted in samples.

SUMMITWEST
ENVIRONMENTAL, INC

2683 NW Rainbow Ridge Dr
Bend OR 97703

(858) 220-5674
SummitWestEnv.com

Results

No *Branchinecta* or *Streptochepalus* cysts were present in any of the samples from either rut. No ostracod shells or cladoceran ephippia were present in any of the samples.

I certify that the information in this survey report and attached exhibits fully and accurately represent my work.

SUMMITWEST
ENVIRONMENTAL, INC
2683 NW Rainbow Ridge Dr
Bend OR 97703
(858) 220-5674
SummitWestEnv.com

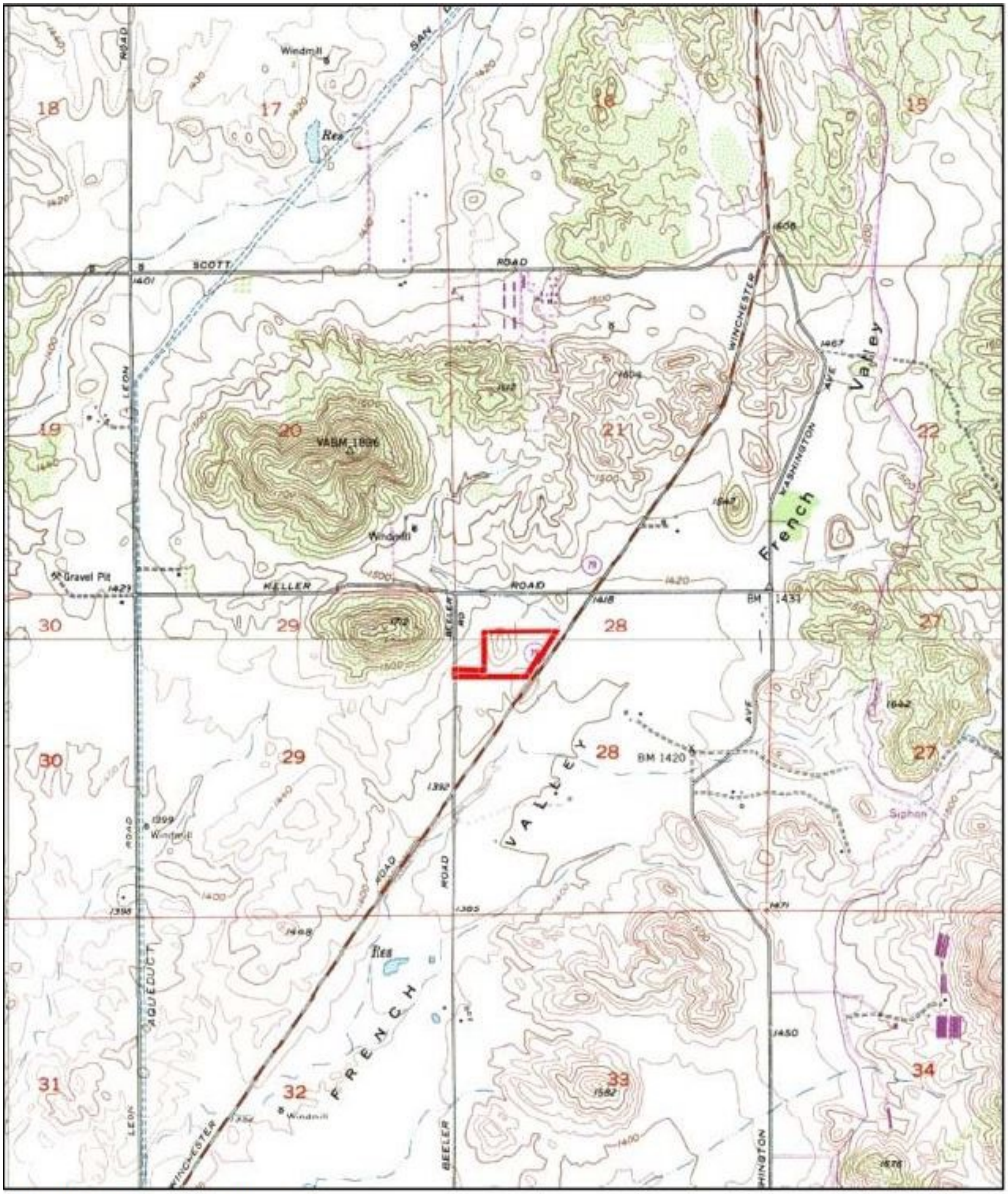


Figure 1. Topographic map

SUMMITWEST
ENVIRONMENTAL, INC
2683 NW Rainbow Ridge Dr
Bend OR 97703
(858) 220-5674
SummitWestEnv.com

Figure 2 – Location of the road ruts (RR) at the Temecula Valley Charter School site. RR1: 33.372503N, 117.0060046W, RR2: 33.3722513 N, 117.055343W

Appendix

This page intentionally left blank.

Appendix D Geotechnical Investigation

GEOTECHNICAL INVESTIGATION
PROPOSED CHARTER SCHOOL SITE
34155 WINCHESTER ROAD
FRENCH VALLEY AREA
RIVERSIDE COUNTY, CALIFORNIA

PREPARED FOR:

TEMECULA VALLEY CHARTER SCHOOL
C/O Hansberger & Klein, PLC
P.O. Box 1352
Blue Jay, California 92317-1352

PREPARED BY:

INLAND FOUNDATION ENGINEERING, INC.
1310 South Santa Fe Avenue
San Jacinto, California 92583

September 9, 2016
Project No. T238-001

INLAND FOUNDATION ENGINEERING, INC.
Consulting Geotechnical Engineers and Geologists
P.O. Box 937, San Jacinto, CA 92581

September 9, 2016
Project No. T238-001

TEMECULA VALLEY CHARTER SCHOOL
C/o Hansberger & Klein, PLC
P.O. Box 1352
Blue Jay, California 92317-1352

Attention: Richard J. Hansberger

Re: Geotechnical Investigation
Proposed Charter School Site
34155 Winchester Road
French Valley Area, Riverside County, California
APN's 476-010-013 & -059

Dear Mr. Hansberger:

We are pleased to submit this geotechnical investigation report conducted for the referenced project. The site is located west of and adjacent to Winchester Road, approximately 625 feet south of Keller Road in the French Valley area of Riverside County, California.

It is our opinion that the proposed development is feasible from a geotechnical engineering standpoint. Our report includes design recommendations along with the field and laboratory data. We have also included recommendations for site grading.

We appreciate the opportunity of being of service to you on this project. If there are any questions, please contact our office.

Respectfully,
INLAND FOUNDATION ENGINEERING, INC.

PROFESSIONAL GEOLOGIST
DANIEL R. LIND
NO. 2451
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Daniel R. Lind, CEG
Principal Geologist

REGISTERED PROFESSIONAL ENGINEER
ALLEN D. EVANS
No. 2060
GEOTECHNICAL
STATE OF CALIFORNIA

Allen D. Evans, GE
Principal

DRL:ADE:es
Distribution: Addressee (3)

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

This report presents the results of the geotechnical investigation/geoseismic evaluation conducted at the site of the proposed Temecula Valley Charter School. The site is located west of and adjacent to Winchester Road, approximately 625 feet south of Keller Road, in the French Valley area of Riverside County, California. The Assessor's Parcel Numbers for the property are 476-010-013 & -059. The following references were provided for our use during this study.

- TVCS Site Plan and Floor Plan, dated July 6, 2016, prepared by WLC Architects.
- TVCS Aerial, dated June 17, 2016, prepared by WLC Architects.
- ALTA/NSPS Land Title Survey, 34155 Winchester Road, Winchester, Riverside County, California, dated June 14, 2016, prepared by O.K.O. Engineering, Inc.
- ALTA/NSPS Land Title Survey (with Topographic Survey), 34155 Winchester Road, Winchester, Riverside County, California, dated June 28, 2016, prepared by O.K.O. Engineering, Inc.

This report provides preliminary design parameters that may be applied to the proposed development on the site.

SCOPE OF SERVICES

The purpose of this study was to provide geotechnical parameters for design and construction of the proposed project. The scope of the geotechnical services included:

- *A review of the general geologic and subsurface conditions at the project site.*
- *An evaluation of the engineering and geologic data collected for the project site.*
- *Preparation of this report providing preliminary geotechnical engineering conclusions and recommendations for design and construction.*

The tasks performed to achieve these objectives included:

- *Collection and review of geologic data relative to the site.*
- *Subsurface exploration to evaluate the nature and stratigraphy of the subsurface soils and to obtain representative samples for laboratory testing.*

- *A visual reconnaissance of the site and surrounding area to ascertain the presence of unstable or adverse geologic conditions.*

- *Laboratory testing of representative samples to evaluate the classification and engineering properties of the soils.*

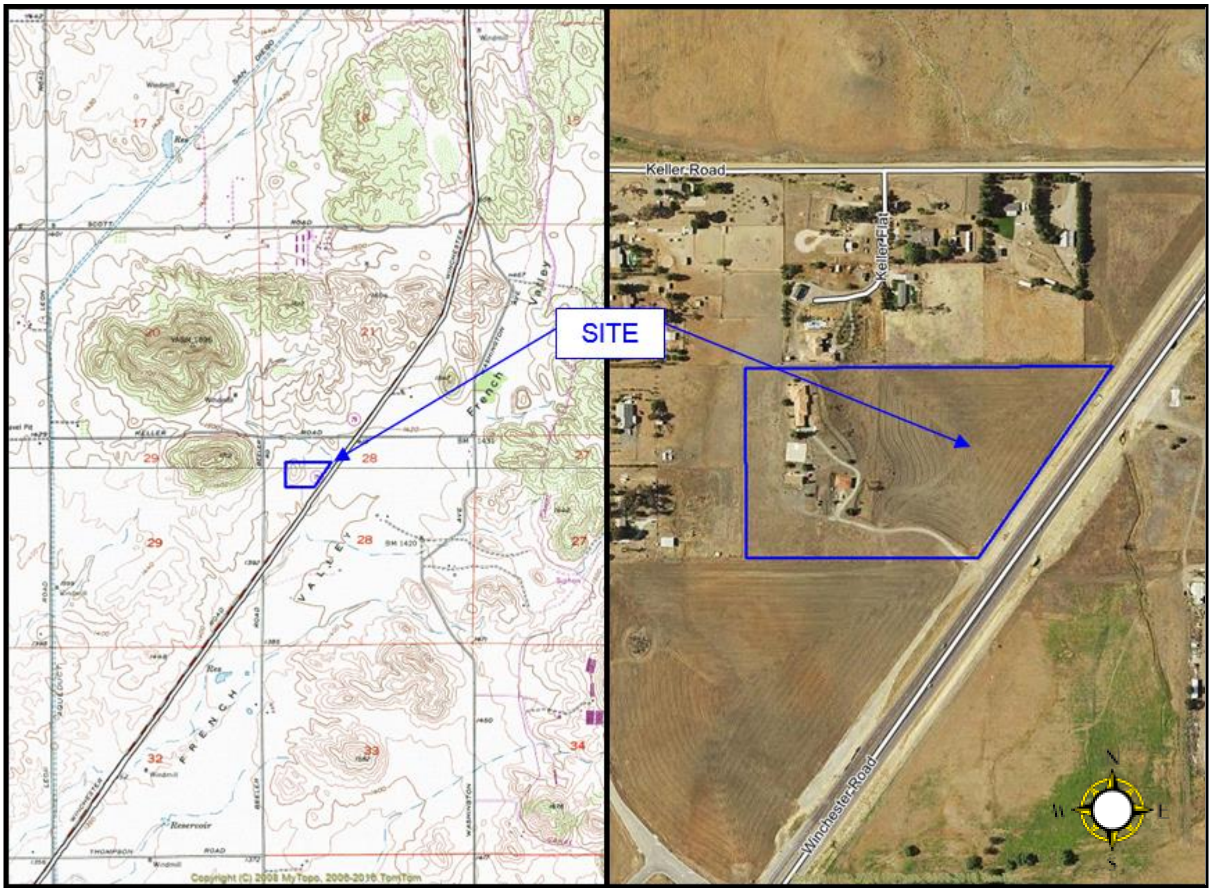
- *Analysis of the data collected and the preparation of this report with preliminary geotechnical engineering conclusions and recommendations.*

Evaluation of hazardous waste was not within the scope of services provided. Evaluation of seismic hazards was based on field mapping, literature review and limited subsurface exploration. Because the site is not located in a defined active fault zone, a detailed review in this regard was not conducted.

PROJECT AND SITE DESCRIPTION

The site is located in the northwesterly portion of Section 28, Township 6 South, Range 2 West, S.B.B.&M. The site is located west of and adjacent to Winchester Road, approximately 625 feet south of Keller Road in the French Valley area of Riverside County, California. The Assessor's Parcel Numbers for the property are 476-010-013 & -059. The project site occupies two parcels on approximately 14.6 acres. Most of the proposed charter school campus will be built on the easterly parcel (APN 476-010-059) that is currently vacant. The westerly parcel (APN 476-010-013) consists of a knoll that has been developed with single family residence, mobile home, and other outbuildings. The location of the project site is shown on Figure 1 below.

Figure 1: **U.S.G.S. Topographic Maps, Winchester & Bachelor Mt. 7.5' Quadrangles and Aerial Photograph (2014)**



At the present time, the proposed school site is vacant. At the time of our field investigation the site had been recently disced. The site is bounded to the east by Winchester Road (State Route 79), to the north and west by rural property, and to the south by vacant land. A borrow ditch is present adjacent to the site along Winchester Road. Two concrete drainage structures are present beneath Winchester Road, near the northerly and southerly portions of the site.

The topography is slightly sloping with a gradient of approxiately 10 percent to the east-southeast. Based on the provided toographic map, elevations across the charter school site range from approximately 1,430 feet above mean sea level (msl) beneath the northwesterly corner of the site to approximately 1,410 feet msl near the southeasterly portion of the site. A shallow and broad drainage swale is present through the center-southern portion of the site, which drains toward the southerly culvert beneath Winchester Road. A review of historical aerial photographs indicates that this drainage swale was more pronounced in the past.

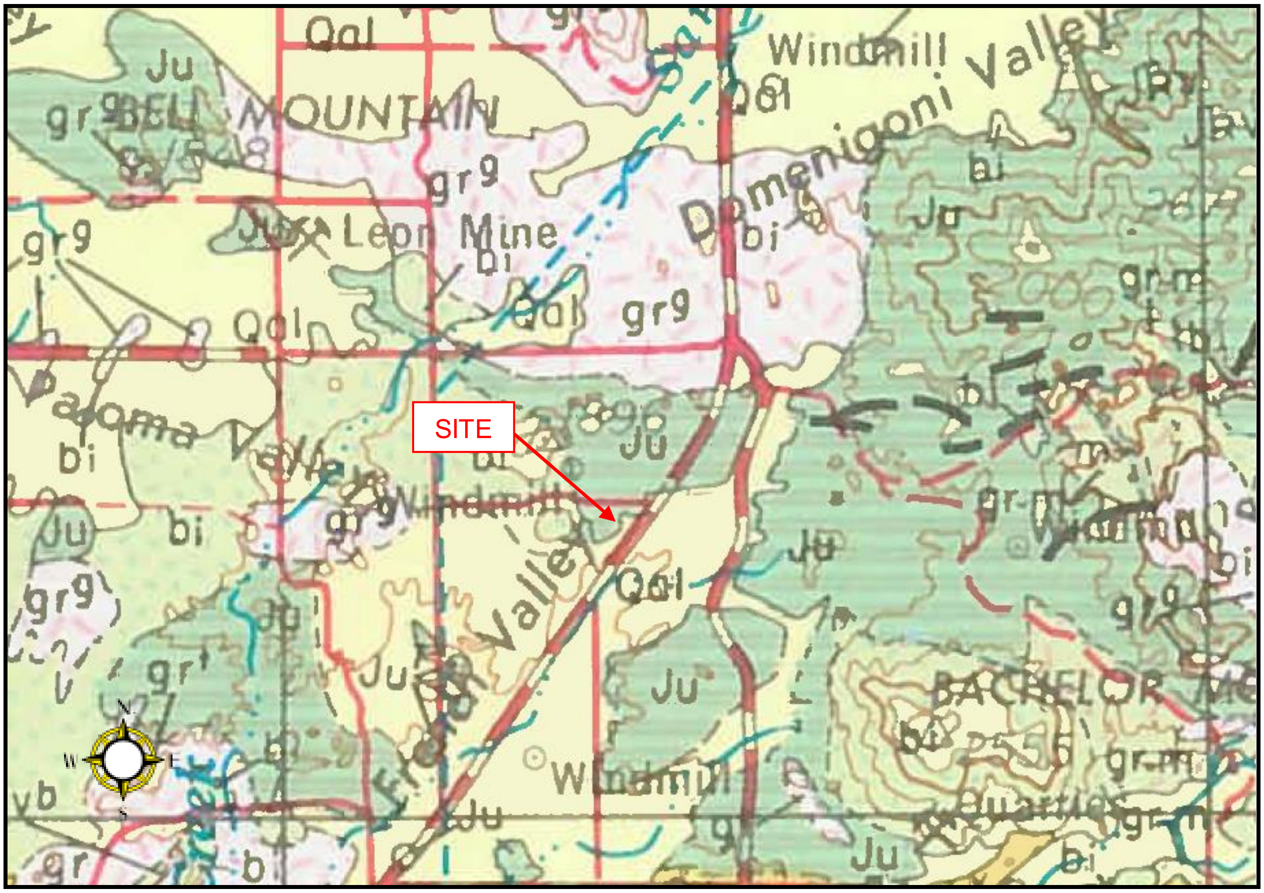
Based on the provided site plan and discussions with the architect, we understand that the proposed construction will consist of six structures located around a central courtyard. The buildings will be single-story wood-framed structures ranging in size from approximately 2,500 to 9,400 square feet. The total cumulative area of the campus buildings will be 44,600 GSF. A paved parking area is planned on the easterly portion of the site. A fire lane is planned around the building complex. We understand that a stormwater retention system is tentatively planned on the easterly portion of the site. Grading is expected to consist of cuts and fills of less than five feet, exclusive of remedial over-excavation as recommended in this report.

GEOLOGIC SETTING

Regional Geology: The subject site is situated within a natural geomorphic province in southwestern California known as the Peninsular Ranges, which is characterized by steep, elongated ranges and valleys that trend northwesterly. This geomorphic province encompasses an area that extends 125 miles, from the Transverse Ranges and the Los Angeles Basin, south to the Mexican border, and beyond another 795 miles to the tip of Baja California (Norris & Webb, 1990; Harden, 1998). This province is believed to have originated as a thick accumulation of predominantly marine sedimentary and volcanic rocks during the late Paleozoic and early Mesozoic. Following this accumulation, in mid-Cretaceous time, the province underwent a pronounced episode of mountain building. The accumulated rocks were then complexly metamorphosed and intruded by igneous rocks, known locally as the Southern California Batholith. A period of erosion followed the mountain building, and during the late Cretaceous and Cenozoic time, sedimentary and subordinate volcanic rocks were deposited upon the eroded surfaces of the batholithic and pre-batholithic rocks.

Figure 2 below shows a portion of the C.D.M.G. Geologic Map of California, Santa Ana Sheet, (Scale 1:250,000), Southern California (Rogers, 1965) depicting the approximate location of the project site.

Figure 2: **C.D.M.G., 1966, Geologic Map of California, Santa Ana Sheet, Scale 1:250,000.**

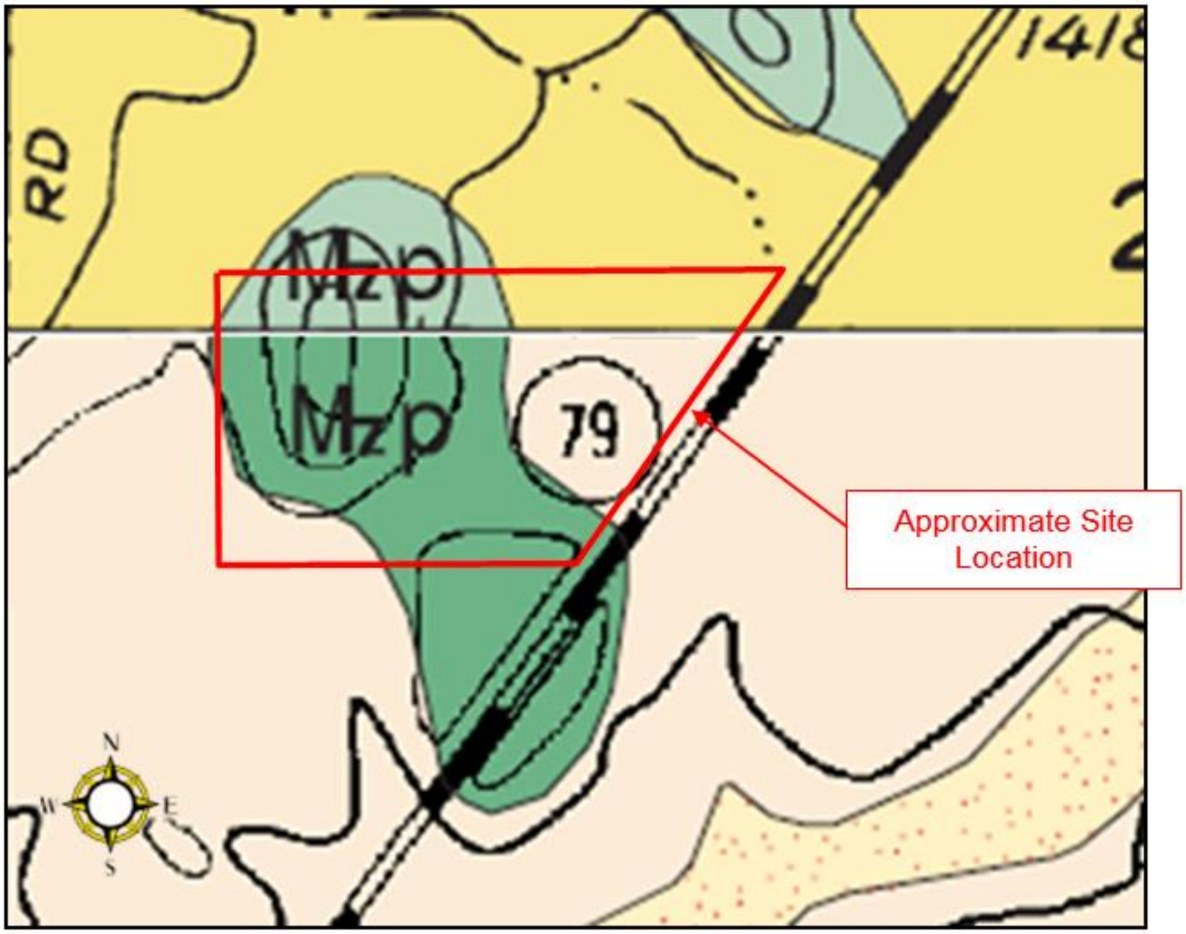


Local Geology: More specifically, the site is situated along the central portion of the Perris Block, an eroded mass of Cretaceous and older crystalline rock. Thin sedimentary and volcanic units mantle the bedrock in a few places with alluvial deposits filling in the lower valley areas. The Perris Block is a structurally stable, internally unfaulted mass of crustal rocks bounded on the west by the Elsinore-Chino fault zones, on the east by the San Jacinto fault zone, and on the north by the Cucamonga fault zone (Woodford, et al., 1971). On the south, the Perris Block is bounded by a series of sedimentary basins that lie between Temecula and Anza (Morton and Matti, 1989).

According to Morton & Kennedy (2003), the site is underlain by very old (middle to early Pleistocene age) alluvial valley deposits and Mesozoic age metamorphic bedrock (phyllite). The alluvial soils are described as well-indurated, reddish-brown, gravel, sand, silt and clay-bearing alluvium (map symbol Qvov). These soils are mapped on the northeasterly portion of the school site. The phyllite bedrock (map symbol Mzp) is mapped across the westerly and southeasterly portion of the school site.

Figure 3 below presents combined portions of the U.S.G.S. Preliminary Geologic Map of the Winchester 7.5' Quadrangle (Morton, 2003) and the Geologic Map of the Bachelor Mt. 7.5' Quadrangle (Morton & Kennedy, 2003) depicting the mapped geologic units in the vicinity of the site.

Figure 3: U.S.G.S. Geologic Maps, Winchester 7.5' Quadrangle and Bachelor Mt. 7.5' Quadrangle (2003)



Qvov	**Very old alluvial valley deposits (middle to early Pleistocene)**—Fluvial sediments deposited on broad canyon floors. Consists of moderately to well-indurated, reddish-brown, mostly very dissected gravel, sand, silt, and clay-bearing alluvium. In places, includes thin, discontinuous alluvial deposits of Holocene age
Mzp	**Phyllite** (**Mesozoic**)—Fissle black phyllite. Commonly has sheen produced by very fine-grained white mica on s-surface; locally contains small elongate prisms of fine-grained white mica, which may be pseudomorphs after chiastolite

Groundwater: Groundwater was encountered within our exploratory boring B-08 at a depth of approximately 30 feet below the existing ground surface. Groundwater information pertinent to the alignment was derived from published California Department of Water Resources (DWR) historical groundwater level data and observation of groundwater conditions in borings drilled during this investigation.

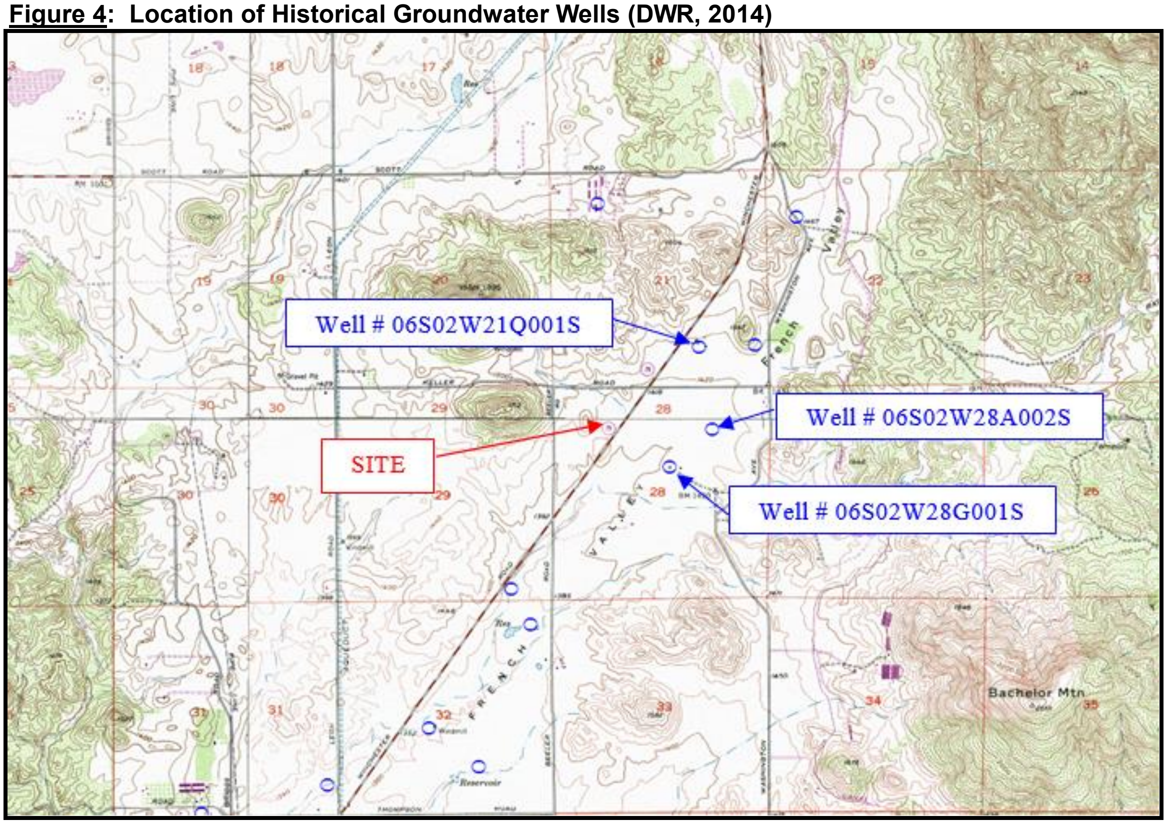
Several historical groundwater records were located in the DWR database for wells in the vicinity of the project site. The State Well Number, depth to ground-water, date monitored, and coordinate locations of each of these wells are presented in Table 1 below:

Table 1: Historical Groundwater Data, Department of Water Resources

State Well No.	Reported Depth to Groundwater (ft.)	Date Monitored	Coordinate Location (NAD27)
06S02W21Q001S	21	1/1/68	117.0886/33.6298
06S02W28A002S	13	1/1/68	117.0875/33.6242
06S02W28G001S	10	1/1/68	117.0909/33.6217

The approximate locations of the wells reported by DWR are presented on the following U.S.G.S. topographic map for reference (Figure 4). It should be noted that the reported groundwater depths in the vicinity may not represent current conditions.

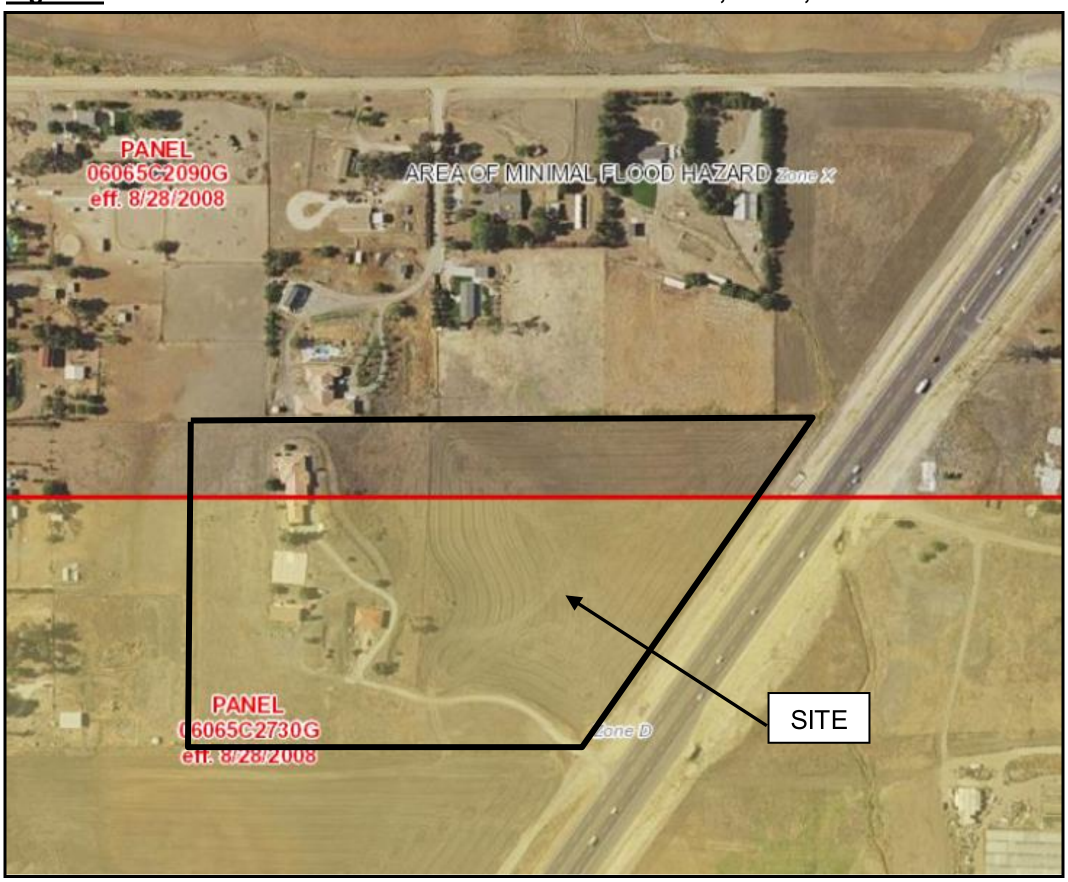
Figure 4: Location of Historical Groundwater Wells (DWR, 2014)



Surface Water: No indications of surface water (ponding, poor drainage, etc.) were observed on the site during the time of this study. Surface water at this site is controlled by the site topography. A review of the U.S.G.S. topographic map for this site indicates that the site drains to the east-southeast.

A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) website (FEMA, 2016), indicates that no specific current FIRM maps are printed for the subject property. The northerly portion of the property is located within Panel 06065C2090G, dated August 28, 2008. This panel indicates that the northerly portion of the project site is located in an area designated as "Zone X" described as "Areas of Minimal Flood Hazard". The southerly portion of the site lies within Panel 06065C2730G, labeled as Zone D. The Zone D designation is used for areas where there are possible but undetermined flood hazards, as no analysis of flood hazards has been conducted. The designation of Zone D is also used when a community incorporates portions of another community's area where no map has been prepared (FEMA, 2013). Figure 5 below shows portions of the referenced panels.

<u>Figure 5</u>: FEMA Panel Nos. 06065C2090G and 06065C2730G, FEMA, 2008



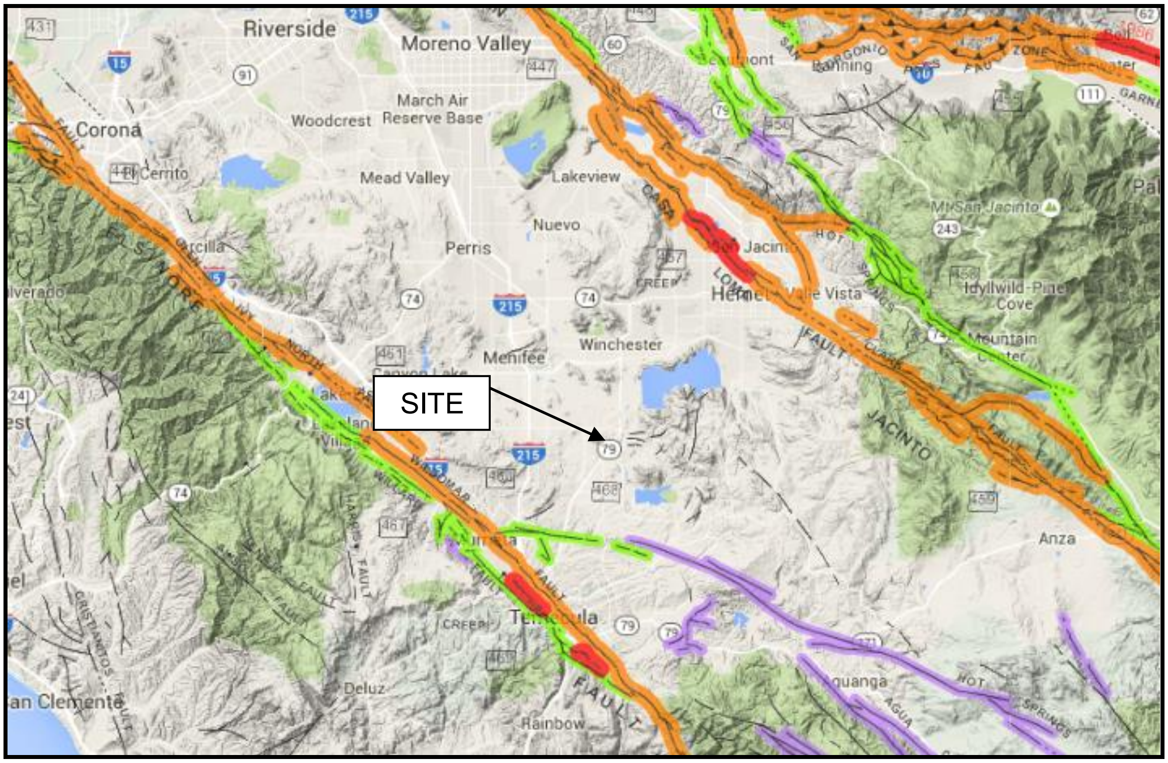
Faulting: There are at least 38 major late Quaternary active/potentially active faults that are within a 100-kilometer radius of the site (Blake, 2000). Of these, there are no faults known to traverse the site, based on published literature, nor is there any photogeologic or surficial geomorphic evidence suggestive of faulting on the site. In addition, the site is not located within a State of California "Alquist-Priolo Earthquake Fault Zone" for fault rupture hazard (Hart and Bryant, 2007) or within a mapped County of Riverside fault zone.

The nearest known active fault is the Temecula segment of the Elsinore Fault Zone, which is approximately 62 kilometers in length and located approximately 12.0 kilometers to the southwest of the project site. This fault is a right-lateral, strike-slip fault capable of producing an earthquake with an estimated maximum moment magnitude of M_W 7.0, and has an associated slip-rate of 5 mm/yr. (U.S.G.S., 2008).

The Elsinore fault zone is a major dextral shear system, parallel to the southern San Andreas fault that accommodates about 5 mm/yr. of the Pacific-North American Plate boundary slip. The northern elements of the fault zone, the Chino and Whittier faults, bound the Puente Hills, an uplifted block of Tertiary sediments. The Glen Ivy section forms the northeast boundary of the Santa Ana Mountains, and, together with the Temecula section, forms the Elsinore trough (Treiman, 1998). Other known regional active faults that could affect the site include the San Jacinto fault (San Jacinto, Anza, and San Bernardino segments) and San Andreas fault.

Figure 6 presents a portion of the 2010 Fault Activity Map of California (CGS, 2010) depicting the site location and mapped faults in the vicinity. This map indicates that no active faults are present on the site, or trending toward the site.

<u>Figure 6</u>: 2010 Fault Activity Map of California (CGS, 2010)



Fault along which historic (last 200 years) displacement has occurred

Holocene fault displacement (during past 11,700 years) without historic record.

Late Quaternary fault displacement (during past 700,000 years).

Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement.

According to the U.S.G.S. 2008 National Seismic Hazard Maps - Source Parameters (USGS, 2008), the major faults influencing the site, distances and maximum earthquake magnitudes are presented in Table 2.

Table 2: Fault Zone, Distances and Maximum Earthquake Magnitudes

Fault Zone	Approximate Distance (km)	Earthquake Magnitude (m_w)	Slip Rate (mm/yr)
Elsinore-Temecula	12.0	7.0	5
San Jacinto-San Jacinto Valley	13.0	7.0	18
San Jacinto-Anza	13.0	7.2	9
Elsinore-Glen Ivy	14.5	6.8	5

Our evaluation of the potential for surface fault rupture at this site included an examination of two non-stereo and ten stereo pairs of vertical black and white aerial photographs dating from 1949 to 2014 (see References for a listing) to aid in assessing the geologic and geomorphic characteristics with respect to the site and vicinity. The photogeologic analysis did not reveal indicators suggestive of active fault-related features. This included the lack of photolineations and/or no consistent tonal variations across the site, or trending toward the site.

Our review indicates that no documented active faults traverse toward the subject site, based on published literature. No surficial indications or geomorphic features were observed within the aerial photographs or field reconnaissance that are suggestive of active faulting.

Seismic Parameters: The site coordinates (NAD 83) are 33.6247°N / -117.0967°W. On the bases of the subsurface conditions and local fault characteristics, the 2013 California Building Code provides the following seismic design parameters as presented in Table 3.

Table 3: **2013 CBC Seismic Design Parameters**

Seismic Parameter	2013 CBC / ASCE 7-10 Reference	Value
Site Class	- - - / Table 20.3-1	D
S_s - Mapped Spectral Acceleration for Short Period	Fig. 1613.3.1(1) / Figure 22-1	1.500
S_1 - Mapped Spectral Acceleration for 1-sec Period	Fig. 1613.3.1(2) / Figure 22-2	0.600
F_a – Short Period Site Coefficient	Table 1613.3.3(1) / Table 11.4-1	1.0
F_V – Long Period Site Coefficient	Table 1613.3.3(2) / Table 11.4-2	1.5
S_{MS} – Maximum Considered Earthquake Spectral Response Acceleration, 5% damped, 0.2-sec period, adjusted for Site Class	Eq. 16-37 / Eq. 11.4-1	1.500
S_{M1} - Maximum Considered Earthquake Spectral Response Acceleration, 5% damped, 1-sec period, adjusted for Site Class	Eq. 16-38 / Eq. 11.4-2	0.900
S_{DS} - Design Earthquake Spectral Response Acceleration, 5% damped, 0.2-sec period	Eq. 16-39 / Eq. 11.4-3	1.000
S_{D1} - Design Earthquake Spectral Response Acceleration, 5% damped, 1-sec period	Eq. 16-40 / Eq. 11.4-4	0.600
MCE_G PGA – Maximum Considered Earthquake Geometric Mean for Site Class B	- - - / Figure 22-7	0.503
PGA_M – MCE_GPGA adjusted for Site Class	- - - / Eq. 11.8-1	0.503g
Seismic Design Category	Sect. 1613A.3.5	D

It is recommended that all structures be designed to at least meet the current California Building Code provisions in the latest CBC edition; however, it should be noted that the building code is intended as a minimum design condition and is often the maximum level to which structures are designed. Structures that are built to minimum code requirements are designed to remain standing after an earthquake in order for occupants to safely evacuate, but then may have to ultimately be demolished (Larson and Slosson, 1992).

It is the responsibility of both the property owner and project structural engineer to determine the risk factors with respect to using CBC minimum design values for the subject project. The previously-outlined CBC seismic classifications and data have been provided for use by the project structural engineer, to aid in evaluating design criteria, if needed. This information should be used to help select the appropriate seismic parameters, as outlined in the California Building Code (CBC, 2013). In addition, a site-specific seismic shear-wave study could also be performed to properly evaluate the soil profile type for site classification and seismic design purposes.

Secondary Seismic Hazards: The primary geologic hazard affecting the project is that of ground shaking. Secondary permanent or transient seismic hazards generally associated with severe ground shaking during an earthquake include, but are not necessarily limited to; ground rupture, liquefaction, seiches or tsunamis, landsliding, rockfalls, and seismically-induced settlement. These are discussed below:

Ground Rupture: Ground rupture is generally considered most likely to occur along pre-existing faults. Since there are no faults that are known to traverse the site, the potential for ground rupture is considered to be low.

Liquefaction and Seismically-Induced Settlement: In general, liquefaction is a phenomenon that occurs where there is a loss of strength or stiffness in the soils that can result in the settlement of buildings, ground failure, or other hazards. The main factors contributing to this phenomenon are: 1) cohesionless, granular soils having relatively low density (usually of Holocene age); 2) shallow ground water (generally less than 50 feet); and 3) moderate to high seismic ground shaking.

Due to the presence of medium dense to dense older alluvial soils underlain by relatively shallow metamorphic bedrock at the site (refer to SUBSURFACE CONDITIONS section), the results of our analysis indicate that the potential for liquefaction and seismically induced settlement is negligible.

Seiches/Tsunamis: A seiche is a standing wave in an enclosed or partially enclosed body of water. In order for a seiche to form, the body of water needs to be at least partially bounded, allowing the formation of the standing wave. Tsunamis are very large ocean waves that are caused by an underwater earthquake or volcanic eruption, often causing extreme destruction when they strike land.

There are no bodies of water on or adjacent to the project site. Based on the distance to large, open bodies of water and the elevation of the site with respect to sea level, it is our opinion that the potential of seiches/tsunamis does not present a hazard to this project.

Landsliding: Due to the relatively low-lying relief of the site and adjacent areas, the potential for landsliding due to seismic shaking is considered very low.

Rockfalls: Since no large rock outcrops are present on or adjacent to the site, the possibility of rockfalls during seismic shaking is nil.

Debris Flows: Debris flows are composed of a slurry-like mass of liquefied debris (ranging up to boulder size) that moves downhill under the force of gravity.

Such slurries are dense enough to support very large particles but not solid enough to resist flowing downhill. Debris flows are most common in steep mountain canyons when a mass of mud and debris becomes saturated during a heavy rainstorm and suddenly begins to flow down the canyons (Prothero & Schwab, 1996). Based on the location of the site and the relatively planar topography of the property up-gradient of site, it is our opinion that the hazard of debris flow should be considered low.

Erosion: No indication of wind or water surface erosion was observed on the site or adjacent properties at the time of our study. It is our opinion that the hazard of erosion at this site should be considered low.

Other Geologic Hazards: There are other geologic hazards not necessarily associated with seismic activity that occur statewide. These hazards include; natural hazardous materials (methane gas, hydrogen-sulfide gas, tar seeps); Radon-222 Gas; regional subsidence, and naturally occurring asbestos. Of these hazards, there are none that appear to impact the site.

ENGINEERING GEOLOGY REVIEW CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

1. Earth Materials

Locally as mapped, the site is shown to be underlain by very old (middle to early Pleistocene) age alluvial valley deposits and Mesozoic age metamorphic bedrock (phyllite).

Exploratory borings conducted by our firm indicate that the site is underlain by a veneer of alluvial deposits overlying metamorphic bedrock (fissile phyllite). The alluvial deposits encountered range in thickness from approximately one (1) to 10 feet across the site. The soils are predominately comprised of fine-grained silty clayey sand, clayey sand, and sandy clay in a generally loose (soft) to hard condition, with varying degrees of cementation. The upper foot (approximately) of the disced surficial soils are very loose. The underlying bedrock (phyllite) is highly to moderately weathered and generally in a hard condition. Some fracturing of the bedrock was observed.

2. Faulting

No active faults are known to traverse the site. In addition, the site is not located within a designated Alquist-Priolo Earthquake Fault Zone for fault rupture hazards. The nearest "known" active fault is the Temecula segment of the Elsinore Fault Zone, located approximately 12.0 kilometers to the southwest of the project site.

3. Seismicity

The primary geologic hazard that exists at the site is that of ground shaking. Several factors determine the severity of ground shaking at a given location, such as size of earthquake, length of fault rupture (if any), depth of hypocenter, type of faulting (dip slip/strike slip), directional attenuation, amplification, earth materials, and others. Due to the location of the site with respect to regional faulting and the recorded historical seismic activity, moderate to severe ground shaking should be anticipated during the life of the proposed facility.

4. Groundwater

Groundwater was encountered within our exploratory boring B-08 at a depth of approximately 30 feet below the existing ground surface. Groundwater data reviewed during this study revealed the depth to historical high groundwater levels in the vicinity of the site is less than 20 feet beneath the existing ground surface. We have estimated a historical high groundwater level of 15 feet beneath the existing ground surface.

5. Secondary Seismic Hazards

There do not appear to be any permanent or transient secondary seismic hazards that would affect the proposed school.

Recommendations:

1. Following are the seismic design parameters determined in accordance with the California Building Code and ASCE-7:

Parameter	Value
S_{DS}	1.00
S_{D1}	0.60
S_{MS}	1.50
S_{M1}	0.90
Seismic Design Category	D

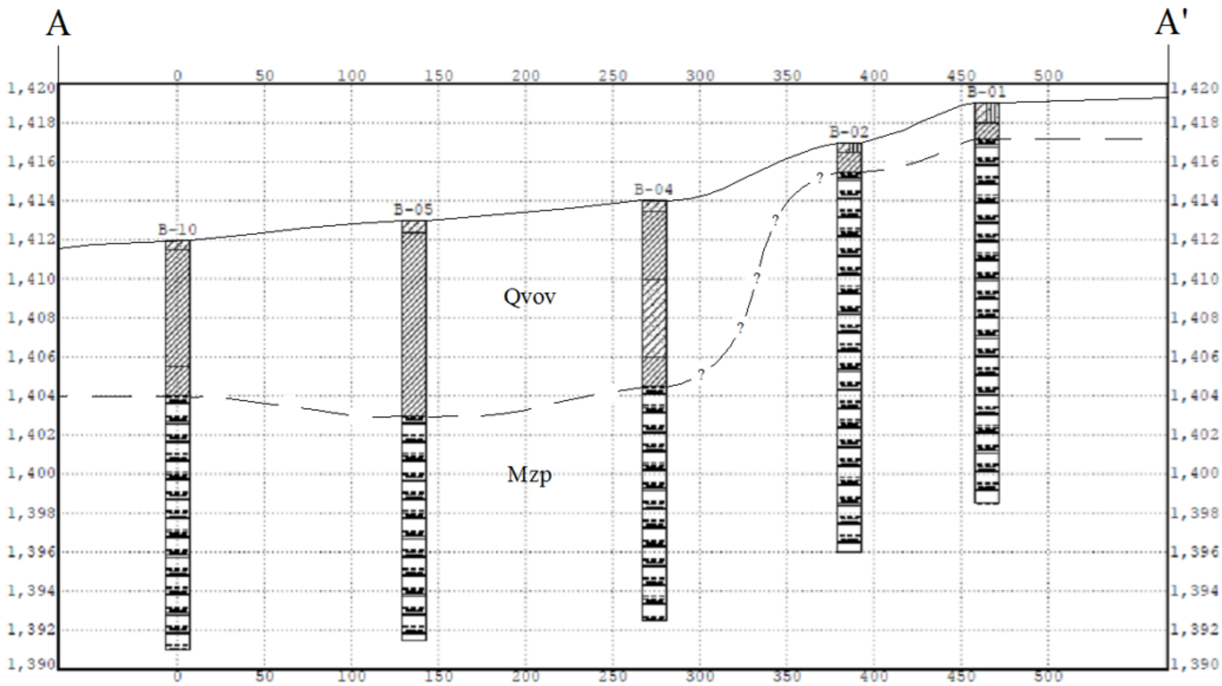
2. It is recommended that all structures be designed to at least meet the current California Building Code provisions in the latest CBC edition (2013); however, it should be noted that the building code is described as a minimum design condition and is often the maximum level to which structures are designed. Structures that are built to minimum code requirements are designed to remain standing after an earthquake in order for occupants to safely evacuate, but then may have to ultimately be demolished (Larson and Slosson, 1992). It is the responsibility of both the property owner and project structural engineer to determine the risk factors with respect to using CBC minimum design values for the facility.

SUBSURFACE CONDITIONS

The results of our field and laboratory exploration and testing indicate that the site is underlain by a veneer of alluvial deposits overlying metamorphic bedrock (fissile phyllite). The alluvial deposits encountered range in thickness from approximately one (1) to 10 feet across the site. The soils are predominately comprised of fine-grained silty clayey sand (SC-SM), clayey sand (SC), and sandy clay (CL) in a generally loose/soft to hard condition, with varying degrees of cementation. The upper foot (approximately) of the disced surficial soil is very loose. The underlying bedrock (phyllite) is highly to moderately weathered and generally in a hard condition.

A typical profile is indicated below (Figure 7)

<u>Figure 7</u>: Subsurface Profile



Consolidation testing indicates that the near surface alluvial soil is slightly to moderately compressible. One test indicates a moderate potential for saturation collapse.

The near surface alluvial soil is plastic and expansive. Expansion Index testing indicated an Expansive Index of 66 on representative soils.

Analytical testing indicates that sulfate concentrations are negligible. In accordance with ACI 318, Table 4.2.1, the soil can be classified as Class S0 with respect to sulfate exposure. Chloride concentrations are less than 100 parts per million. The soil is slightly alkaline with pH values of 7.8 to 8.2. Saturated resistivity values range from 1,600 to 2,600 ohm-cm.

Groundwater was encountered within our exploratory boring B-08 at a depth of approximately 30 feet below the existing ground surface. Groundwater data reviewed during this study revealed the depth to historical high groundwater levels in the vicinity of the site is less than 20 feet beneath the existing ground surface.

CONCLUSIONS AND RECOMMENDATIONS

On the basis of our field and laboratory exploration and testing, it is our opinion that the proposed construction will be feasible from a geotechnical engineering standpoint. Existing site soils should be suitable for providing foundation support with appropriate recompaction, as recommended herein.

The primary issue requiring mitigation is the presence of expansive soils. Expansive soil design criteria are recommended for concrete slabs-on-grade.

Analytical testing indicates that sulfate concentrations are negligible. In accordance with ACI 318, Table 4.2.1, the soil can be classified as Class S0 with respect to sulfate exposure. Chloride concentrations are also low. The soil is slightly alkaline with pH values of 7.8 to 8.2. Saturated resistivity values range from 1,600 to 2,600 ohm-cm, indicating that the soil is moderately corrosive with respect to buried ferrous metals. Inland Foundation Engineering, Inc. does not practice corrosion engineering. We recommend that a qualified corrosion engineer be consulted for additional guidance.

Groundwater was encountered within our exploratory boring B-08 at a depth of approximately 30 feet below the existing ground surface. Groundwater data reviewed during this study revealed the depth to historical high groundwater levels in the vicinity of the site is less than 20 feet beneath the existing ground surface.

The following paragraphs present more detailed design criteria which have been developed on the basis of our field and laboratory investigation.

Foundation Design: Foundations for the proposed charter school may consist of shallow spread footings with a slab-on-grade floor. For design, we recommend an allowable soil bearing capacity of 2,800 pounds per square foot. This value may be increased by ⅓ for short-term transient wind and seismic loads.

Conventional spread foundations should have a minimum width of 12 inches and should be founded a minimum depth of 24 inches beneath the lowest adjacent final grade. Building footings should be supported by at least 24 inches of compacted fill over suitably dense alluvial soils.

Static settlement of foundations properly designed and constructed as recommended herein is expected to be less than one inch total. Differential settlement between foundations of similar size and load is expected to be less than one-half inch.

The site is underlain by expansive soil. The 2013 CBC requires that slab-on-grade foundations on expansive soils be designed in accordance with WRI/CRSI Design of Slab-on-Ground Foundations (1981) or PTI Standard Requirements for Analysis of Shallow Concrete Foundations on Expansive Soils (2012). Recommended design parameters for use with these methods are presented in the "Concrete Slabs-on-Grade" section of this report.

If conventional slabs-on grade are utilized, they should be supported by at least four feet of imported non-expansive soil.

Lateral Design: Resistance to lateral loads will be provided by a combination of friction acting at the base of the slab or foundation and passive earth pressure. A coefficient of friction of 0.39 between soil and concrete may be used with dead load forces only. A passive earth pressure of 270 pounds per square foot, per foot of depth, may be used for the sides of footings poured against recompacted or dense native material. These values may be increased by 1/3 to provide for lateral loads of short duration such as those caused by wind or seismic forces. Passive earth pressure should be ignored within the upper one foot except where confined as beneath a floor slab, for example.

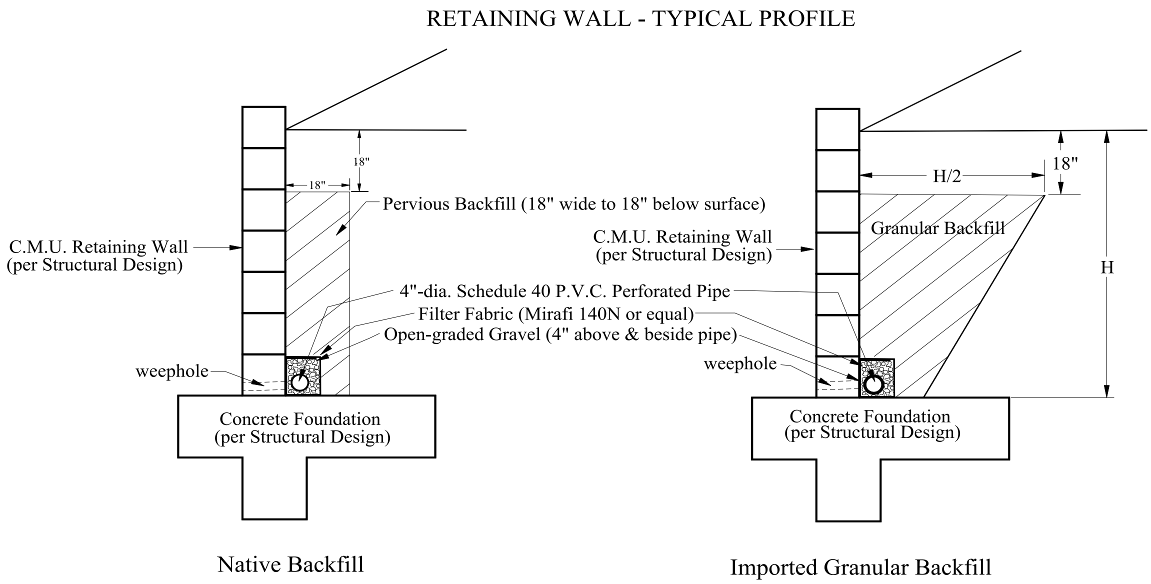
Trench Wall Stability: Significant caving did not occur within our exploratory borings. All excavations should be configured per with the requirements of CalOSHA. We would classify the soils as Type C, per CalOSHA criteria. The classification of the soil and the shoring and/or slope configuration should be the responsibility of the contractor on the basis of the trench depth and the soil encountered. The contractor should have a "competent person" on-site for the purpose of assuring safety within and about all construction excavations.

Retaining Walls: Retaining walls may be necessary during construction and/or landscaping. For on-site soils, the retaining walls should be designed for an active earth pressure equivalent to that exerted by a fluid weighing not less than 40 pounds per cubic foot (pcf).

For walls that are restrained, an "at-rest" lateral equivalent fluid pressure of 60 pounds per cubic foot is recommended, with the resultant applied at mid-height of the wall.

Any applicable construction and seismic surcharges should be added to the above pressures. Figure 8 shows a typical retaining wall profile.

Figure 8: Typical Retaining Wall Profile



At least 12 inches of granular material should be used in the backfill behind the walls and water pressure should not be permitted to build up behind retaining walls. The upper 12 to 18 inches of the backfill should consist of soil having a low permeability (less than 10^{-6} cm/sec). All backfill should be non-expansive. A subdrain should be constructed along the base of the backfill. Typical recommended retaining wall backfill and drainage details are shown in the detail above.

Concrete Slabs-on-Grade: Our exploratory borings and laboratory testing indicate that potentially expansive soils are present throughout the project site and that expansive soil design criteria should be implemented for concrete slabs-on-grade. *If conventional slabs-on grade are utilized, they should be supported by at least four feet of imported non-expansive soil.*

The 2013 CBC requires that slab-on-grade foundations on expansive soils be designed in accordance with ***WRI/CRSI Design of Slab-on-Ground Foundations (1981)*** or ***PTI Standard Requirements for Analysis of Shallow Concrete Foundations on Expansive Soils (2012)***. The following table presents the design parameters for the WRI method (Table 4):

Table 4: **WRI Parameters**

Parameter	Reference	Value
C_O	WRI Figure 5	2.0
C_S	WRI Figure 4	1.0
C_W	WRI Figure 14	15
Effective PI	Laboratory Testing	16
1-C	WRI Figure 15	0.0

PTI design criteria for the design of post-tensioned slabs are presented in the following table (Table 5):

Table 5: **PTI Parameters**

Parameter	Reference	Value
pF	Figure 5.11	4.0
Thornthwaite Index	Figure A3	-30
e_m edge lift	Figure 5.10	4.5 ft.
y_m edge lift	Table 5.2 (a)	1.0 in.
e_m center lift	Figure 5.10	9.0 ft.
y_m center lift	Table 5.2 (a)	0.3 in.

All concrete slabs-on-grade should have a minimum thickness of four inches. During final grading and prior to the placement of concrete, all surfaces to receive concrete slabs-on-grade should be compacted to maintain a minimum compacted fill thickness of 12 inches.

Load bearing slabs may be designed using a modulus of subgrade reaction not exceeding 100 pounds per square inch per inch.

Slabs that are designed and constructed per the provisions of the American Concrete Institute (ACI) as a minimum will perform much better and will be more pleasing in appearance. Shrinkage of concrete should be anticipated. This will result in cracks in all concrete slabs-on-grade. Shrinkage cracks may be directed to saw-cut "control joints" spaced on the basis of slab thickness and reinforcement. ACI typically recommends control joint spacing in unreinforced concrete at maximum intervals equal to the slab thickness times 24. A level subgrade is also an important element in achieving some “control” in the locations of shrinkage cracks. Control joints should be cut immediately following the finishing process and prior to the placement of the curing cover or membrane. Control joints that are cut on the day following the concrete placement are generally ineffective. The placement of reinforcing steel will help in reducing crack width and propagation as-well-as providing for an increase in the control joint spacing. The use of welded wire mesh has typically been observed to be of limited value due to difficulties and lack of care in maintaining the level of the steel in the concrete during placement. The addition of water to the mix to enhance placement and workability frequently results in an excessive water-cement ratio that weakens the concrete, increases drying times and results in more cracking due to concrete shrinkage during the initial cure.

Where slabs are to receive moisture sensitive floor coverings, we recommend the use of a vapor retarder. There are various products manufactured for this purpose. ASTM currently provides a standard water vapor permeance of 0.3 perms. Such materials would allow up to 18 gallons of water per week in a 50,000 square foot area. Therefore, it should be understood that these materials are not vapor “barriers”. Some flooring applications may require more effective retarders. Therefore, the selection of the vapor retarder should be based upon the type of flooring material and is not considered to be a geotechnical engineering design parameter.

Vapor retarders should have a minimum thickness of 10-mil unless otherwise specified. It is possible that the retarders will be exposed to equipment loads such as ready-mix trucks, buggies, laser screeds, etc. In such cases, the thickness should be increased to at least 15-mil. Vapor retarders should be placed between two 2-inch thick layers of sand to reduce the potential of punctures and to aid in the curing process. In lieu of this, the concrete may be placed directly upon the vapor retarder but should be designed with reinforcement to offset additional curling stresses. Seams and holes made for underground utilities should be properly sealed per the recommendations of the manufacturer.

The vapor retarder recommended in the preceding paragraphs is a common method of reducing the migration of moisture through the slab. It will not prevent all moisture migration through the slab nor will it prohibit the formation of mold or other moisture related problems. For moisture sensitive floor coverings, an expert in that field should be consulted to properly design a vapor retarder suitable for the specific application.

If concrete is to be placed on a dry absorptive subgrade in hot and dry weather, the subgrade should be dampened but not to a point that there is freestanding water prior to placement. The formwork and reinforcement should also be dampened.

Preliminary Pavement Design: Based on our test results, we have used an R-value of 13 to evaluate the preliminary structural pavement sections for the project. At the completion of rough grading, additional samples of the actual pavement subgrade soil should be obtained for R-value testing to confirm that the following recommended pavement sections are appropriate.

All surfaces to receive asphalt concrete paving should be underlain by a minimum compacted fill thickness of 12 inches (excluding aggregate base). This may be performed as described in the Site Grading Section of this report.

Asphalt Concrete Pavement

Table 6 presents the recommended structural section designs based on current Caltrans design procedures.

Table 6: Preliminary AC Pavement Designs

Service	Asphalt Concrete Thickness (ft.)	Base Course Thickness (ft.)
Light traffic (autos, parking areas, T.I. = 5.0)	0.25	0.70
Heavy traffic (trucks, driveways, bus lanes, T.I. =7.0)	0.30	1.20

Portland Cement Concrete Pavement (PCCP)

Table 7 presents the recommended PCCP structural sections for onsite parking and drive areas based on the American Concrete Institute Guide for Design and Construction of Concrete Parking Lots (ACI 330R-08).

Table 7: Preliminary PCCP Pavement Designs

Service	PCCP Thickness (in.)	Class 2 Aggregate Base Thickness (in.)
Car Parking Areas and Access Lanes ADTT = 1 (Category A)	4.5	4.0
Bus Lanes and Parking ADTT = 25 (Category B)	5.5	4.0

The concrete should have a minimum 28-day modulus of rupture of 600 psi. This corresponds to a compressive strength of approximately 4,500 psi. The Class 2 aggregate base should comply with current Caltrans requirements. The aggregate base should be compacted to at least 95 percent relative compaction based on ASTM D1557. The upper 12 inches of pavement subgrade soil, below the aggregate base, should also be compacted to a minimum relative compaction of 95 percent.

Construction joints should be sawcut in the pavement at a maximum spacing of 30 times the thickness of the slab, up to a maximum of 15 feet. Pavement sawcutting should be performed within 12 hours of concrete placement, preferably sooner. Sawcut depths should be equal to approximately ¼ of the slab thickness for conventional saws or one inch when early-entry saws are utilized on slabs nine inches thick or less. Construction joints should not be placed near flow lines. The use of plastic strips for formation of jointing is not recommended. The use of expansion joints is not recommended, except where the pavement will adjoin structures.

General Site Grading: All grading should be performed in accordance with the applicable provisions of the 2013 California Building Code. The following recommendations have been developed on the basis of our field and laboratory testing:

1. **Clearing and Grubbing:** All surfaces to receive compacted fill and all building, slab and pavement areas should be cleared of existing loose soil, vegetation, debris, and other unsuitable materials. We recommend a minimum over-excavation of at least 24 inches below existing surface grades to provide assurance of root removal and to expose abandoned utility and irrigation lines. All abandoned underground utility lines should

be traced out and completely removed from the site. Soils which are loosened due to the removal of trees should be removed and replaced as controlled compacted fill.

2. **Preparation of Surfaces to Receive Compacted Fill:** All surfaces to receive compacted fill should be subjected to compaction testing prior to processing. Testing should indicate a relative compaction of at least 85 percent within the unprocessed native soils. If roots or other deleterious materials are encountered or if the relative compaction fails to meet the acceptance criterion, additional over-excavation will be required until satisfactory conditions are encountered. Upon approval, surfaces to receive fill should be scarified, brought to near optimum moisture content, and compacted to a minimum of 90 percent relative compaction.

3. **Placement of Compacted Fill:** Fill materials consisting of on-site soils or approved imported granular soils should be spread in shallow lifts and compacted at near optimum moisture content to a minimum of 90 percent relative compaction.

4. **Preparation of Building Areas:** Building areas for the charter school should be over-excavated to minimum depth of 24 inches below existing grades, or to the depth necessary to provide at least 12 inches of compacted fill below footing bottoms, whichever is deeper. The over-excavated area should extend outside of the exterior footing lines for a distance of at least five feet. The surface of the over-excavation should then be reviewed for compliance with the criteria of Item 2 under this section. Upon approval the surface should be scarified, brought to near optimum moisture content and compacted to a minimum of 90 percent relative compaction. The excavated material may then be replaced as controlled compacted fill.

5. **Preparation of Slab and Paving Areas:** During final grading and immediately prior to the placement of concrete or a base course, all surfaces to receive asphalt concrete paving, PCC paving or concrete slabs-on-grade should be processed and tested to assure compaction for a depth of at least of 12 inches. This may be accomplished by a combination of overexcavation, scarification and recompaction of the surface, and replacement of the excavated material as controlled compacted fill. Compaction of slab areas should be to a minimum of 90 percent relative

compaction. Compaction within proposed pavement areas should be to a minimum of 95 percent relative compaction for both the subgrade and base course.

6. **Utility Trench Backfill:** Utility trench backfill consisting of the on-site soil types should be placed by mechanical compaction to a minimum of 90 percent relative compaction. This is with the exception of the upper 12 inches under pavement areas where the minimum relative compaction should be 95 percent. Jetting of the native soils is not recommended.

7. **Testing and Observation:** During site grading, tests and observations should be performed to verify that the grading is being performed in accordance with the project specifications and the recommendations in this report. Field density testing should be performed in accordance with the ASTM D1556 or D6938 test method. The minimum acceptable degree of compaction should be 90 percent of the maximum dry density as obtained by the ASTM D1557 test method. Where testing indicates insufficient density, additional compactive effort should be applied until retesting indicates satisfactory compaction.

Testing should also be conducted to verify that the soils will not subject concrete to sulfate attack and are not corrosive. Testing of any proposed import soil will be necessary prior to placement on the site. Testing of on-site soils may be done on either a selective or random basis as site conditions indicate.

GENERAL

The findings and recommendations presented in this report are based upon an interpolation of the soil conditions between boring locations. Should conditions be encountered during grading that appears to be different than those indicated by this report, this office should be notified.

We recommend that a pre-job conference be held on the site prior to the initiation of site grading. The purpose of this meeting will be to assure a complete understanding of the recommendations presented in this report as they apply to the actual grading performed.

This report was prepared for Temecula Valley Charter School for their use in the design of the Charter School Facility. This report may only be used by Temecula Valley Charter School for this purpose. The use of this report by parties or for other purposes is not authorized without written permission by Inland Foundation Engineering, Inc. Inland Foundation Engineering, Inc. will not be liable for any projects connected with the unauthorized use of this report.

The recommendations of this report are considered to be preliminary. The final design parameters may only be determined or confirmed at the completion of site grading on the basis of observations made during the site grading operation. To this extent, this report is not considered to be complete until the completion of both the design process and the site preparation.

REFERENCES

ASCE/SEI, 2010, ASCE Standard 7-10, Minimum Design Loads for Buildings and Other Structures.

Blake, T.F. 1989-2000a, EQSEARCH, A Computer Program for the Estimation of Peak Horizontal Acceleration from Southern California Historical Earthquake Catalog, Version 3.00b.

Blake, T.F. 1998-2000, UBCSEIS, A Computer Program for the Estimation of Uniform Building Code Coefficients Using 3-D Fault Sources, Version 1.03.

California Building Standards Commission, 2013, California Building Code (CBC), California Code of Regulations, Title 24, Part 2, Volume 2.

California Division of Mines & Geology (C.D.M.G.), 2000, Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region, DMG CD 2000-003.

California Geological Survey (CGS), 2007, "Guidelines to Geologic/Seismic Reports," Note No. 42, Interim Revision 2007.

California Geological Survey (CGS), 2008, Guidelines for Evaluating and Mitigating Seismic Hazards in California, CGS Special Publication 117A.

California Geological Survey (CGS), 2002, “California Geomorphic Provinces”, Note 36.

California Geological Survey (CGS), 2013, Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals, and Essential Services Buildings, Note 48, October 2013.

Cao, T., Bryant, W.A., Rowshandel, B., Branum, D., and Wills, C.J., 2003, The Revised 2002 California Probabilistic Seismic Hazard Maps, June 2003, California Geological Survey.

Coduto, Donald, 2001, Foundation Design: Principles and Practice, Second Edition, Prentice Hall.

Dudley, Paul H., 1936, Physiographic History of a Portion of the Perris Block, Southern California, from "Journal of Geology," 1936, Volume 44, pp. 358-378.

Federal Emergency Management Agency (2016), FEMA Flood Map Service Center, http://msc.fema.gov/portal

Harden, D.R., 1998, California Geology: Prentice Hall, Inc.

Hart, E.W. and Bryant W., 1997, "Fault Rupture Hazard Zones in California," California Division of Mines & Geology Special Publication 42.

Larson, R., and Slosson, J., 1992, The Role of Seismic Hazard Evaluation in Engineering Reports, *in* Engineering Geology Practice in Southern California, AEG Special Publication No. 4, pp. 191-194.

Lofgren, Ben E., 1976, Land Subsidence and Aquifer System Compaction in the San Jacinto Valley - A Progress Report, Journal Research, U.S. Geological Survey, Volume 4, No. 1, pp. 9-18, January-February 1976.

Morton, D.M. and Matti, J.C., 1989, A Vanished late Pliocene to early Pleistocene alluvial-fan complex in the north Perris block, southern California. In Conglomerates in Basin Analysis: A symposium Dedicated to A.O. Woodford, Pacific Section S.E.P.M., Vol. 62, pp. 73-80.

NCEDC, 2014, Northern California Earthquake Data Center. UC Berkeley Seismological Laboratory. Dataset. doi:10.7932/NCEDC.

Norris, R.M. and R.W. Webb, 1990, Geology of California (second edition).

Prothero, D.R., & Schwab, F., 1996, Sedimentary Geology, an Introduction to Sedimentary Rocks and Stratigraphy.

U.S.G.S., 2016, U.S.G.S. DesignMaps Application, http://earthquake.usgs.gov/designmaps/us/application.php

Treiman, J., compiler, 1998, Fault number 126d, Elsinore fault zone, Temecula section, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, http://earthquakes.usgs.gov/hazards/qfaults, accessed 12/04/2015 12:10 PM.

Waring, G.A., 1919, Ground Water in the San Jacinto and Temecula Basins, California: U.S.G.S. Water Supply Paper 429.

Woodford, A., Shelton, J., Doehring, D., and Morton, R., 1971, Pliocene-Pleistocene History of the Perris Block, Southern California, Geological Society of America Bulletin, V. 82, pp. 3421-3448, 18 Figures, December, 1971.

Ziony, J.I., and Yerkes, R.F., 1985, Evaluating Earthquake and Surface Faulting Potential, in Evaluating Earthquake Hazards in the Los Angeles Region, U.S.G.S. Professional Paper 1360.

MAPS UTILIZED

California Division of Mines & Geology (C.D.M.G.), 2000, Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region, DMG CD 2000-003.

California Division of Mines & Geology (C.D.M.G.), 1966, Geologic Map of California, Santa Ana Sheet, Scale 1:250,000 (Second Printing 1973).

California Geological Survey (CGS), 2010, 2010 Fault Activity Map of California, Geologic Map No. 6.

Jennings, C.W., 1992, Preliminary Fault Activity Map of California, Scale 1:750,000, C.D.M.G. Open File Report 92-03.

Jennings, C.W., 1994, Fault Activity Map of California and Adjacent Areas, C.D.M.G. Geologic Data Map No. 6, 1:750,000 scale.

Morton, D.M. and Matti, J.C., 2005, Preliminary Geologic Map of the Hemet 7.5' Quadrangle, Riverside County, California.

Morton, D.M. and Kennedy, M.P., 2003, Geologic Map of the Bachelor Mt. 7.5' Quadrangle, U.S.G.S. Open File Report 03-103.

Morton, D.M., 2003, Preliminary Geologic Map of the Winchester 7.5' Quadrangle, U.S.G.S. Open File Report 03-188.

Riverside County Land Information System GIS Maps, 2016.

Rodgers, T.H., 1966, Geologic Map of California, Santa Ana Sheet, Scale 1:250,000 (Second Printing 1973).

Toppozada, T.R., et al., 2000, Epicenters of and Areas Damaged by $M \geq 4$ California Earthquakes, Map Sheet 49, Scale 1"=25 Miles.

Waring, G.A., 1919, Map of San Jacinto and Temecula Basins, California.

Ziony, J.I., and Jones, L.M., 1989, Map Showing Late Quaternary Faults and 1978-1984 Seismicity of the Los Angeles Region, California, U.S.G.S. Miscellaneous Field Studies Map MF-1964.

AERIAL PHOTOGRAPHS UTILIZED

Riverside County Flood Control District, 1949, Photo No. AXM-10F-61, April 23, 1949.

Riverside County Flood Control District, 1962, Photo Nos. 3-394 and 3-395, Scale 1" = 2,000', January 30, 1962.

Riverside County Flood Control District, 1974, Photo Nos. 734 through 735, Scale 1" = 2,000', June 20, 1974.

Riverside County Flood Control District, 1980, Photo Nos. 763 and 764, Scale 1" = 2,000', May 4, 1980.

Riverside County Flood Control District, 1983, Photo Nos. 591 and 592, Scale 1" = 2,000', December 15, 1983.

Riverside County Flood Control District, 1990, Photo Nos. 15-24 and 15-25, Scale 1" = 1,600', January 25, 1990.

Riverside County Flood Control District, 1995, Photo Nos. 15-21 and 15-22, Scale 1" = 1,600', January 29, 1995.

Riverside County Flood Control District, 2000, Photo Nos. 15-24 and 15-25, Scale 1" = 1,600', March 18, 2000.

Riverside County Flood Control District, 2005, Photo Nos. 15-22 and 15-23, Scale 1" = 1,600', April 14, 2005.

Riverside County Flood Control District, 2010, Photo Nos. 15-23 and 15-24, Scale 1" = 1,600', March 26, 2010.

Terrain Navigator, Orthophoto Map, Bachelor Mt. NW Quadrangle, CA, USGS Ref. Code 33117-E1-01-PHT, dated May 30, 2014.

APPENDIX A

APPENDIX A

FIELD EXPLORATION

For our field exploration, ten exploratory borings were excavated by means of a truck mounted rotary auger rig at the approximate locations shown on Figure No. A-13. Logs of the materials encountered were made on the site by a staff geologist. These are presented on Figure Nos. A-3 through A-12.

Representative relatively undisturbed samples were obtained within our borings by driving a thin-walled steel penetration sampler with successive 30-inch drops of a 140-pound hammer. The number of blows required to achieve each six inches of penetration were recorded on our boring logs and used for estimating the relative consistencies of the subsoils. Two different samplers were used. The first sampler used was a Standard Penetration Sampler for which published correlations relating the number of hammer blows to the strength of the soil are available. The second sampler type was larger in diameter, carrying brass sample rings having inner diameters of 2.41 inches. Samples were placed in moisture sealed containers in order to preserve the natural soil moisture content. They were then transported to our laboratory for further observations and testing.

Representative bulk samples were obtained and returned to our laboratory for further testing and observations. The results of this testing are discussed and presented in Appendix B.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487)

PRIMARY DIVISIONS			GROUP SYMBOLS		SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIALS IS LARGER THAN #200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN #4 SIEVE	CLEAN GRAVELS (LESS THAN) 5% FINES	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP		POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVEL WITH FINES	GM		SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC		CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN #4 SIEVE	CLEAN SANDS (LESS THAN) 5% FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP		POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES	SM		SILTY SANDS, SAND-SILT MIXTURES
			SC		CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS MORE THAN HALF OF MATERIALS IS SMALLER THAN #200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT IS LESS THAN 50	ML		INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL		ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT IS GREATER THAN 50	MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
	HIGHLY ORGANIC SOILS		PT		PEAT, MUCK AND OTHER HIGHLY ORGANIC SOILS
TYPICAL FORMATIONAL MATERIALS	SANDSTONES		SS		
	SILTSTONES		SH		
	CLAYSTONES		CS		
	LIMESTONES		LS		
	SHALE		SL		

CONSISTENCY CRITERIA BASES ON FIELD TESTS

RELATIVE DENSITY – COARSE – GRAIN SOIL

RELATIVE DENSITY	SPT * (# BLOWS/FT)	RELATIVE DENSITY (%)
VERY LOOSE	<4	0-15
LOOSE	4-10	15-35
MEDIUM DENSE	10-30	35-65
DENSE	30-50	65-85
VERY DENSE	>50	85-100

CONSISTENCY – FINE-GRAIN SOIL

		TORVANE	POCKET ** PENETROMETER
CONSISTENCY	SPT* (# BLOWS/FT)	UNDRAINED SHEAR STRENGTH (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)
Very Soft	<2	<0.13	<0.25
Soft	2-4	0.13-0.25	0.25-0.5
Medium Stiff	4-8	0.25-0.5	0.5-1.0
Stiff	8-15	0.5-1.0	1.0-2.0
Very Stiff	15-30	1.0-2.0	2.0-4.0
Hard	>30	>2.0	>4.0

* NUMBER OF BLOWS OF 140 POUND HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1 3/8 INCH I.D.) SPLIT BARREL SAMPLER (ASTM -1586 STANDARD PENETRATION TEST)

** UNCONFINED COMPRESSIVE STRENGTH IN TONS/SQ.FT. READ FROM POCKET PENETROMETER

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
DRY	Absence of moisture, dusty, dry to the touch
MOIST	Damp but no visible water
WET	Visible free water, usually soil is below water table

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbled or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

EXPLANATION OF LOGS

LOG OF BORING B-01

Elevation:	1419.0	Date(s) Drilled:	8/2/16
Drilling Method:	Rotary Auger	Logged by:	DRL
Drilling Rig:	CME 75	Hammer Type:	Auto-Trip
Boring Diameter:	8-inches	Hammer Weight:	140 lb.
		Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	USCS	DESCRIPTION	SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
0	SC SM	**SILTY CLAYEY SAND**, very fine-grained, dark brown (10YR 3/3), dry to slightly moist, very loose. Abundant rootlets.	B				
	CL	**SANDY CLAY**, very fine- to medium-grained, dark olive-brown (2.5Y 3/3), moist, hard. Moderatley cemented.	SS	20	7	120	
			B	50			
	BR	**PHYLLITE BEDROCK**, dark gray (2.5Y 3/1), moist, hard. Moderately to highly weathered.	SS	50	13	89	
5			SS	16 50/5"	14	106	
10			SS	50	10	105	
15		slight mottling	SS	50/5"	6	102	
20			SPT	50	10		

End of boring at 20.5 feet. No groundwater encountered. Slight mottling at 15 feet.

INLAND FOUNDATION ENGINEERING, INC.

Geotechnical Investigation
Temecula Valley Charter School
Temecula, CA
Project No. T238-001

Figure No. **A-3**

LOG OF BORING B-02

Elevation:	1417.0	Date(s) Drilled:	8/2/16
Logged by:	DRL		
Drilling Method:	Rotary Auger	Hammer Type:	Auto-Trip
Drilling Rig:	CME 75	Hammer Weight:	140 lb.
Boring Diameter:	8-inches	Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	GRAPHIC	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE SAMPLE	SAMPLES: BULK SAMPLE	SAMPLES: SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
0		SC SM	**SILTY CLAYEY SAND**, very fine-grained, dark grayish-brown (2.5Y 4/2), dry, very loose.							
		CL	**SANDY CLAY**, very fine-grained, dark grayish-brown (2.5Y 4/2), slightly moist, stiff to hard.	X		SS	44 50/4"	10	99	
		BR	**PHYLLITE BEDROCK**, very fine-grained, dark grayish brown (2.5Y 4/2), slightly moist, hard. Strongly cemented. Moderately to highly weathered.							
5				X		SS	50	3	99	
10			very hard, slightly weathered							
				X		SS	50/4"	6	101	
15				X		SS	30 50/2"	6	110	
20				X		SPT	39 50/5"	6		
			End of boring at 21 feet. No groundwater or mottling encountered.							

INLAND FOUNDATION ENGINEERING, INC.

Geotechnical Investigation
Temecula Valley Charter School
Temecula, CA
Project No. T238-001

Figure No. **A-4**

LOG OF BORING B-03

Elevation: **1414.0** Date(s) Drilled: **8/3/16** Logged by: **DRL**
Drilling Method: **Rotary Auger** Hammer Type: **Auto-Trip**
Drilling Rig: **CME 75** Hammer Weight: **140 lb.**
Boring Diameter: **8-inches** Hammer Drop: **30-inches**

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	USCS	Description	SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
	SC	**CLAYEY SAND**, very fine- to coarse-grained, dark olive-brown (2.5Y 3/3), slightly moist, loose.	B				
	SC	**CLAYEY SAND**, with gravel, very fine-grained, olive brown (2.5Y 4/3), slightly moist, dense. Well cemented. Blocky.	SS	25	5	109	
			B	50/6"			
			SS	50/4"	7	109	
5	BR	**PHYLLITE BEDROCK**, dark grayish-brown (2.5Y 4/2), slightly moist, hard. Moderately weathered. Fractured. Becomes less weathered with depth.					
			SPT	50/6"	5		
10							
			SPT	50/6"	3		
15			SPT	50/4"	3		

End of boring at 16.5 feet. No groundwater encountered.

LOG OF BORING B-04

Elevation:	1414.0	Date(s) Drilled:	8/2/16	Logged by:	DRL
Drilling Method:	Rotary Auger			Hammer Type:	Auto-Trip
Drilling Rig:	CME 75			Hammer Weight:	140 lb.
Boring Diameter:	8-inches			Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	USCS	Description	SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
	SC	**CLAYEY SAND**, very fine-grained, dark grayish-brown (2.5Y 4/2), dry, very loose. Rootlets.	B				
	CL	**SANDY CLAY**, very fine-grained, dark brown (10YR 3/3), slightly moist to moist, hard. Strongly cemented.	SS	37 31	8	114	
5	SC	**CLAYEY SAND**, with gravel, very fine- to fine-grained, dark brown (10YR 3/3), moist, dense.	B				
			SS	50	10	105	
	CL	**SANDY CLAY**, with gravel, very fine- to coarse-grained, dark olive-brown (2.5Y 3/3), moist, dense conglomerate. Hard drilling.	SS	29 50	10	110	
10	BR	**PHYLLITE BEDROCK**, very fine- to coarse-grained, dark gray (2.5Y 3/1), moist, hard. Highly weathered.					
			SS	30 50/4"	13	104	
15			SS	50	11	99	
20			SPT	40 50/4"	14		
		End of boring at 21.5 feet. No groundwater encountered.					

INLAND FOUNDATION ENGINEERING, INC.

Geotechnical Investigation
Temecula Valley Charter School
Temecula, CA
Project No. T238-001

Figure No. **A-6**

LOG OF BORING B-05

Elevation:	1413.0	Date(s) Drilled:	8/2/16
Logged by:	DRL		
Drilling Method:	Rotary Auger	Hammer Type:	Auto-Trip
Drilling Rig:	CME 75	Hammer Weight:	140 lb.
Boring Diameter:	8-inches	Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	USCS	DESCRIPTION	SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
0	SC	**CLAYEY SAND**, very fine-grained, dark olive-brown (2.5Y 3/3), dry, very loose. Rootlets.	B				
	CL	**CLAY**, with sand, very fine- to fine-grained, dark olive-brown (2.5Y 3/3), moist, hard. Moderately cemented.	SS	17 23	8	97	
			SS	28 33	8	103	
5							
10	BR	**PHYLLITE BEDROCK**, very fine- to coarse-grained, dark gray (2.5Y 3/1), moist, hard. Moderately to highly weathered.	SS	40 50/5"	15	101	
15		Mottling	SS	50/4"	10	100	
20			SPT	22 50	24		

End of boring at 21.5 feet. No groundwater encountered.
Mottling observed at 15 feet.

INLAND FOUNDATION ENGINEERING, INC.

Geotechnical Investigation
Temecula Valley Charter School
Temecula, CA
Project No. T238-001

Figure No. **A-7**

LOG OF BORING B-06

Elevation:	1412.0	Date(s) Drilled:	8/3/16	Logged by:	DRL
Drilling Method:	Rotary Auger			Hammer Type:	Auto-Trip
Drilling Rig:	CME 75			Hammer Weight:	140 lb.
Boring Diameter:	8-inches			Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	GRAPHIC	USCS	SUMMARY OF SUBSURFACE CONDITIONS	DRIVE SAMPLE	BULK SAMPLE	SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
		SM	**SILTY SAND**, with clay, very fine- to fine-grained, olive-brown (2.5Y 4/3), slightly moist, loose.							
		BR	**PHYLLITE BEDROCK**, dark gray (2.5Y 3/1), slightly moist, hard. Moderately weathered. Fractured in sample.							
				X		SPT	32 50/5"	10		
5										
10				X		SPT	50/4"	6		
15				X		SPT	50/5"	9		
			End of boring at 15.5 feet. No groundwater encountered.							

INLAND FOUNDATION ENGINEERING, INC.

Geotechnical Investigation
Temecula Valley Charter School
Temecula, CA
Project No. T238-001

Figure No. **A-8**

LOG OF BORING B-07

Elevation:	1412.0	Date(s) Drilled:	8/3/16
Drilling Method:	Rotary Auger	Logged by:	DRL
Drilling Rig:	CME 75	Hammer Type:	Auto-Trip
Boring Diameter:	8-inches	Hammer Weight:	140 lb.
		Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	USCS	DESCRIPTION	SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
	SM	**SILTY SAND**, with clay, very fine- to fine-grained, olive-brown (2.5Y 4/3), slightly moist, loose.					
	CL	**CLAY**, trace sand, dark brown (10YR 3/3), slightly moist, hard. Blocky.					
			SS	30 50/5"	13 13	92 101	
5			SS	38 50/5"	11	116	
			SS	50/5"	10	106	
10	BR	**PHYLLITE BEDROCK**, olive-brown (2.5Y 4/3) to dark gray (2.5Y 3/1), moist, hard. Highly to moderately weathered. Fractured in sample. Rust mottling					
			SPT	31 50/2"	8		
15			SPT	50/4"	4		
		End of boring at 15.3 feet. No groundwater encountered. Rust mottling observed at 11 feet.					

INLAND FOUNDATION ENGINEERING, INC.

Geotechnical Investigation
Temecula Valley Charter School
Temecula, CA
Project No. T238-001

Figure No. **A-9**

LOG OF BORING B-08

Elevation:	1413.0	Date(s) Drilled:	8/2/16
Logged by:	DRL		
Drilling Method:	Rotary Auger	Hammer Type:	Auto-Trip
Drilling Rig:	CME 75	Hammer Weight:	140 lb.
Boring Diameter:	8-inches	Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

USCS	Description
SC	**CLAYEY SAND**, very fine-grained, dark olive-brown (2.5Y 3/3), dry, very loose. Rootlets.
CL	**SANDY CLAY**, very fine-grained, dark brown (10YR 3/3), slightly moist, hard. Strongly cemented.
SC	**CLAYEY SAND**, very fine- to fine-grained, dark yellowish-brown (10YR 3/4), slightly moist, dense. Moderately cemented.
CL	**SANDY CLAY**, very fine-grained, dark brown (10YR 3/3), slightly moist, hard. Moderately to strongly cemented.
SC SM	**SILTY CLAYEY SAND**, with gravel, fine- to medium-grained, dark brown (10YR 3/3), moist, dense. Moderately to strongly cemented.
BR	**PHYLLITE BEDROCK**, very fine- to coarse-grained, dark gray (2.5Y 3/1), moist, hard. Moderately to highly weathered. Mottling. Strongly cemented. Moderately weathered.

SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
B				
SS	26 50/5"	13	95	
B				
SS	31 50	10	96	
SS	40 50/4"	7	103	
B				
SS	18 50	7	110	
SS	31 50	13	101	
SPT	43 50/5"	11		
SPT	33 50/3"	13		
SPT	22 50	17		
SPT	50	9		
SPT	50	9		
SPT	50/3"	10		
SPT	50/2"	13		

End of boring at 51 feet. Groundwater initially encountered at 48.1 feet. Final groundwater at 30 feet. Mottling observed at 15 feet.

INLAND FOUNDATION ENGINEERING, INC.

Geotechnical Investigation
Temecula Valley Charter School
Temecula, CA
Project No. T238-001

Figure No. **A-10**

LOG OF BORING B-09

Elevation:	1409.0	Date(s) Drilled:	8/3/16	Logged by:	DRL
Drilling Method:	Rotary Auger			Hammer Type:	Auto-Trip
Drilling Rig:	CME 75			Hammer Weight:	140 lb.
Boring Diameter:	8-inches			Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	GRAPHIC	USCS	SUMMARY OF SUBSURFACE CONDITIONS	DRIVE SAMPLE	BULK SAMPLE	SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
		SC	**CLAYEY SAND**, very fine-grained, dark olive-brown (2.5Y 3/3), dry, very loose. Rootlets.			B				
		CL	**SANDY CLAY**, very fine-grained, dark brown (10YR 3/3), slightly moist, stiff to hard. Well cemented. Porous. Blocky.			B		7	112	
						SS	31 50/5"			
		BR	**PHYLLITE BEDROCK**, olive-brown (2.5Y 4/3) to dark gray (2.5Y 3/1), moist, hard. Highly to moderately weathered.			SS	50/6"	12	86	
5										
								16		
						SPT	12 17			
10			Rust-colored mottling					33		
						SPT	16 21			
15						SPT	30 50/5"	13		

End of boring at 16 feet. No groundwater encountered.
Rust-colored mottling observed at 10 feet.

LOG OF BORING B-10

Elevation: 1412.0	Date(s) Drilled: 8/2/16	Logged by:	DRL
Drilling Method:	Rotary Auger	Hammer Type:	Auto-Trip
Drilling Rig:	CME 75	Hammer Weight:	140 lb.
Boring Diameter:	8-inches	Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	USCS	Description	SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
	SC	**CLAYEY SAND**, very fine-grained, dark olive-brown (2.5Y 3/3), dry, very loose. Rootlets.	B				
	CL	**SANDY CLAY**, very fine- to fine-grained, dark olive-brown (2.5Y 3/3), slightly moist, hard. Moderately cemented. Porous.	SS	20 24	7	101	
			SS	15 16	9	96	
5							
	CL	**SANDY CLAY**, with gravel, very fine- to medium-grained, very dark grayish-brown (2.5Y 3/2), moist, hard. Moderately cemented. Conglomerate.	SS	20 50	8	101	
	BR	**PHYLLITE BEDROCK**, very fine- to coarse-grained, dark gray (2.5Y 3/1), moist, hard. Highly weathered.					
10			SS	45 45	8	115	
15			SS	50/4"	5	104	
20			SPT	35 50/5"	7		

End of boring at 21 feet. No groundwater encountered.

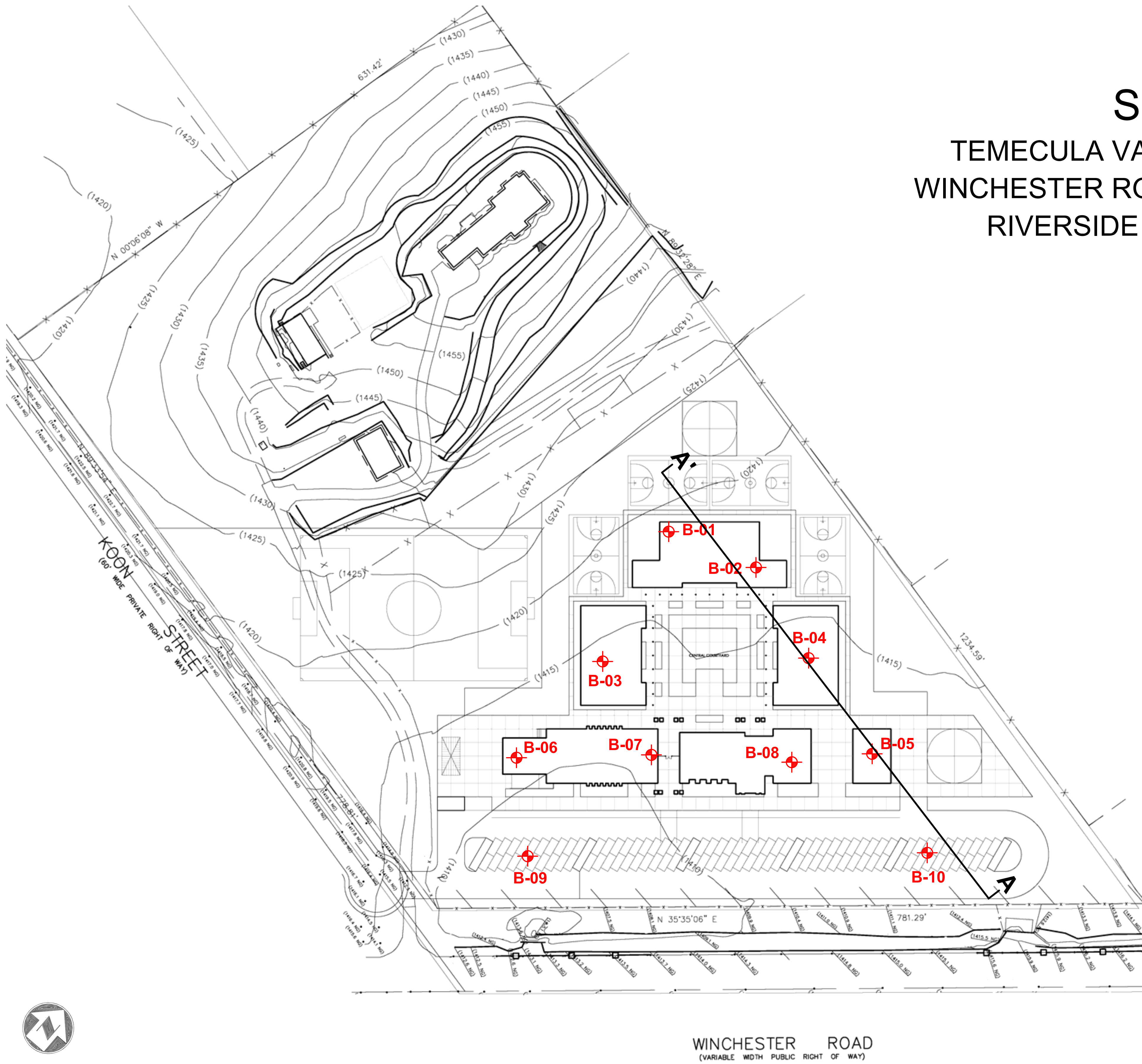
INLAND FOUNDATION ENGINEERING, INC.

Geotechnical Investigation
Temecula Valley Charter School
Temecula, CA
Project No. T238-001

Figure No. **A-12**

SITE PLAN

TEMECULA VALLEY CHARTER SCHOOL
WINCHESTER ROAD, FRENCH VALLEY AREA
RIVERSIDE COUNTY, CALIFORNIA



LEGEND

= Approximate Location of Exploratory Borings

A A' = Cross Section

INLAND FOUNDATION ENGINEERING, INC. 1310 South Santa Fe Avenue San Jacinto, California (951) 654-1555 FAX (951) 654-0551		
DRAWN BY: ES	JOB NO.: T238-001	
SCALE: 1" = 125'	DATE: September 2016	A-13

APPENDIX B

APPENDIX B

LABORATORY TESTING

Representative bulk and intact soil samples were obtained in the field and returned to our laboratory for additional observations and testing. Laboratory testing was generally performed in two phases. The first phase consisted of testing in order to estimate the compaction of the existing natural soil and the general engineering classifications of the soils across the site. This testing was performed in order to estimate the engineering characteristics of the soil and to serve as a basis for selecting samples for the second phase of testing. The second phase consisted of soil mechanics and analytical testing. This testing included consolidation testing, direct shear testing and testing to estimate the concentration of water-soluble sulfate, pH, chlorides and resistivity. These tests were performed in order to provide a means of developing specific design recommendations based on the strength characteristics of the soil.

CLASSIFICATION AND COMPACTION TESTING

Unit Weight and Moisture Content: Each relatively undisturbed sample was weighed and measured in order to determine its unit weight. A small portion of each sample was then subjected to testing in order to determine its moisture content. This testing was performed in accordance with the ASTM Standards D2937 and D2216. This was used in order to estimate the dry density of the soil in its natural condition. The results of this testing are shown on the Boring Logs (Figure Nos. A-2 through A-12).

Maximum Density-Optimum Moisture Content: Representative soil types were selected for maximum density tests. This testing was performed in accordance with the ASTM D1557. The results of this testing are presented graphically on Figure No. B-4. The maximum density is compared to the field density of the soil in order to estimate the existing relative compaction to the soil.

Classification Testing: Four soil samples were selected for classification testing. This testing consists of mechanical grain size analyses and Atterberg Limits tests. This testing was performed in accordance with ASTM D422 and D4318. These tests provide information for developing classifications for the soil in accordance with the Unified Classification System. This classification system categorizes the soil into groups having similar engineering characteristics. The results of this testing are useful in detecting variations in the soils and in selecting samples for further testing. The results of this testing are presented on Figure No. B-5.

SOIL MECHANICS TESTING

Direct Shear Testing: Two samples were selected for direct shear testing. This testing was performed in accordance with ASTM D3080. This testing measures the shear strength of the soil under various normal pressures and is used in developing parameters for foundation design and lateral design. Testing was performed using recompacted test specimens which were saturated prior to testing. Testing was performed using a strain controlled test apparatus with normal pressures ranging from 500 to 2500 pounds per square foot. The results of this testing are shown on Figure No. B-6.

Consolidation Testing: Two samples were selected for consolidation testing. This testing was performed in accordance with ASTM D2435. For this test, relatively undisturbed samples were selected and carefully trimmed into a one inch thick by 2.41-inch diameter consolidometer. The consolidometer was moisture sealed in order to preserve the natural moisture content during the initial stages of testing. Loads ranging from 272 to 9,024 pounds per square foot were applied progressively with the rate of settlement declining to a value of 0.0002 inches per hour prior to the application of each subsequent load. At a preselected load, water was introduced into the consolidometer in order to observe the potential for saturation collapse. The results of this testing are presented graphically on Figure Nos. B-7 through B-8.

ANALYTICAL TESTING

Two samples were selected to test the concentration of soluble sulfates, chlorides, pH level, and resistivity of and within the on-site soils. The following table presents the results of this testing:

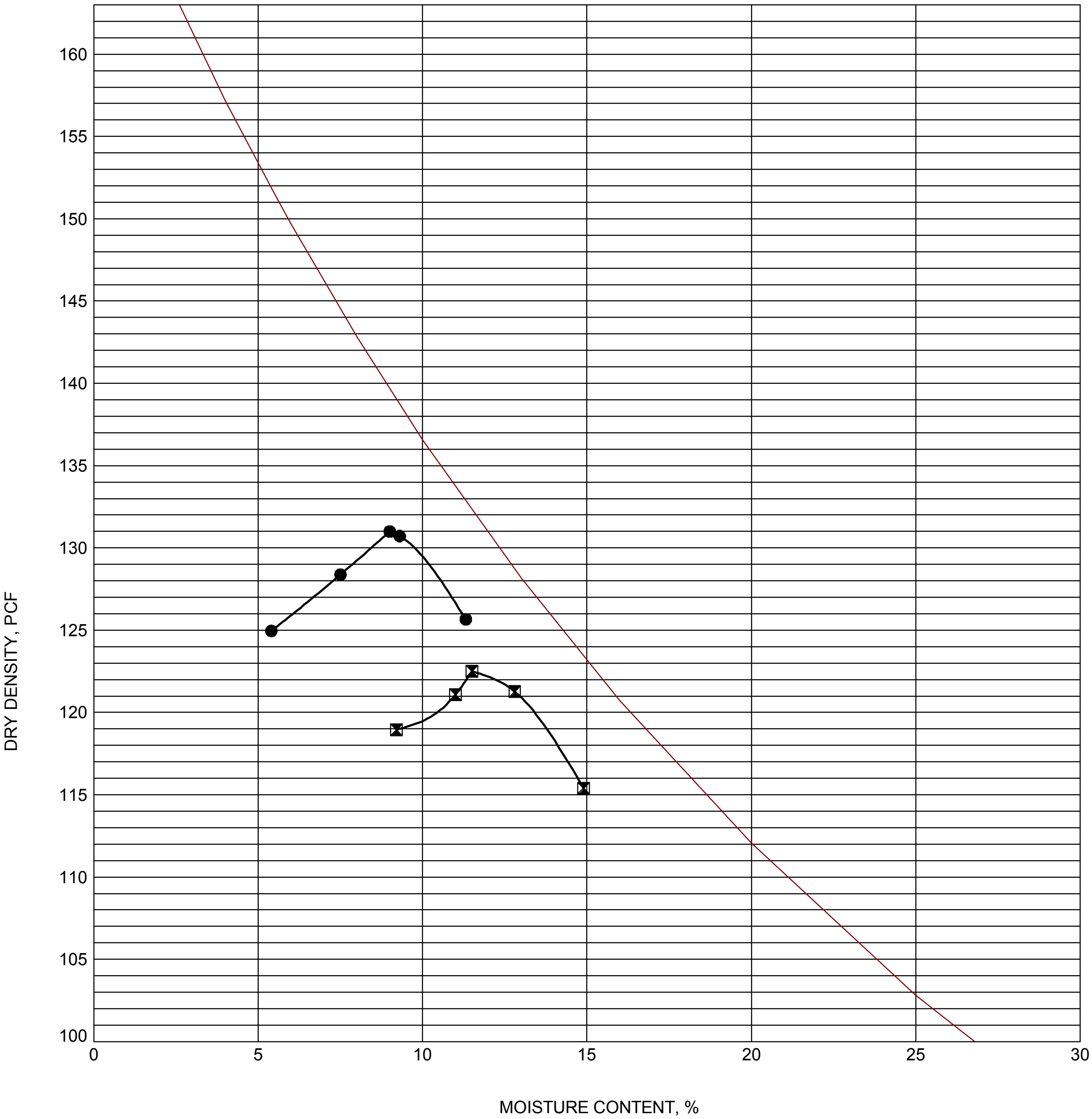
Sample Location	Sample Depth (ft.)	Water-Soluble Sulfates (□)	Chlorides (ppm)	Minimum Resistivity (ohm-cm)	PH
B-03	1.0-4.5	<0.001	90	2,600	7.8
B-05	0.5-10.0	<0.001	90	1,600	8.2

Expansion Index Testing: Two samples were selected for expansion index testing per the current ASTM Standard D4829. This testing consists of remolding 4-inch diameter by 1-inch thick test specimens to a moisture content and dry density corresponding to approximately 50 percent saturation. The samples are subjected to a surcharge of 144 pounds per square foot and allowed to reach equilibrium. At that point the specimens are inundated with distilled water. The linear expansion is then measured until complete. The results of this testing are shown below.

Sample Location	Sample Depth (feet)	Initial Dry Density (pcf)	Initial Moisture Content (□)	Expansion Index	Expansion Class
B-03	1.0-4.0	118.4	8.1	25	Low
B-05	0.0-10.0	112.0	10.2	66	Med

GENERAL

All laboratory testing has been conducted in conformance with the applicable ASTM test methods by personnel trained and supervised in conformance with our QA/QC policy. Our test data only relates to the specific soils tested. Soil conditions typically vary and any significant variations should be reported to our laboratory for review and possible testing. The data presented in this report are for the use of Temecula Valley Charter School only and may not be reproduced or used by others without written approval of Inland Foundation Engineering, Inc.



	Specimen Identification		Classification	Max.Density	MC%
●	**B-03**	**1.0**	**CLAYEY SAND with GRAVEL SC**	**131.0**	**9.0**
⧗	**B-05**	**0.0**	**LEAN CLAY with SAND CL**	**122.5**	**11.5**

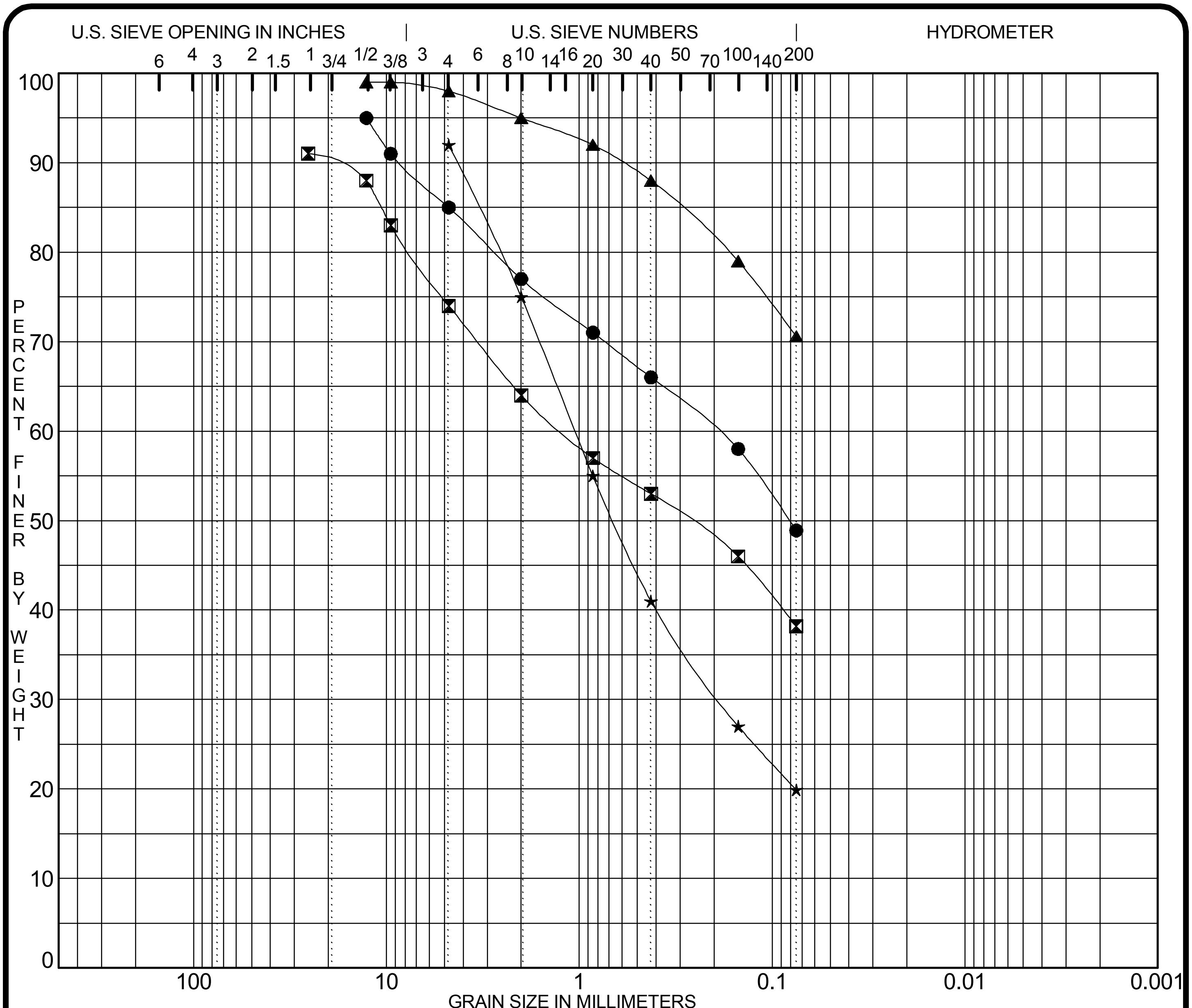
PROJECT Geotechnical Investigation
Temecula Valley Charter School

PROJECT NO. T238-001
DATE

MAXIMUM DENSITY-OPTIMUM MOISTURE CURVES (ASTM D1557)

Inland Foundation Engineering, Inc

FIGURE NO. B-4



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	S.G.	LL	PL	PI	Cc	Cu
●	**B-03**	**1.0**	**CLAYEY SAND with GRAVEL SC**		**25**	**14**	**11**		
⧗	**B-04**	**4.0**	**CLAYEY SAND with GRAVEL SC**		**31**	**17**	**14**		
▲	**B-05**	**0.0**	**LEAN CLAY with SAND CL**		**34**	**18**	**16**		
★	**B-09**	**3.0**	**CLAYEY SAND SC**						

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**B-03**	**1.0**	**12.70**	**0.19**			**10.0**	**36.1**	**48.9**	
⧗	**B-04**	**4.0**	**25.40**	**1.23**			**17.0**	**35.8**	**38.2**	
▲	**B-05**	**0.0**	**12.70**				**1.0**	**27.4**	**70.6**	
★	**B-09**	**3.0**	**4.75**	**1.05**	**0.188**		**0.0**	**72.1**	**19.9**	

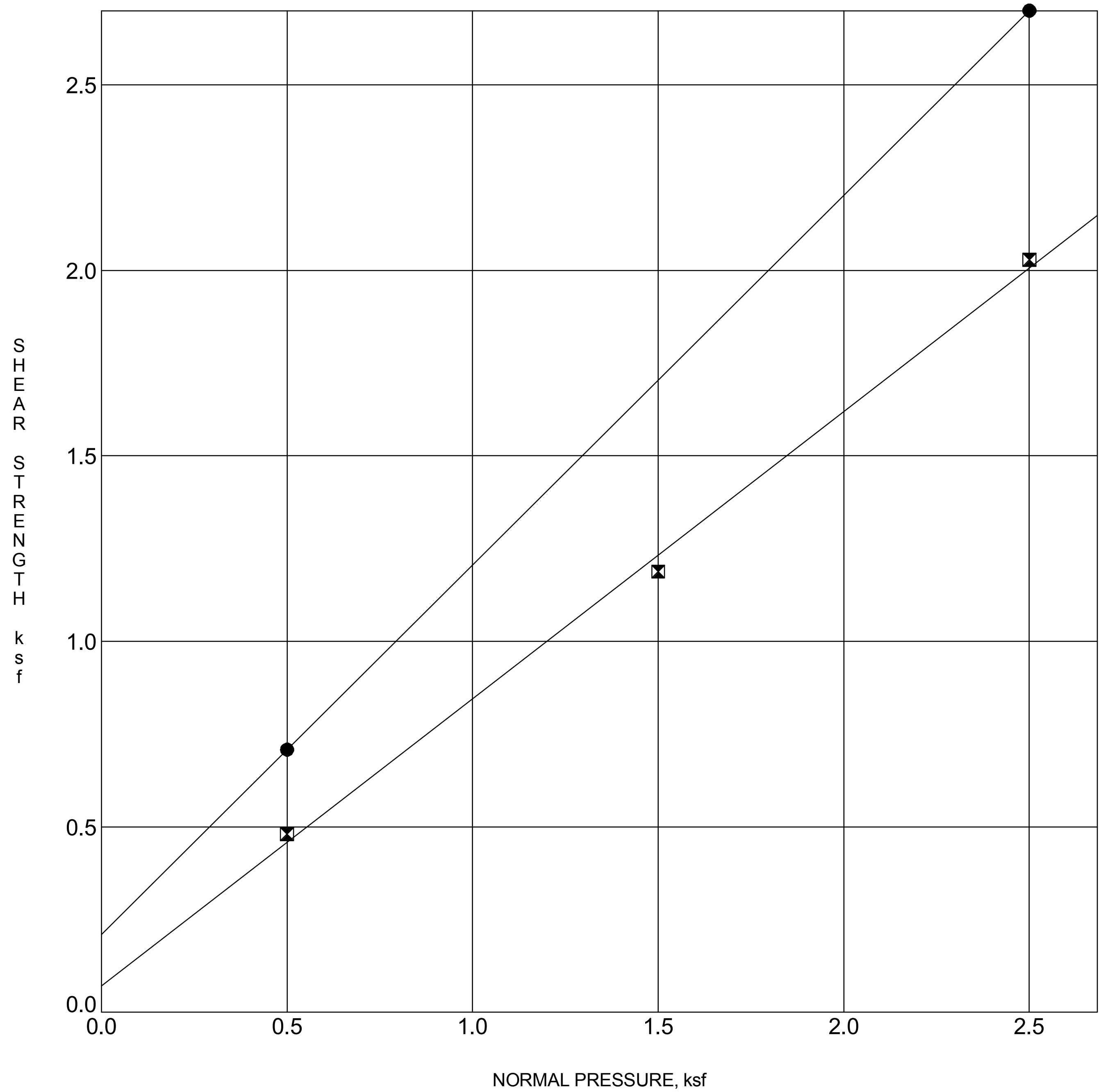
PROJECT Geotechnical Investigation
Temecula Valley Charter School

PROJECT NO. T238-001
DATE

GRADATION CURVES (ASTM D422, ASTM D4318)

Inland Foundation Engineering, Inc

FIGURE NO. B-5



	Specimen Identification		Classification	Phi	Cohesion	DD	MC%
●	**B-04**	**5.0**	**CLAYEY SAND, SC**	**45**	**0.210**	**113**	**9**
⧗	**B-07**	**2.5**	**CLAY, CL**	**38**	**0.070**	**102**	**12**

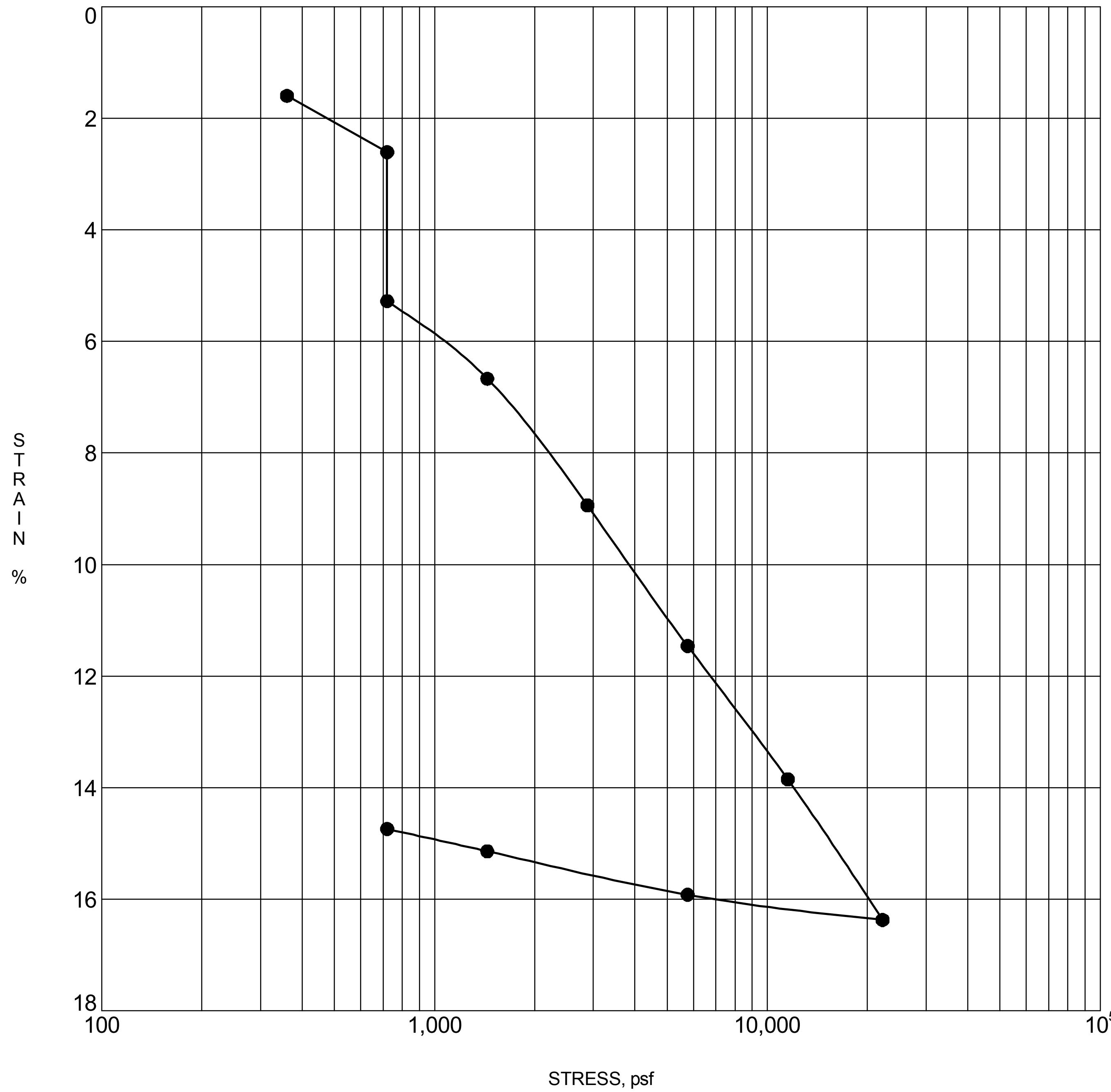
PROJECT Geotechnical Investigation
Temecula Valley Charter School

PROJECT NO. T238-001
DATE

SHEAR TEST DIAGRAM (ASTM D3080)

Inland Foundation Engineering, Inc

FIGURE NO. B-6



	Specimen Identification		Classification	DD	MC%
●	**B-04**	**5.0**	**CLAYEY SAND, SC**	**111**	**3**
⊠					
▲					
★					
⊙					
✿					

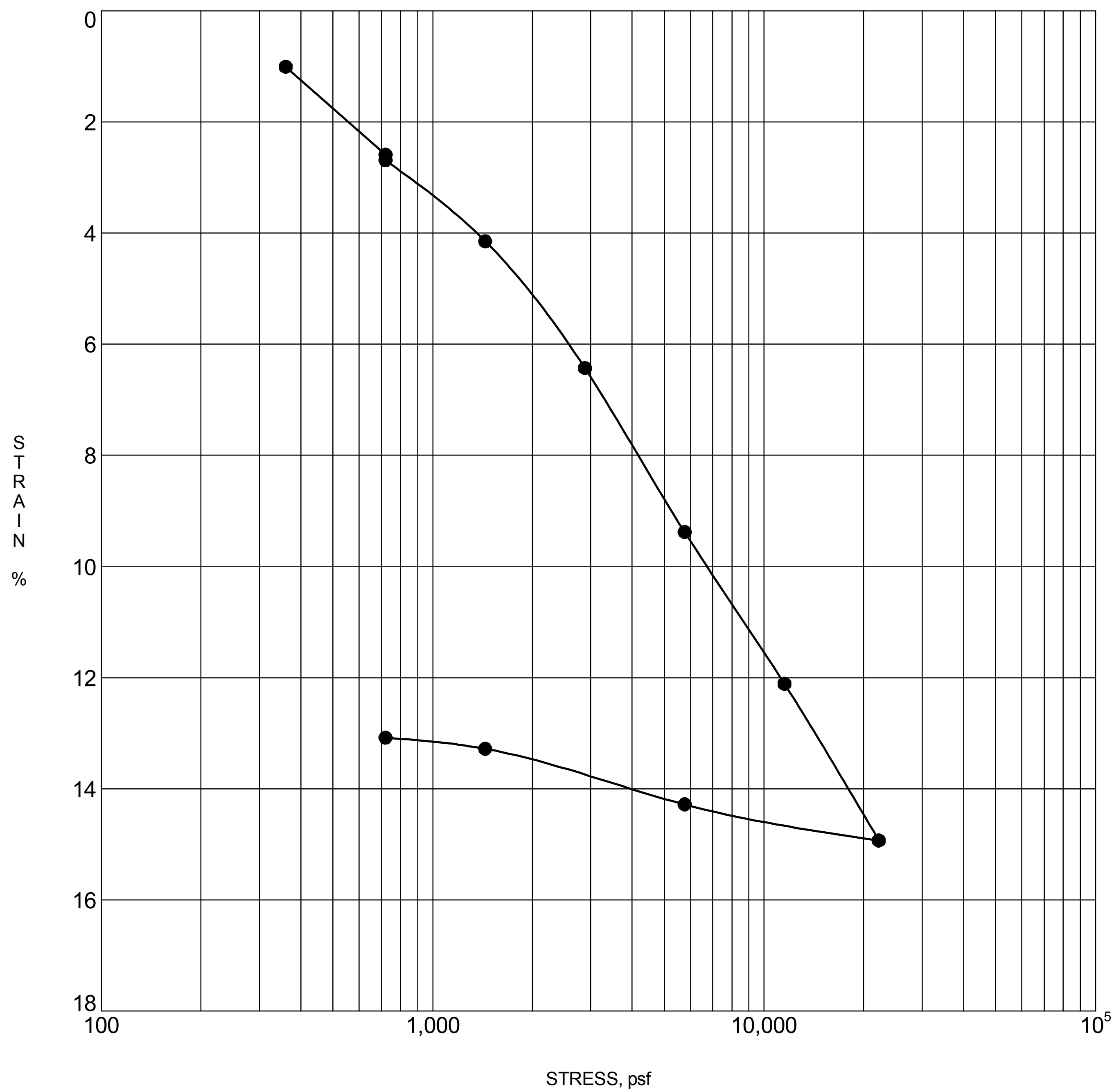
PROJECT Geotechnical Investigation
Temecula Valley Charter School

PROJECT NO. T238-001
DATE

CONSOLIDATION TEST (ASTM D2435)

Inland Foundation Engineering, Inc

FIGURE NO. B-7



	Specimen Identification		Classification	DD	MC%
●	**B-07**	**2.5**	**CLAY, CL**	**101**	**13**
⊠					
▲					
★					
⊙					
✪					

PROJECT Geotechnical Investigation
Temecula Valley Charter School

PROJECT NO. T238-001
DATE

CONSOLIDATION TEST (ASTM D2435)

Inland Foundation Engineering, Inc

FIGURE NO. B-8

Appendix

This page intentionally left blank.

Appendix E Paleontological Technical Study

PALEO SOLUTIONS
Paleontological and Archaeological Compliance and Consulting Services

PALEONTOLOGICAL TECHNICAL STUDY: TEMECULA VALLEY CHARTER SCHOOL PROJECT, RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

PLACEWORKS

Jorge Estrada
Senior Associate
3 MacArthur Place, Suite 1100
Santa Ana, CA 92707

Prepared by:

PALEO SOLUTIONS, INC.

911 S. Primrose Ave., Unit N
Monrovia, CA 91016
Geraldine@paleosolutions.com
(562) 818-7713

Geraldine Aron, M.S. – Principal Investigator	3/1/17 Date
Paul C. Murphey, Ph.D. – Technical Reviewer	3/1/17 Date
Joey Raum, B.S. – Report Author	3/1/17 Date
Courtney Richards, M.S. – Report Author	3/1/2017 Date

PSI Report#: CA17RiversidePLA01R

FEBRUARY 24, 2017

This page intentionally left blank.

TABLE OF CONTENTS

FIGURES

TABLES

1.0 EXECUTIVE SUMMARY

This report presents the results of the paleontological technical study conducted by Paleo Solutions, Inc. (Paleo Solutions) under contract to PlaceWorks in support of the Temecula Valley Charter School Project (Project). This work was required by the County of Riverside Planning Department to meet their requirement as the lead agency under the California Environmental Quality Act (CEQA), and as part of the Development Review Team (DRT) condition. All paleontological work was completed in compliance with CEQA, Riverside County guidelines, and best practices in mitigation paleontology. The Project is located at 34155 Winchester Road in the community of French Valley in unincorporated western Riverside County, California (see Figure 1). The Project area lies on the USGS Winchester (1953) and Bachelor Mountain (1951) California 7.5' topographic quadrangles on privately owned land in the northwest-northwest, northeast-northwest, and southwest-northwest quarter quarters of Section 28, Township 6 South, Range 2 West (see Table 1; see Figure 2).

The Project area was evaluated based on an analysis of existing paleontological data and a field survey. The four components of the analysis included a geologic map review, a geotechnical report review, a literature search, institutional record searches. The analysis of existing data was supplemented with a pedestrian field survey, with the combined purpose of determining the paleontological potential of the Project area. Geologic mapping indicates that the Project area is primarily underlain by Mesozoic plutonic and metasedimentary rocks, Pleistocene very old alluvial valley deposits, and Quaternary young alluvial deposits (Morton and Kennedy, 2003; Dibblee and Minch, 2003; see Figure 3). It should be noted that the two geologic maps reviewed for the analysis differ on the age of the alluvial sediments in some portions of the Project area. Specifically, the northeast portion of the Project area is mapped as Holocene surficial sediments (Qa) by Dibblee and Minch, 2003, but is mapped as Pleistocene very old alluvial valley deposits (Qvova) by Morton and Kennedy, 2003).

According to the record search and literature search, there are no previously recorded fossil localities within the Project area; however, there are numerous other fossil localities recorded from Pleistocene-age sediments in southern California that are similar to those mapped in the Project area. The geotechnical report for the Project (Inland Foundation Engineering, Inc., 2016) indicates that Quaternary (Holocene or Pleistocene) sediments (which would have moderate paleontological potential if they are Pleistocene) will be impacted beginning at depths between one and two feet below the current ground surface. Additionally, the geotechnical report indicates that Mesozoic phyllite bedrock may be impacted as shallowly as one to ten feet deep. No paleontological resources were discovered during the field survey, although sediments conducive to fossil preservation were observed. Project activities may potentially result in significant adverse impacts to paleontological resources if these older alluvial sediments are encountered during excavation. Furthermore, the field survey did not resolve the Quaternary sediment age discrepancy in the two geologic maps (Dibblee and Minch, 2003 and Morton and Kennedy, 2003). Further investigation is therefore necessary to determine which mapped unit is correct and to ultimately determine the age of the Quaternary sediments underlying portions of the Project area.

The Potential Fossil Yield Classification (PFYC) system was applied to the results of the analysis of existing data and field survey. Pleistocene very old alluvium has moderate paleontological potential (PFYC Class 3). Holocene alluvium is estimated to be less than 10,000 years old, and has low paleontological potential (PFYC Class 2) because it is too young to contain in-situ fossils. However, these younger deposits may overlie older geologic units with higher paleontological potential which may be disturbed at depth. Fossils contained in artificial fill lack critical scientific information, and artificial fill is generally considered to have a low paleontological potential (PFYC Class 2). Mesozoic phyllite is formed high temperatures and pressures and will be devoid of recognizable fossils. Mesozoic phyllite therefore has a very low paleontological potential (PFYC Class 1).

Based on the ground disturbance necessary to complete the Project, there is potential for adverse impacts to scientifically significant paleontological resources within Pleistocene very old alluvial deposits underlying the thin veneer of Holocene soils or alluvial deposits within the Project area. Construction excavations which disturb Pleistocene-age sediments should be monitored by a professional paleontologist in order to reduce potential adverse impacts on scientifically important paleontological resources to a less than significant level. Prior to construction, a paleontological resources monitoring and mitigation plan (PRMMP) should be prepared. It should provide detailed recommended monitoring locations; a description of a worker training program; detailed procedures for monitoring, fossil recovery, laboratory analysis, and museum curation; a curation agreement; and notification procedures in the event of a fossil discovery by a paleontological monitor or other project personnel. Disturbance to Mesozoic-age phyllite should not be monitored. Because the Project area is nearly devoid of exposed sediments, the approximate ages (Holocene or Pleistocene) of the Quaternary deposits underlying the Project area could not be determined from the field survey. Additionally, the subterranean sediment descriptions provided in the geotechnical report are inconclusive for determining a Holocene versus Pleistocene age. Therefore, it is recommended that all excavations in all locations of the Project area be initially monitored for the presence of Pleistocene sediments and scientifically significant paleontological resources contained therein. If it is determined that only Holocene-age alluvium or Mesozoic-age phyllite is impacted, monitoring should be reduced or halted. Any potential fossils that are unearthed during construction should be evaluated by a professional paleontologist as described in the PRMMP.

2.0 INTRODUCTION

This report presents the results of the paleontological technical study conducted by Paleo Solutions under contract to PlaceWorks in support of the Temecula Valley Charter School Project. This work was required by the County of Riverside Planning Department to meet their requirement as the lead agency under the CEQA, and as part of the Development Review Team (DRT) condition. All paleontological work was completed in compliance with CEQA, Riverside County guidelines, and best practices in mitigation paleontology.

2.1 Project Location

The Project is located at 34155 Winchester Road in the community of French Valley in unincorporated western Riverside County, California (Figure 1). The site occupies two parcels of land totaling approximately 17.1 acres and is located primarily on vacant land. The Project is mapped on the USGS Winchester (1953) and Bachelor Mountain (1951) California 7.5' topographic quadrangles on privately owned land in the northwest-northwest, northeast-northwest, and southwest-northwest quarter quarters of Section 28, Township 6 South, Range 2 West (Table 1; Figure 2). The western portion is partially developed with several homes, a basketball court, a water well, above-ground storage tanks, and propane tanks. The eastern portion is vacant and has been recently graded. A partially paved road runs along the southern and eastern portions of the Project area and provides access from State Route (SR) 79. Geologic mapping of the Project indicates that the site is primarily underlain by Mesozoic plutonic and metasedimentary rocks, Pleistocene very old alluvial valley deposits, and Quaternary young alluvial deposits (Morton and Kennedy, 2003; Dibblee and Minch, 2003; Figure 3).

2.2 Project Background Description

The Project proposes to construct a new charter school that would serve up to 600 K-8 students. Six buildings would be constructed, totaling approximately 45,000 square feet. Vehicular access and parking will be accommodated by the construction of a driveway at the southeast corner of the Project site, construction of Koon Street which would connect the Project site to the existing Pourroy Road, and construction of a parking lot consisting of 98 parking spaces. Additionally, athletic facilities including hardtop courts and a turf field will be constructed. Landscaping will include installation of trees, shrubs, and ground cover.

TABLE 1. TEMECULA VALLEY CHARTER SCHOOL PROJECT SUMMARY

<table>
<tr><td>Project Name</td><td colspan="5">Temecula Valley Charter School Project</td></tr>
<tr><td>Project Description</td><td colspan="5">The Project proposes to construct six buildings totaling approximately 45,000 square feet, a driveway, a new road (Koon Street) that will connect the site to Pourroy Road, and a parking lot.</td></tr>
<tr><td>Project Area</td><td colspan="5">The Project area is located at 34155 Winchester Road in the community of French Valley in unincorporated western Riverside County, California.</td></tr>
<tr><td>Total Acreage</td><td colspan="5">17.1 acres</td></tr>
<tr><td rowspan="2">Location (PLSS) and Land Ownership</td><td>Quarter-Quarter</td><td>Section</td><td>Township</td><td>Range</td><td>Land Ownership</td></tr>
<tr><td>NWNW, NENW, SWNW</td><td>28</td><td>T6S</td><td>R2W</td><td>undetermined</td></tr>
</table>

Topographic Map(s)	USGS Winchester (1953) and Bachelor Mountain (1951) California 7.5' quadrangles			
Geologic Map(s)	Geologic Map of the Winchester 7.5' quadrangle, Riverside County, California (Dibblee and Minch, 2003); Geologic Map of the Bachelor Mountain 7.5' quadrangle, Riverside County, California (Morton and Kennedy, 2003)			
Mapped Geologic Formations and Age	**Formation**	**Map Symbol**	**Age**	**Paleontological Sensitivity (PFYC)**
	Quaternary valley alluvial deposits	Qa	Holocene	2 (Low)
	Quaternary alluvial channel deposits	Qyaa	Holocene	2 (Low)
	Quaternary very old valley alluvial deposits	Qvova	Holocene to Pleistocene	3 (Moderate)
	Gabbro of the Peninsular Ranges batholith	Kgb	Cretaceous	1 (Very Low)
	Granodiorite, undifferentiated of the Peninsular Ranges batholith	Kgd	Cretaceous	1 (Very Low)
	Phyllite	Mzp	Mesozoic	1 (Very Low)
Permits	No permits were required for the paleontological work conducted for this Project.			
Previously Documented Fossil Localities within the Project area	The Western Science Center records search yielded no fossil localities recorded within a one-mile radius of the Project area (Appendix A).			
Recommendations	Construction excavations which disturb Pleistocene-age sediments should be monitored by a professional paleontologist in order to reduce potential adverse impacts on scientifically important paleontological resources to a less than significant level. Prior to construction, a paleontological resources monitoring and mitigation plan (PRMMP) should be prepared. It should provide detailed recommended monitoring locations; a description of a worker training program; detailed procedures for monitoring, fossil recovery, laboratory analysis, and museum curation; a curation agreement with the Western Science Center or another accredited repository; and notification procedures in the event of a fossil discovery by a paleontological monitor or other project personnel. Because the Project area is nearly devoid of exposed sediments, the approximate ages (Holocene or Pleistocene) of the Quaternary deposits underlying the Project area could not be determined from the field survey. Additionally, the subterranean sediment descriptions provided in the geotechnical report are inconclusive for determining a Holocene versus Pleistocene age. Therefore, it is recommended that all excavations in all locations of the Project area be initially monitored for the presence of Pleistocene sediments and scientifically significant paleontological resources contained therein. If it is determined that only Holocene-age alluvium or Mesozoic-age phyllite is impacted, monitoring should be reduced or halted. Any potential fossils that are unearthed during construction should be evaluated by a professional paleontologist as described in the PRMMP.			

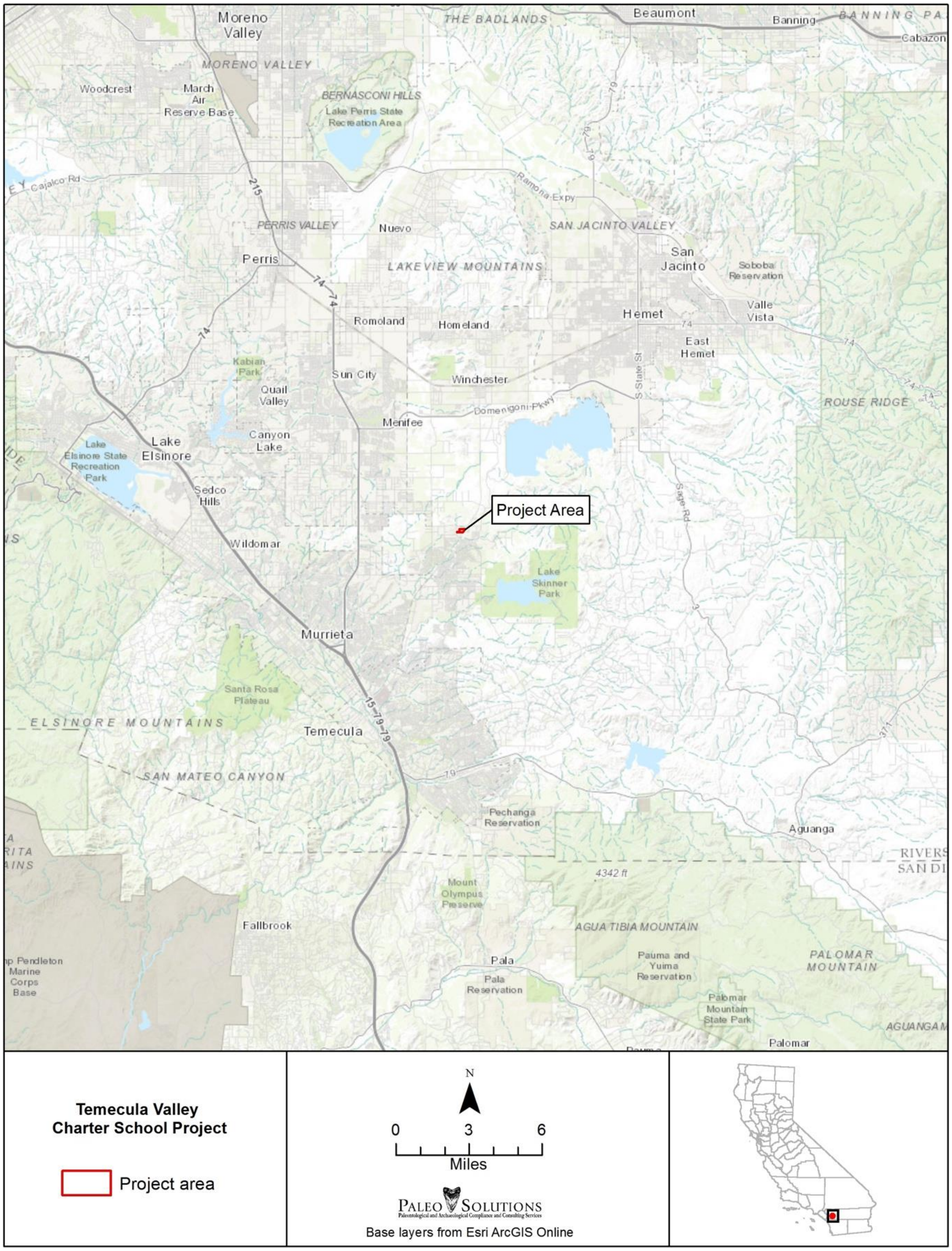


Figure 1. Project Location Map.

Figure 2. Project Overview Map.

3.0 DEFINITION AND SIGNIFICANCE OF PALEONTOLOGICAL RESOURCES

As defined by Murphey and Daitch (2007): "Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. Paleontological resources include not only fossils themselves, but also the associated rocks or organic matter and the physical characteristics of the fossils' associated sedimentary matrix.

The fossil record is the only evidence that life on earth has existed for more than 3.6 billion years. Fossils are considered non-renewable resources because the organisms they represent no longer exist. Thus, once destroyed, a fossil can never be replaced. Fossils are important scientific and educational resources because they are used to:

- Study the phylogenetic relationships amongst extinct organisms, as well as their relationships to modern groups;
- Elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including the biases inherent in the fossil record;
- Reconstruct ancient environments, climate change, and paleoecological relationships;
- Provide a measure of relative geologic dating that forms the basis for biochronology and biostratigraphy, and which is an independent and corroborating line of evidence for isotopic dating;
- Study the geographic distribution of organisms and tectonic movements of land masses and ocean basins through time;
- Study patterns and processes of evolution, extinction, and speciation; and
- Identify past and potential future human-caused effects to global environments and climates."

Fossil resources vary widely in their relative abundance and distribution and not all are regarded as significant. According to the Bureau of Land Management (BLM) Instructional Memorandum (IM) 2009-011, a "Significant Paleontological Resource" is defined as:

> "Any paleontological resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant paleontological resource is considered to be of scientific interest if it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has an identified educational or recreational value. Paleontological resources that may be considered not to have scientific significance include

> those that lack provenience or context, lack physical integrity due to decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate coprolites (feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities" (BLM, 2008)."

Vertebrate fossils, whether preserved remains or track ways, are classified as significant by most state and federal agencies and professional groups (and are specifically protected under Division 1 of the California Public Resources Code, Section 5020.1 [b]). In some cases, fossils of plants or invertebrate animals are also considered significant and can provide important information about ancient local environments. Assessment of significance is also subject to the CEQA criterion that the resource constitutes a "unique paleontological resource or site."

4.0 LAWS, ORDINANCES, REGULATIONS AND STANDARDS

This section of the report presents the regulatory requirements pertaining to paleontological resources that will apply to this Project.

4.1 State and Local Regulatory Setting

The following subsections describe the applicable state and local regulations.

4.1.1 California Environmental Quality Act (CEQA)

The procedures, types of activities, persons, and public agencies required to comply with the California Environmental Quality Act (CEQA) are defined in the Guidelines for Implementation of CEQA (State CEQA Guidelines), as amended on March 18, 2010 (Title 14, Section 15000 et seq. of the California Code of Regulations [i.e., 14 CCR Section 15000 et seq.) and further amended January 4th, 2013. One of the questions listed in the CEQA Environmental Checklist is: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (State CEQA Guidelines Section 15064.5 and Appendix G, Section V, Part C).

4.1.2 State of California Public Resources Code

The State of California Public Resources Code (Chapter 1.7), Sections 5097.5 and 30244, includes additional state level requirements for the assessment and management of paleontological resources. These statutes require reasonable mitigation of adverse impacts to paleontological resources resulting from development on state lands, define the removal of paleontological "sites" or "features" from state lands as a misdemeanor, and prohibit the removal of any paleontological "site" or "feature" from State land without permission of the jurisdictional agency. These protections apply only to State of California land, and thus apply only to portions of the project, if any, which occur on State land.

4.1.3 Riverside County General Plan

The Riverside County General Plan recommends that a paleontologist examine the sediments of Undetermined sensitivity to determine their sensitivity, defines a significant impact on paleontological resources, and requires monitoring of activities within High sensitivity areas that may affect paleontological resources. It also requires that a final report be submitted to the Riverside County Planning Department documenting the findings of the monitoring and mitigation work (County of Riverside, 2003). Riverside County General Plan recommendations are based on the Society of Vertebrate Paleontology (SVP) Guidelines.

The Multipurpose Open Space Element of the Riverside County General Plan provides the following requirements for paleontologically sensitive areas within the county:

OS 19.8 Whenever existing information indicates that a site proposed for development may contain biological, paleontological, or other scientific resources, a report shall be filed stating the extent and potential significance of the resources that may exist within the proposed development and appropriate measures through which the impacts of development may be mitigated.

OS 19.9 This policy requires that when existing information indicates that a site proposed for development may contain paleontological resources, a paleontologist shall monitor site grading activities, with the authority to halt grading to collect uncovered paleontological resources, curate any resources collected with an appropriate repository, and file a report with the Planning Department documenting any paleontological resources that are found during the course of site grading.

OS 19.10 Transmit significant development applications subject to CEQA to the San Bernardino County Museum (SBCM) for review, comment, and/or preparation of recommended conditions of approval with regard to paleontological resources.*

*The SBCM is not currently able to fulfil this role due to a change in the paleontology department staff.

4.2 Permits

No permits were required for the paleontological work conducted for the Project.

5.0 METHODS

This paleontological analysis of existing data included a geologic map review, a geotechnical report review, a literature search, an institutional record search, and a field survey. The goal of this report is to evaluate the paleontological potential of the Project area and make recommendations for the mitigation of adverse impacts on paleontological resources that may occur as a result of the proposed construction.

5.1 Paleontological Analysis

Paleo Solutions reviewed two geologic maps of the Project area published by T.W. Dibblee and J.A. Minch (2003) and Morton and Kennedy (2003). The literature reviewed included published and unpublished scientific papers. A paleontological record search was conducted at the Western Science Center in Hemet, California. Darla Radford, M.A. performed the search. The results of the record search (dated January 18, 2017) are attached as Appendix A. Additional record searches of online databases were completed by Paleo Solutions staff. Joey Raum, B.S. conducted the field survey, performed the background research, and co-authored this report with Courtney Richards, M.S. Geraldine Aron, M.S. oversaw all aspects of the Project as the Paleontological Principal Investigator. Courtney Richards and Paul Murphey, Ph.D. performed the technical review of this report. GIS maps were prepared by Barbara Webster, M.S.

5.2 Paleontological Potential Classification Criteria

The PFYC system was developed by the Bureau of Land Management (BLM, 2016). Because of its demonstrated usefulness as a resource management tool, the PFYC has been utilized for many years for projects across the country, regardless of land ownership. It is a predictive resource management tool that classifies geologic units on their likelihood to contain paleontological resources on a scale of 1 (very low potential) to 5 (very high potential). This system is intended to aid in predicting, assessing, and mitigating paleontological resources. The PFYC ranking system is summarized in Table 2, along with the Riverside County guideline paleontological sensitivity rankings, which are included for a comparison of the two systems.

TABLE 2. POTENTIAL FOSSIL YIELD CLASSIFICATION (BLM, 2016) COMPARED TO THE RIVERSIDE COUNTY GENERAL PLAN (2003).

<table>
<tr><th>BLM PFYC Designation</th><th>*Riverside County Paleontological Sensitivity</th><th>Assignment Criteria Guidelines and Management Summary (PFYC system)</th></tr>
<tr><td rowspan="4">1 = Very Low Potential</td><td rowspan="4">Low Sensitivity</td><td>Geologic units are not likely to contain recognizable paleontological resources.</td></tr>
<tr><td>Units are igneous or metamorphic, excluding air-fall and reworked volcanic ash units.</td></tr>
<tr><td>Units are Precambrian in age.</td></tr>
<tr><td>Management concern is usually negligible, and impact mitigation is unnecessary except in rare or isolated circumstances.</td></tr>
<tr><td rowspan="6">2 = Low Potential**</td><td rowspan="6">High B Sensitivity</td><td>Geologic units are not likely to contain paleontological resources.</td></tr>
<tr><td>Field surveys have verified that significant paleontological resources are not present or are very rare.</td></tr>
<tr><td>Units are generally younger than 10,000 years before present.</td></tr>
<tr><td>Recent aeolian deposits</td></tr>
<tr><td>Sediments exhibit significant physical and chemical changes (i.e., diagenetic alteration) that make fossil preservation unlikely</td></tr>
<tr><td>Management concern is generally low, and impact mitigation is usually unnecessary except in occasional or isolated circumstances.</td></tr>
</table>

BLM PFYC Designation	*Riverside County Paleontological Sensitivity	Assignment Criteria Guidelines and Management Summary (PFYC system)
3 = Moderate Potential	High A Sensitivity	Sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence.
		Marine in origin with sporadic known occurrences of paleontological resources.
		Paleontological resources may occur intermittently, but these occurrences are widely scattered
		The potential for authorized land use to impact a significant paleontological resource is known to be low-to-moderate.
		Management concerns are moderate. Management options could include record searches, pre-disturbance surveys, monitoring, mitigation, or avoidance. Opportunities may exist for hobby collecting. Surface-disturbing activities may require sufficient assessment to determine whether significant paleontological resources occur in the area of a proposed action and whether the action could affect the paleontological resources.
4 = High Potential	High A Sensitivity	Geologic units that are known to contain a high occurrence of paleontological resources.
		Significant paleontological resources have been documented but may vary in occurrence and predictability.
		Surface-disturbing activities may adversely affect paleontological resources.
		Rare or uncommon fossils, including nonvertebrate (such as soft body preservation) or unusual plant fossils, may be present.
		Illegal collecting activities may impact some areas.
		Management concern is moderate to high depending on the proposed action. A field survey by a qualified paleontologist is often needed to assess local conditions. On-site monitoring or spot-checking may be necessary during land disturbing activities. Avoidance of known paleontological resources may be necessary.
5 = Very High Potential	High A Sensitivity	Highly fossiliferous geologic units that consistently and predictably produce significant paleontological resources.
		Significant paleontological resources have been documented and occur consistently
		Paleontological resources are highly susceptible to adverse impacts from surface disturbing activities.
		Unit is frequently the focus of illegal collecting activities.
		Management concern is high to very high. A field survey by a qualified paleontologist is almost always needed and on-site monitoring may be necessary during land use activities. Avoidance or resource preservation through controlled access, designation of areas of avoidance, or special management designations should be considered.
U = Unknown Potential	Undetermined Sensitivity	Geologic units that cannot receive an informed PFYC assignment
		Geological units may exhibit features or preservational conditions that suggest significant paleontological resources could be present, but little information about the actual paleontological resources of the unit or area is unknown.
		Geologic units represented on a map are based on lithologic character or basis of origin, but have not been studied in detail.
		Scientific literature does not exist or does not reveal the nature of paleontological resources.
		Reports of paleontological resources are anecdotal or have not been verified.

BLM PFYC Designation	*Riverside County Paleontological Sensitivity	Assignment Criteria Guidelines and Management Summary (PFYC system)
		Area or geologic unit is poorly or under-studied.
		BLM staff has not yet been able to assess the nature of the geologic unit.
		Until a provisional assignment is made, geologic units with unknown potential have medium to high management concerns. Field surveys are normally necessary, especially prior to authorizing a ground-disturbing activity.

*Riverside County guidelines paleontological sensitivity rankings comparison to BLM PFYC rankings. This comparison does not denote an absolute correlation between the rankings.
**Sensitivity may increase with depth.

6.0 GEOLOGY AND PALEONTOLOGY

The Peninsular Ranges Geomorphic Province is a region characterized by northwest-trending fault-bounded mountain ranges, broad intervening valleys, and low-lying coastal plains (Yerkes et al., 1965). The Peninsular Ranges extend approximately 920 miles from Los Angeles Basin to the southern tip of Baja California, and vary in width from approximately 30 to 100 miles. Bedrock units in the Peninsular Ranges include Jurassic-age igneous rocks of the Southern California Batholith (Yerkes et al., 1965). The Project area is situated in the central portion of the Perris Block, which is a fault-bounded block comprising part of the northern Peninsular Ranges; the block is bounded by the San Jacinto Fault on the east, the Elsinore-Chino Fault zones on the west, and the Cucamonga Fault on the north (Woodford et al., 1971). The Project area lies in a broad valley with interspersed hills that is bounded by the Santa Ana Mountains and the San Jacinto Mountains to the southwest and northwest, respectively. The Project area is underlain primarily by Holocene-age to Pleistocene-age sedimentary deposits and Mesozoic-age phyllite (Morton and Kennedy, 2003; Dibblee and Minch, 2003).

6.1 Literature Search

Several published sources including geologic maps and scientific papers were reviewed for this study. Aerial imagery shows that the Project area surface is relatively flat and predominantly covered by native sediments and vegetation as well as unmapped artificial fill emplaced by previous construction projects. A review of the geologic maps (Morton and Kennedy, 2003; Dibblee and Minch, 2003) shows that the Project area is predominantly mapped as Pleistocene very old alluvial valley deposits (Qvova), Holocene alluvial valley deposits (Qa), and Mesozoic phyllite (Mzp) (Figure 3). For this study, the mapping by Dibblee and Minch (2003) was used in the Winchester USGS 7.5’ Topographic Quadrangle (northern Project area), and the mapping by Morton and Kennedy (2003) was used in the Bachelor Mountain 7.5’ Topographic Quadrangle (southern Project area). A comparison of the two maps revealed differences in the interpreted ages of the Quaternary surficial sedimentary deposits. Specifically, the northeast portion of the Project area is mapped as Holocene surficial sediments (Qa) by Dibblee and Minch (2003), and Pleistocene very old alluvial valley deposits (Qvova) by Morton and Kennedy (2003). This significantly different geologic interpretation indicates further investigation will be needed to correctly determine the age of the sedimentary deposits underlying this portion of the Project area.

The paleontological sensitivity of the geologic units was determined using the PFYC system (see Section 5.2). The paleontological sensitivity rankings of each geologic unit crossed by the Project are listed in Table 1. The geographic distribution of the geologic units within the Project area is illustrated in Figure 3.

6.1.1 Mesozoic Plutonic and Metasedimentary Units (Kgb, Kgd, Mzp)

Mesozoic-age rock units consist of hornblende gabbro (Kgb), biotite and hornblende-biotite granodiorite (Kgd), and phyllite (Mzp). Phyllite is mapped within the Project area in the central, northwest corner, and southeast corner. According to the geotechnical report (Inland Foundation Engineering, 2016), phyllite bedrock underlies the Quaternary alluvial sediments in the Project area between one and ten feet below the current ground surface. Additionally, gabbro (Kgb) is mapped west of the Project area, and granodiorite (Kgd) is mapped as two small slivers southwest of the Project area (Figure 3). Igneous rocks formed deep within the Earth's surface at high temperature and high pressure and lack fossil resources. Metamorphic rocks have been deformed by heat and pressure and will usually be devoid of recognizable fossil remains. Igneous and metamorphic rocks are therefore considered to have very low paleontological potential (Class 1) using the PFYC system and low sensitivity per Riverside County guidelines (2003).

6.1.2 Pleistocene Very Old Alluvial Deposits (Qvova)

Pleistocene very old alluvial valley deposits (Qvova) comprise fluvial sediments deposited on broad canyon floors by ancient river and stream systems. These sediments were shed from adjacent mountain ranges during uplift associated with fault activity. Older alluvial sediments are heavily dissected and consist of moderately to well-indurated, reddish-brown, clay, silt, sand and gravel (Morton and Kennedy, 2003). Pleistocene very old alluvial deposits are mapped on the majority of the western Project area as well as the northeast corner (Figure 3).

Taxonomically diverse and locally abundant Pleistocene animals and plants have been collected from older alluvial deposits similar to those mapped in the Project area throughout southern California and include mammoth, mastodon, camel, horse, bison, giant ground sloth, peccary, cheetah, lion, saber tooth cat, capybara, dire wolf, and numerous taxa of smaller mammals (Jahns, 1954; Cooper and Eisentraut, 2002; Jefferson, 1991). Pleistocene very old alluvial deposits have moderate paleontological potential (Class 3) using the PFYC system and high (A) sensitivity per Riverside County guidelines (2003).

Pleistocene older alluvium has produced numerous Pleistocene-age vertebrate fossils in the Project vicinity as well as elsewhere in Riverside County (Cooper and Eisentraut, 2002; Jefferson, 1991; Springer et al., 2009). Most notable is the massive fossil collection recovered during excavation for Diamond Valley Lake, which is located northeast of the Project area. These sediments have yielded tens of thousands of fossils corresponding to the late Irvingtonian and early Rancholabrean North American Land Mammal Ages (Reynolds and Reynolds, 1990a; 1990b). The Diamond Valley Lake Local Fauna (DVLLF) is the largest open, non-asphaltic late Pleistocene fossil assemblage known in the southwestern United States (Springer et al., 2009). The assemblage comprises 2,646 localities and includes nearly 100,000 identifiable fossils representing more than 105 vertebrate, invertebrate, and plant taxa (Springer et al., 2009). Vertebrate fossils are generally well-preserved and relatively complete and provide important data on the relative abundance and diversity of species through time at the given geographical location (Springer et al., 2009). A complete list of DVLLF taxa is provided in Table 3.

Furthermore, the Pauba Formation, which is geologically correlative with Pleistocene older alluvium, has produced numerous specimens of well-preserved fossil vertebrates of late Pleistocene age during excavations for a nearby housing development project in Temecula, Riverside County. These fossils were discovered during monitoring in 2004 and included scientifically significant specimens from six different taxa: *Mammuthus columbi* (mammoth), *Equus* spp. (horse), *Bison antiquus* (bison), cf. Camelidae (camel family), Rodentia (rodent family), and Serpentes (snake) (Table 3; SWCA, 2004).

6.1.3 Quaternary Young Alluvial Deposits (Qa, Qyaa)

Quaternary young alluvial deposits (Qa, Qyaa) are Holocene-age (10,000 years ago – Recent) and are composed of gravel, sand, and clay that comprise valleys and alluvial fans. Quaternary deposits are poorly consolidated and represent sedimentation associated with current and former major rivers and streams. Generally rounded to well-rounded, these gravels are comprised of igneous and metamorphic rocks from the local mountains that have been washed downstream over time (Dibblee and Minch, 2003; Morton and Kennedy, 2003). The alluvium is covered with greyish colored soil. Quaternary valley alluvium (Qa) is mapped in the northeast corner of the Project area, and alluvial channel deposits (Qyaa) are mapped southeast of the Project area.

Fossils are generally unknown from Holocene-age surficial deposits, due to their young age. Reworked fossils from older deposits may be present, but would not meet significance criteria as the fossils would lack critical contextual information. However, they may overlie older, paleontologically sensitive deposits at depth. Therefore, the Quaternary alluvium deposits are designated as having low paleontological sensitivity (Class 2) above four feet depth and are designated as having unknown paleontological potential (Class U) below four feet depth using the PFYC system. These deposits have a high (B) sensitivity per Riverside County guidelines (2003).

6.1.4 Artificial Fill (af)

Artificial fill (af) comprises recent deposits of previously disturbed sediments emplaced by construction operations and are found in areas where recent construction has taken place. Colors are highly variable and sediments are mottled in appearance. Although these materials may contain fossil resources, they have been removed from their original locations and lack significance. Artificial fill is not mapped in the Project area; however, the apparent preexisting surface disturbance in the vicinity suggests the presence of these materials comprising some of the surface of the Project area. Artificial fill (af) has low paleontological potential (Class 2) using the PFYC system and high (B) sensitivity per Riverside County guidelines (2003).

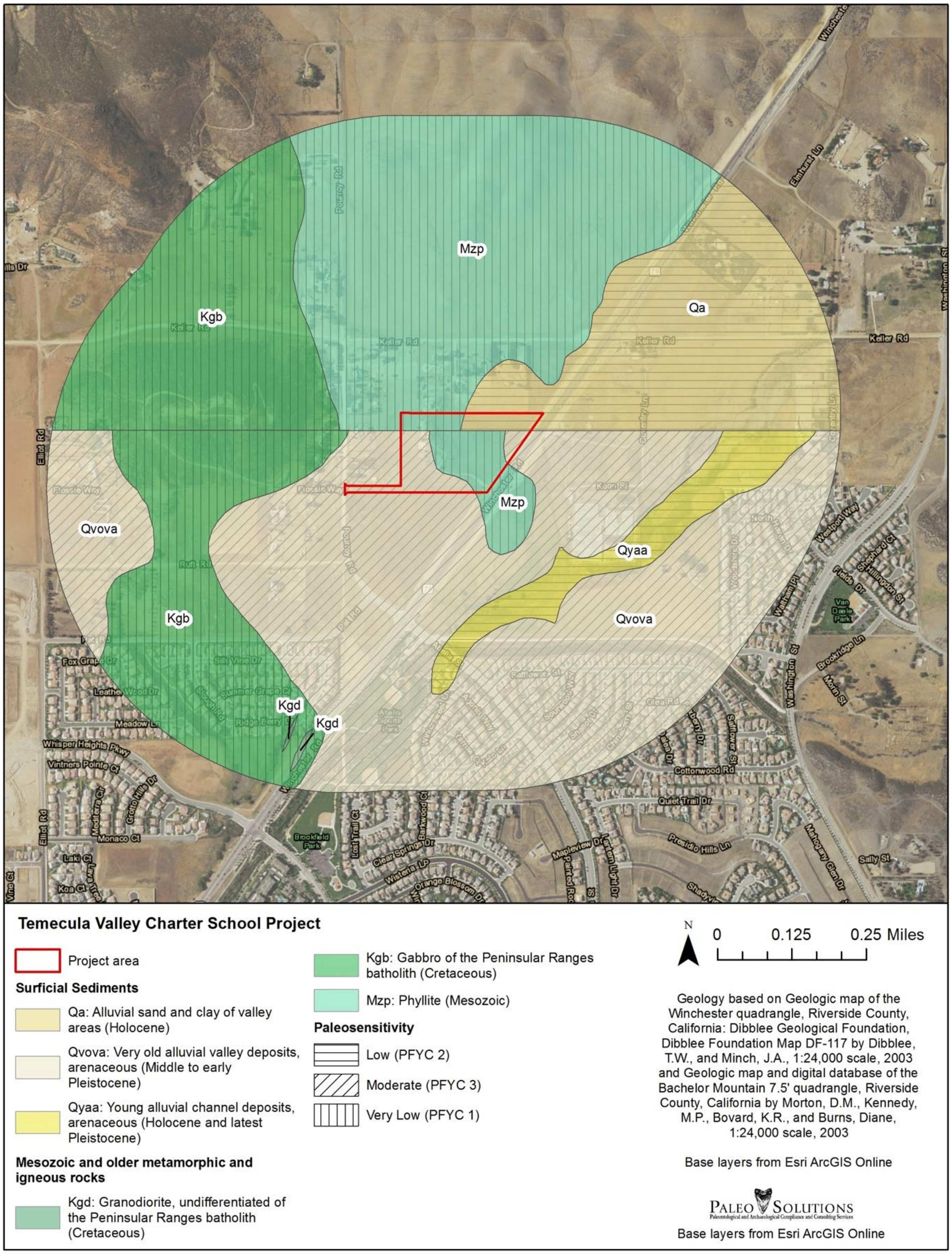


Figure 3. Project Geology Map.

6.2 Paleontological Record Search Results

Paleo Solutions requested a paleontological search of records maintained by the Western Science Center in Hemet, California. The museum responded on January 18, 2017 that there were no localities within a one-mile radius of the Project area (Radford, 2017; Appendix A). However, numerous fossil localities have been recorded within five miles of the Project area (Table 3; see Section 6.1.2). Online database searches yielded numerous vertebrate fossil localities recorded from Pleistocene-age deposits within Riverside County including, mammoth, mastodon, camel, horse, bison, ground sloth, peccary, lion, saber-tooth cat, capybara, dire wolf, and rodent (UCMP, 2017; PBDB, 2017; Table 3).

TABLE 3. PALEONTOLOGICAL LITERATURE AND RECORDS SEARCH RESULTS

Institutional Locality Number	Taxon	Common Name	Location	Source
Not reported	*Megalonyx jeffersonii*	Jefferson's ground sloth	Diamond Valley Lake	Springer et al., 2009
Not reported	*Nothrotheriops shastensis*	Shasta ground sloth	Diamond Valley Lake	Springer et al., 2009
Not reported	*Paramylodon harlani*	giant ground sloth	Diamond Valley Lake	Springer et al., 2009
Not reported	*Canis dirus* *Canis latrans*	dire wolf coyote	Diamond Valley Lake	Springer et al., 2009
Not reported	*Urocyon cinereoargenteus*	grey fox	Diamond Valley Lake	Springer et al., 2009
Not reported	*Ursus americanus*	black bear	Diamond Valley Lake	Springer et al., 2009
Not reported	cf. *Arctodus* sp.	short-faced bear	Diamond Valley Lake	Springer et al., 2009
Not reported	*Smilodon fatalis*	sabre-toothed cat	Diamond Valley Lake	Springer et al., 2009
Not reported	*Lynx rufus*	bobcat	Diamond Valley Lake	Springer et al., 2009
Not reported	*Panthera leo atrox*	North American lion	Diamond Valley Lake	Springer et al., 2009
Not reported	*Mammut americanum*	American mastodon	Diamond Valley Lake	Springer et al., 2009
Not reported	*Mammuthus columbi*	Columbian mammoth	Diamond Valley Lake	Springer et al., 2009
Not reported	*Equus occidentalis* *Equus conversidens*	extinct Western horse extinct small horse	Diamond Valley Lake	Springer et al., 2009
Not reported	*Platygonus compressus*	extinct flat-headed peccary	Diamond Valley Lake	Springer et al., 2009
Not reported	*Camelops hesternus*	extinct camel	Diamond Valley Lake	Springer et al., 2009
Not reported	*Hemiauchenia macrocephala*	extinct llama	Diamond Valley Lake	Springer et al., 2009
Not reported	*Odocoileus hemionus*	mule deer	Diamond Valley Lake	Springer et al., 2009
Not reported	*Capromeryx minor*	extinct dwarf pronghorn	Diamond Valley Lake	Springer et al., 2009
Not reported	*Antilocapra. americana*	pronghorn	Diamond Valley Lake	Springer et al., 2009
Not reported	*Bison antiquus* *Bison latifrons*	extinct ancient bison extinct long-horned bison	Diamond Valley Lake	Springer et al., 2009

Institutional Locality Number	Taxon	Common Name	Location	Source
Not reported	*Sylvilagus audubonii*	Audubon's cotton-tailed rabbit	Diamond Valley Lake	Springer et al., 2009
Not reported	*Lepus californicus*	jackrabbit	Diamond Valley Lake	Springer et al., 2009
Not reported	cf. *Ammospermophilus* sp.	antelope ground squirrel	Diamond Valley Lake	Springer et al., 2009
Not reported	*Eutamias* sp.	chipmunk	Diamond Valley Lake	Springer et al., 2009
Not reported	*Spermophilus beecheyi* *Spermophilus* sp.	Beechey's ground squirrel ground squirrel	Diamond Valley Lake	Springer et al., 2009
Not reported	*Thomomys bottae*	Botta's pocket gopher	Diamond Valley Lake	Springer et al., 2009
Not reported	*Dipodomys* sp.	kangaroo rat	Diamond Valley Lake	Springer et al., 2009
Not reported	*Perognathus* sp.	large pocket mouse	Diamond Valley Lake	Springer et al., 2009
Not reported	*Reithrodontomys* sp.	harvest mouse	Diamond Valley Lake	Springer et al., 2009
Not reported	cf. *Peromyscus crinitus* *Peromyscus* sp,	canyon mouse deer mouse	Diamond Valley Lake	Springer et al., 2009
Not reported	*Neotoma fuscipes* *Neotoma lepida*	dusky-footed wood rat desert wood rat	Diamond Valley Lake	Springer et al., 2009
Not reported	*Microtus californicus*	California meadow vole	Diamond Valley Lake	Springer et al., 2009
Not reported	*Mustela frenata*	long-tailed weasel	Diamond Valley Lake	Springer et al., 2009
Not reported	*Mephitis* sp.	striped or hooded skunk	Diamond Valley Lake	Springer et al., 2009
Not reported	*Taxidea taxus*	badger	Diamond Valley Lake	Springer et al., 2009
Not reported	*Sorex ornatus*	ornate shrew	Diamond Valley Lake	Springer et al., 2009
Not reported	*Scapanus latimanus*	mole	Diamond Valley Lake	Springer et al., 2009
Not reported	*Myotis* sp.	mouse-eared bat	Diamond Valley Lake	Springer et al., 2009
Not reported	*Anas* sp.	duck	Diamond Valley Lake	Springer et al., 2009
Not reported	*Accipiter* sp. *Accipiter cooperi*	hawk Cooper's hawk	Diamond Valley Lake	Springer et al., 2009
Not reported	*Aquila chrysaetos*	golden eagle	Diamond Valley Lake	Springer et al., 2009
Not reported	*Falco* sp.	falcon or kestrel	Diamond Valley Lake	Springer et al., 2009
Not reported	*Meleagris californica*	extinct California turkey	Diamond Valley Lake	Springer et al., 2009
Not reported	*Callipepla californica*	California quail	Diamond Valley Lake	Springer et al., 2009
Not reported	Scolopacidae	indeterminate shore bird	Diamond Valley Lake	Springer et al., 2009
Not reported	*Asio* sp. *Asio flammeus*	owl short-eared owl	Diamond Valley Lake	Springer et al., 2009
Not reported	*Colaptes auratus*	northern flicker	Diamond Valley Lake	Springer et al., 2009
Not reported	cf. *Hirundo* sp.	swallow	Diamond Valley Lake	Springer et al., 2009
Not reported	Hirundinidae	indeterminate large-sized swallow	Diamond Valley Lake	Springer et al., 2009

Institutional Locality Number	Taxon	Common Name	Location	Source
Not reported	*Cyanocitta stelleri*	Steller's jay	Diamond Valley Lake	Springer et al., 2009
Not reported	*Corvus corax*	raven	Diamond Valley Lake	Springer et al., 2009
Not reported	cf. *Turdus migratorius*	American robin	Diamond Valley Lake	Springer et al., 2009
Not reported	Corvidae	jay-sized blackbird magpie-sized blackbird	Diamond Valley Lake	Springer et al., 2009
Not reported	cf. *Sturnella neglecta*	Western meadowlark	Diamond Valley Lake	Springer et al., 2009
Not reported	*Scaphiopus hammondi*	Hammonds's spadefoot toad	Diamond Valley Lake	Springer et al., 2009
Not reported	cf. *Bufo boreas*	western toad	Diamond Valley Lake	Springer et al., 2009
Not reported	cf. *Hyla cadaverina*	California tree frog	Diamond Valley Lake	Springer et al., 2009
Not reported	*Rana* sp.	true frog	Diamond Valley Lake	Springer et al., 2009
Not reported	*Clemmys marmorata*	Western pond turtle	Diamond Valley Lake	Springer et al., 2009
Not reported	*Gopherus agassizii*	desert tortoise	Diamond Valley Lake	Springer et al., 2009
Not reported	Iguanidae	indeterminate "sceloporine" iguana	Diamond Valley Lake	Springer et al., 2009
Not reported	*Phrynosoma coronatum*	coast horned lizard	Diamond Valley Lake	Springer et al., 2009
Not reported	*Cnemidophorus tigris*	Western whiptail lizard	Diamond Valley Lake	Springer et al., 2009
Not reported	*Crotaphytus collaris*	collared lizard	Diamond Valley Lake	Springer et al., 2009
Not reported	*Gerrhonotus* sp.	alligator lizard	Diamond Valley Lake	Springer et al., 2009
Not reported	*Sceloporus occidentalis* cf. *Sceloporus graciosus*	Western fence lizard sagebrush lizard	Diamond Valley Lake	Springer et al., 2009
Not reported	*Uta stansburiana*	side-blotched lizard	Diamond Valley Lake	Springer et al., 2009
Not reported	cf. *Lampropeltis* sp.	king snake	Diamond Valley Lake	Springer et al., 2009
Not reported	*Masticophis* sp.	whip snake	Diamond Valley Lake	Springer et al., 2009
Not reported	*Pituophis melanoleucus*	gopher snake	Diamond Valley Lake	Springer et al., 2009
Not reported	*Tantilla* sp.	black-head snake	Diamond Valley Lake	Springer et al., 2009
Not reported	*Thamnophis* sp.	garter snake	Diamond Valley Lake	Springer et al., 2009
Not reported	*Crotalus* sp. *Crotalus cerastes*	rattlesnake sidewinder	Diamond Valley Lake	Springer et al., 2009
Not reported	Caudata	indeterminate salamander	Diamond Valley Lake	Springer et al., 2009
Not reported	Ostracoda	ostracodes	Diamond Valley Lake	Springer et al., 2009
Not reported	Isoptera	indeterminate termites	Diamond Valley Lake	Springer et al., 2009
Not reported	Coleoptera	indeterminate beetles	Diamond Valley Lake	Springer et al., 2009
Not reported	Pelecypoda	indeterminate bivalves	Diamond Valley Lake	Springer et al., 2009

Institutional Locality Number	Taxon	Common Name	Location	Source
Not reported	*Deroceras* sp.	slug	Diamond Valley Lake	Springer et al., 2009
Not reported	*Discus whitneyi*	forest disc snail	Diamond Valley Lake	Springer et al., 2009
Not reported	*Succinea avara*	amber snail	Diamond Valley Lake	Springer et al., 2009
Not reported	*Pupilla muscorum*	widespread column snail	Diamond Valley Lake	Springer et al., 2009
Not reported	*Vertigo sp.*	vertigo snail	Diamond Valley Lake	Springer et al., 2009
Not reported	*Vallonia cyclophorella* *Vallonia gracilicosta*	silky vallonia snail multi-rib vallonia snail	Diamond Valley Lake	Springer et al., 2009
Not reported	*Fossaria parva*	pygmy fossaria snail	Diamond Valley Lake	Springer et al., 2009
Not reported	*Physa* sp.	freshwater snail	Diamond Valley Lake	Springer et al., 2009
Not reported	*Gyraulus circumstriatus* *Gyraulus parvus*	disc gyro snail ash gyro snail	Diamond Valley Lake	Springer et al., 2009
Not reported	*Helisoma tenue*	rams-horn snail	Diamond Valley Lake	Springer et al., 2009
Not reported	*Valvata humeralis*	glossy valvata snail	Diamond Valley Lake	Springer et al., 2009
Not reported	*Mammuthus columbi* *Equus* spp. *Bison antiquus* cf. Camelidae Rodentia Serpentes	mammoth horse bison camel rodent snake	Temecula	SWCA, 2004
Not reported	*Mammuthus* *Mammut* Camelidae Equidae *Bison* *Megatherium* Tayassuidae *Acinonyx* *Panthera* *Smilodon* *Hydrochoerus* *Canis dirus* Rodentia	mammoth mastodon camel horse bison giant ground sloth peccary cheetah lion saber-tooth cat capybara dire wolf rodent	Riverside County	Jahns, 1954; Cooper and Eisentraut, 2002; Jefferson, 1991; UCMP, 2017; PBDB, 2017

7.0 FIELD SURVEY RESULTS

A paleontological field survey was conducted on February 2, 2017 by Paleo Solutions staff member Joey Raum, B.S. The survey was conducted after a review of aerial photographs indicated that the Project area included areas of undisturbed native sediment. The pedestrian survey was conducted to look for and record any fossil resources that may already be exposed onsite and to inspect sediment and bedrock exposures in an effort to resolve the discrepancies between the two geologic maps (Dibblee and Minch, 2003; Morton and Kennedy, 2003) reviewed for this analysis (see Section 6.1). This included close inspection and documentation of sediment and bedrock outcrops. Reference points were acquired using a Trimble GPS unit. Sediment and bedrock lithologies were recorded and analyzed and used to better interpret the Project paleontological sensitivity, and thus better understand the Project potential impact.

The survey area is accessible from the eastern and western ends from SR-79 and Pourroy Road, respectively. The survey area terrain is relatively flat and low lying and is adjacent to low-moderate to moderate relief hills situated to the south, west, and north (FiguresFigure ***4***,Figure ***5***, andFigure ***6***). The largest adjacent hill is situated west of the survey area (FiguresFigure ***8*** andFigure ***4***). The western and southwestern ends of the site lie at a slightly higher elevation than the rest of the site. Located on the highest point in the western-central area is a house (FiguresFigure ***4*** andFigure ***7***). West of the survey area are moderately developed residential areas including houses and graded unpaved roads. The survey area has minor infrastructures, although the surface has been heavily disturbed by recent agricultural use.

7.1 Geology

Sediments consists of poorly consolidated Quaternary (Holocene or Pleistocene) alluvium, which is mostly disturbed by previous agricultural use and other grading activities. Exposures are sparse and limited to patches of ground surface where grass cover is thin. Sediments exposed near the northeastern corner of the survey area include surface alluvium consisting of well to moderately sorted, medium to dark brown to gray, sandy silt and angular to subangular granule to small cobble size clasts of metamorphic and plutonic origin. No sediment profiles are exposed onsite; however, very low relief washes lie along the eastern boundary adjacent to SR-79, particularly near the northeastern corner (FiguresFigure ***9***,Figure ***10***,Figure ***11***, andFigure ***12***). Sediments are similar across the site, although more reddish-brown colored material was observed in the south-central area (FiguresFigure ***7***,Figure ***13***, andFigure ***14***). Reddish colored (oxidized) sediments are often indicative of older Pleistocene-age alluvium, which is potentially conducive to fossil preservation. Although sediment and bedrock exposures are limited onsite, there is a road cut along SR-79 that lies adjacent to the southeast corner. The road cut exposes very hard metamorphic grade bedrock (FiguresFigure ***15***,Figure ***16***, andFigure ***17***). The proximity of the road cut to the survey site implies that these metamorphic rocks underlie, in part, much of the low to moderate relief hills in the southwestern end of the site. Additionally, the moderate relief hills in the surrounding region appear to be dominantly composed of hard bedrock, either or plutonic or metamorphic origin. Furthermore, the angularity of the surface pebbles and cobbles (Figure 12) implies relatively close sediment transport, which suggests that material was derived from the surrounding hills and mountains. Due to the limited exposures of Quaternary (Holocene or Pleistocene) alluvium observed during the field survey, a definitive age determination could not be made.

7.2 Paleontology

No paleontological resources were observed or collected during the survey. Although sediments conducive to fossil preservation were observed.

Figure 4. Overview of survey area from southeast end. Mapped as Pleistocene-age alluvium (Qvova) and Mesozoic phyllite (Mzp). View northwest.

Figure 5. Overview of survey area from southeastern end of site. Mapped as Quaternary alluvium (Qa/Qvova) and Mesozoic phyllite (Mzp). View northeast.

Figure 6. Overview of survey area from western end at Pourroy Road. Mapped as Pleistocene-age alluvium (Qvova). View east.

Figure 7. Overview of northwestern site area which is situated on a low-moderate relief hill. Mapped as Pleistocene-age alluvium (Qvova) and Mesozoic phyllite (Mzp). View northeast.

Figure 8. View of western end of site, which terminates at Pourroy Road. Adjacent hills composed of plutonic/metamorphic rock. Mapped as Pleistocene-age alluvium (Qvova) and Mesozoic phyllite (Mzp). View west.

Figure 9. Overview of northern end of survey area from the northeast corner. Mapped as Quaternary alluvium (Qa/Qvova) and Mesozoic phyllite (Mzp). View west.

Figure 10. Quaternary alluvium consisting of medium to dark brown sandy silt. Mapped as Holocene-age alluvium (Qa). Very low relief washes. View north.

Figure 11. Quaternary alluvium consisting of medium to dark brown sandy silt. Mapped as Holocene-age alluvium (Qa). View down.

Figure 12. Quaternary alluvium consisting of medium to dark brown to gray sandy silt. Mapped as Holocene-age alluvium (Qa). View down.

Figure 13. Quaternary alluvium consisting of reddish-brown sandy silt. Mapped as Pleistocene-age alluvium (Qvova). View down.

Figure 14. Quaternary alluvium consisting of reddish-brown sandy silt. Mapped as Pleistocene-age alluvium (Qvova). View down.

Figure 15. Metamorphic grade bedrock exposed in a rock cut along SR-79 adjacent to the southeastern corner of the survey site. Mapped as Pleistocene-age alluvium (Qvova) and Mesozoic phyllite (Mzp). View northeast.

Figure 16. Metamorphic grade bedrock exposed in a rock cut along SR-79 adjacent to the southeastern corner of the survey site. Mapped as Pleistocene-age alluvium (Qvova) and Mesozoic phyllite (Mzp). View south.

Figure 17. Metamorphic grade bedrock exposed in a rock cut along SR-79 adjacent to the southeastern corner of the survey site. Mapped as Pleistocene-age alluvium (Qvova) and Mesozoic phyllite (Mzp). View down.

8.0 RESOURCE ASSESMENT

The PFYC system was applied to the results of the analysis of existing data. Pleistocene very old alluvium has moderate paleontological potential (PFYC Class 3). Holocene young alluvium is estimated to be less than 10,000 years old, and has low paleontological potential (PFYC Class 2) because it is too young to contain in-situ fossils. However, these younger deposits often overlie older geologic units with higher paleontological potential which may be disturbed at depth. Fossils contained in artificial fill lack critical scientific information, and artificial fill is generally considered to have low paleontological potential (PFYC Class 2). Igneous and metamorphic rock units, which are formed under high temperatures and/or pressures, are devoid of scientifically significant fossils and are considered to have very low paleontological potential (PFYC Class 1).

9.0 IMPACTS TO PALEONTOLOGICAL RESOURCES

Direct impacts to paleontological resources concern the physical destruction of fossils, usually by human-caused ground disturbance. Indirect impacts to paleontological resources typically concern the loss of resources to theft and vandalism resulting from increased public access to paleontologically sensitive areas. Cumulative impacts to paleontological resources concern the incremental loss of these nonrenewable resources to society as a whole.

Surface grading or shallow excavations entirely within Holocene young alluvial deposits in the Project area are unlikely to uncover significant fossil vertebrate remains. However, older deposits may be present immediately below a thin veneer of Holocene soils or alluvium. The geotechnical boring logs show Quaternary (Holocene and Pleistocene) sediments one foot beneath the ground surface and extending to a maximum depth of ten feet. Excavations in the Project area that extend down into very old sedimentary deposits may well impact scientifically important paleontological resources. Excavations entirely within previously disturbed sediments or artificial fill are unlikely to uncover significant fossil vertebrate remains; furthermore, any recovered resources will lack stratigraphic context. However, these deposits may shallowly overlie older in-situ sedimentary deposits. Excavations into Mesozoic phyllite, expected to be encountered starting at relatively shallow depths of one to ten feet below the current ground surface (Inland Foundation Engineering, Inc. 2016), will not impact scientifically significant fossils, although the overlying sediments may contain resources. Therefore, grading and other earthmoving activities may potentially result in significant direct impacts to paleontological resources throughout the entirety of the Project area.

10.0 RECOMMENDATIONS

Based on the ground disturbance necessary to complete the Project, there is the potential for adverse impacts to scientifically significant paleontological resources within Pleistocene very old alluvial deposits underlying a thin veneer of Holocene soils or alluvial deposits within the Project area. Construction excavations which disturb Pleistocene-age sediments should be monitored by a professional paleontologist in order to reduce potential adverse impacts on scientifically important paleontological resources to a less than significant level. Prior to construction, a paleontological resources monitoring and mitigation plan (PRMMP) should be prepared. It should provide detailed recommended monitoring locations; a description of a worker training program; detailed procedures for monitoring, fossil recovery, laboratory analysis, and museum curation; a curation agreement with the Western Science Center or another accredited repository; and notification procedures in the event of a fossil discovery by a paleontological monitor or other project personnel. Because the Project area is nearly devoid of exposed sediments, the approximate ages (Holocene or Pleistocene) of the Quaternary deposits underlying the Project area could not be determined from the field survey. Additionally, the subterranean sediment descriptions provided in the geotechnical report are inconclusive for determining Holocene or Pleistocene ages. Therefore, it is recommended that excavations in all locations of the Project area be initially monitored for the presence of paleontologically sensitive sediments. If it is determined that only Holocene-age alluvium (PFYC Class 2) or Mesozoic-age phyllite (PFYC Class 1) is impacted, monitoring will be reduced or halted. Any potential fossils that are unearthed during construction should be evaluated by a professional paleontologist as described in the PRMMP.

REFERENCES

Bureau of Land Management (BLM). 2008. Assessment and Mitigation of Potential Impacts to Paleontological Resources: BLM Instruction Memorandum No. 2009-011.

Bureau of Land Management (BLM). 2016. Potential Fossil Yield Classification system: BLM Instruction Memorandum No. 2016-124 (PFYC revised from USFS, 2008).

Cooper, J. D. and P.J. Eisentraut. 2002. Orange County Archaeo/Paleo Curation Draft Guidelines, Procedures and Policies - Draft Document. Prepared for County of Orange, Board of Supervisors.

County of Riverside. 2003. General Plan. Available at: http://www.rctlma.org/genplan/

Davis, S.N. and F.R. Hall. 1959. Water quality of eastern Stanislaus and northern Merced Counties, California: Standfor University. Pubs. Geol. Sci., v.6, no. 1, 112 p.

Dibblee, T.W. and J.A. Minch. 2003. Geologic map of the Winchester quadrangle, Riverside County, California. Dibblee Geological Foundation Map DF-117, (scale 1:24,000).

Inland Foundation Engineering, Inc. 2016. Geotechnical Investigation Proposed Charter School Site 34155 Winchester Road, French Valley Area, Riverside County, California. Prepared for Temecula Valley Charter School, Dated 9 September 2016, pp. 3-A12.

Jahns, R.H. 1954. Geology of Southern California. State of California, Department of Natural Resources, Bulletin 170, Volume 1.

Janda, R. J. 1965. Quaternary alluvium near Friant, California: International Association Quaternary Research Guidebook for Field Conference I, northern Great Basin and California, p. 128-133.

Jefferson, G.T. 1991. A Catalogue of late Quaternary Vertebrates from California: Part two, Mammals. *Natural History Museum of Los Angeles, Technical Report* #7.

Mann, J.F. 1955. Geology of a portion of the Elsinore fault zone, California: California Div. Mines Special Report 43, p. 22.

Murphey, P.C. 2004. SWCA Environmental Consultants (SWCA). Paleontological Monitoring Report for the Harveston Phase 2 Housing Development Temecula, California. Prepared for Lennar Communities, Inc.

Morton, D.M. and M.P. Kennedy. 2003. Geologic map of the Bachelor Mountain 7.5' quadrangle, Riverside County, California. U.S. Geological Survey Open-File Report 03-103, (scale 1:24,000).

Murphey, P.C., and D. Daitch. 2007. Paleontological overview of oil shale and tar sands areas in Colorado, Utah and Wyoming: U.S. Department of Energy, Argonne National Laboratory Report Prepared for the U.S. Department of Interior Bureau of Land Management, 468 p. and 6 maps (scale 1:500,000).

Paleo Biology Database (PBDB). 2017. Online search of the PaleoBiology Database, accessed January 20-25.

Radford, D. 2017. Paleontological Records Search – Temecula Valley Charter School Project. Completed by the Western Science Center at the request of Paleo Solutions, Inc. Dated 18 January 2017.

Reynolds, R.E., L.P. Fay, and R.L. Reynolds. 1990. An early-late Irvingtonian land mammal age fauna from Murrieta, Riverside County, California: San Bernardino County Museum Association Quarterly, v. XXXVII, p. 35-36.

Reynolds, R.E. and R.L. Reynolds. 1990a. A new late Blancan faunal assemblage from Murrieta, Riverside County, California: San Bernardino County Museum Association Quarterly, v. XXXVII, p. 34.

Reynolds, R.E. and R.L. Reynolds. 1990b. Irvingtonian? Faunas from the Pauba Formation, Temecula, Riverside County, California: San Bernardino County Museum Association Quarterly, v. XXXVII, p. 37.

Rogers, G.S. 1917. Chemical Relations of the Oil-Field Waters in San Joaquin Valley, California. USGS Bulletin 653.

Springer, K., E. Scott, C. Sagebiel, and L.K. Murray. 2009. The Diamond Valley Lake local fauna: Late Pleistocene vertebrates from inland southern California. *in* Papers on geology, vertebrate paleontology, and biostratigraphy in honor of Michael O. Woodburne (L.G. Albright, III, ed.). Museum of Northern Arizona Bulletin 65, Flagstaff, Arizona. pp. 217-235.

University of California Museum of Paleontology (UCMP). 2017. Online search of the University of California Museum of Paleontology database, accessed January 20-25.

Woodford, A.O., J.S. Shelton, D.O. Doehring, and R.K. Morton. 1971. Pliocene-Pleistocene history of the Perris Block, Southern California. Geological Society of America Bulletin, v. 82, 3421-3448 p.

Yerkes, R.F., T.H. McCulloh, J.E. Schoellhamer, and J.G. Vedder. 1965. Geology of the Los Angeles Basin, California; an introduction: Professional Paper.

APPENIDX A
WESTERN SCIENCE CENTER RECORDS SEARCH RESULTS

WESTERN SCIENCE CENTER

January 18, 2017

Paleo Solutions
Barbara Webster, MS
911 S. Primrose Ave., Unit N
Monrovia, CA 91016

Dear Ms. Webster,

This letter presents the results of a record search conducted for the Temecula Valley Charter School Project in the city of Winchester in Riverside County, California. The project site is located west of Highway 79/Winchester Road, south of Keller Road, in section 28 on the boundary of the Winchester and Bachelor Mountain CA USGS 7.5 minute quadrangles.

The geologic units underlying this project are mapped primarily as very old alluvial channel deposits dating from the middle to early Pleistocene, with areas of phyllite deposits dating from the Mesozoic period (Morton & Kennedy, 1991, 1995-1998). The Pleistocene alluvial channel units are considered to be of high paleontological sensitivity. The Western Science Center does not have localities within the project area or within a 1 mile radius, but does have numerous fossil localities within 5 miles that presented significant paleontological finds within similar alluvial mapped units including those associated with the Diamond Valley Lake Project in Hemet, and the Harveston II Project in Temecula. The Diamond Valley Lake and Harveston II Projects resulted in hundreds of fossil localities and thousands of fossil specimens.

Any fossils recovered from the project area would be scientifically significant. Excavation activity associated with development of the project area would impact the paleontologically sensitive Pleistocene units and it is the recommendation of the Western Science Center that a paleontological resource mitigation program be put in place to monitor, salvage, and curate any recovered fossils associated with the current study area.

If you have any questions, or would like further information about the Diamond Valley Lake or Harveston II projects mentioned, please feel free to contact me at dradford@westerncentermuseum.org

Sincerely,

Darla Radford
Collections Manager

2345 Searl Parkway ♦ Hemet, CA 92543 ♦ phone 951.791.0033 ♦ fax 951.791.0032 ♦ WesternScienceCenter.org

Appendix

This page intentionally left blank.

Appendix F Phase I Environmental Site Assessment

ENVIRONMENTAL ASSESSMENT

Prepared for:

Hansberger & Klein
Erica Klein

PHASE I ENVIRONMENTAL SITE ASSESSMENT
OF
34155 Winchester Road
Winchester, California 92596

PREPARED BY:

EMG
10461 Mill Run Circle
Suite 1100
Owings Mills, Maryland 21117
800.733.0660
www.EMGcorp.com

EMG CONTACT:

Kelly Hoover
Senior Environmental Consultant
800.733.0660. x6279
khoover@emgcorp.com

EMG PROJECT NUMBER:

120191.16R000-001.135

DATE OF REPORT:

June 6, 2016

ON SITE DATE:

May 26, 2016

PROJECT SUMMARY TABLE

REPORT SECTION	ACCEPTABLE	ROUTINE SOLUTION	PHASE II	REC	ESTIMATED COST
DATA GAPS	Yes				
CURRENT USE OF PROJECT	Yes				
HAZARDOUS MATERIALS	Yes				
STORAGE TANKS	Yes				
WASTE GENERATION	Yes				
SURFACE AREAS	Yes				
ADJACENT PROPERTY USE	Yes				
HISTORICAL REVIEW	Yes				
PROJECT REGULATORY DATABASE REVIEW	Yes				
OFF-SITE REGULATORY DATABASE REVIEW	Yes				
VAPOR MIGRATION	Yes				
ASBESTOS	No (1)	Yes		No	$495
RADON GAS	Yes				
LEAD-BASED PAINT	Yes				
LEAD IN DRINKING WATER	Yes (2)	Yes		No	TBD
MOISTURE CONDITIONS	Yes				

Conditions noted in the Project Summary Table are representative of the overall conditions of the property. The Project Summary Table should not be used as a stand alone document. REC - Recognized Environmental Condition, as defined by ASTM E1527-13.

Footnotes:

1. Based on the date of construction, there is a potential that asbestos containing materials (ACM) exist at the Project. The non-friable suspect ACM was observed in generally good condition and should be sampled prior to repair, renovation, or demolition activities. These materials can be maintained in place if an Operations and Maintenance (O&M) Program is developed and implemented. A properly designed O&M Program is sufficient to maintain the materials in accordance with current regulatory standards. Based on the scope of work, these materials were not sampled.
2. The Project is served by a private well. No documentation regarding lead in water testing was provided to EMG. The well should be sampled if proposed for future use, or properly abandoned if the well is not intended to be used in the future.

TABLE OF CONTENTS

TABLE OF APPENDICES

1.0 EXECUTIVE SUMMARY

EMG performed a Phase I Environmental Site Assessment of the property summarized below on May 26, 2016.

The assessment was performed at the Client's request using methods and procedures consistent with good commercial and customary practice conforming with ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. Any exceptions to, or deletions from, this practice are described in Section 2 of this report. The assessment was completed for the following property:

PROJECT DESCRIPTION	
Project Name:	34155 Winchester Road (the "Project")
Project Address:	34155 Winchester Road, Winchester, Riverside County, California 92596
Additional Current/Historical Addresses:	Not applicable
Assessor Parcel Number(s):	476010013 and 476010059
Site Visit Date:	May 26, 2016
Property Type:	Residential and naturally vegetated
Land Area (acres):	14.6
Number of Units:	Two residences
Number of Buildings:	Three
Year Constructed:	1979
Basement:	No
Domestic Sewage:	Septic system
Gross Building Area (SF):	Not reported
Net Rentable Area (SF):	Not reported

Naturally vegetated land on west portion of Project

Permanent residence

Mobile home structure

Garage structure

SITE RECONNAISSANCE CONDITIONS	
Date Completed:	May 26, 2016
EMG Project Manager:	Kate Downey
Weather Conditions:	Sunny
Temperature (F):	70s
Percent of Units Observed:	100%
Access Limitations:	No access limitations were encountered.

ENVIRONMENTALLY SUSPECT PROJECT USE	
PROJECT USE	CURRENTLY LOCATED AT THE PROJECT
Cellular Communications Equipment:	No
Commercial Printing:	No
Dry Cleaner:	No
Emergency Generator or Diesel Fire Pump:	No
Gasoline Station:	No
Heavy Industrial Use:	No
Landfill:	No
Machine Shop:	No
Military Use:	No
Oil Well:	No
Photograph/X-Ray Developing:	No
Vehicle Repair:	No

CHRONOLOGICAL HISTORY OF PROJECT			
YEARS	PROJECT USE	TENANTS	ENVIRONMENTAL CONCERN
Prior to 1938	No historical data available.	Not applicable	No
1938 - 1975	Vacant, non-arable land	Not applicable	No
1979 - Current	Residential and vacant, non-arable land	Not applicable	No

ADJACENT PROPERTIES			
DIRECTION	ADDRESSES	PROPERTY USE / BUSINESS NAME	ENVIRONMENTAL CONCERN
North	34119 Keller Flat Court	Single-family residence	No
East	Not applicable	Vacant, non-arable land	No
South	Not applicable	Vacant, non-arable land	No
West	34220-34550 Pourroy Road	Single-family residences	No

1.1 FINDINGS AND OPINIONS

This assessment has revealed no evidence of recognized environmental conditions (RECs), historical recognized environmental conditions (HRECs), controlled recognized environmental conditions (CRECs), significant data gaps, or significant business environmental risks in connection with the Project, except as discussed below.

ASBESTOS

Business Environmental Risk: Suspect ACM identified

Based on the date of construction, there is a potential that asbestos containing materials (ACM) exist at the Project. The non-friable suspect ACM was observed in generally good condition and should be sampled prior to repair, renovation, or demolition activities.

These materials can be maintained in place if an Operations and Maintenance (O&M) Program is developed and implemented. A properly designed O&M Program is sufficient to maintain the materials in accordance with current regulatory standards. Based on the scope of work, these materials were not sampled.

LEAD IN DRINKING WATER

Business Environmental Risk: Lead In Water

The Project is served by a private well. No documentation regarding lead in water testing was provided to EMG. The well should be sampled if proposed for future use, or properly abandoned if the well is not intended to be used in the future.

1.2 RECOMMENDATIONS

EMG recommends the following:

34155 Winchester Road

RECOMMENDATION	ESTIMATED COST
The development and implementation of an Asbestos O&M Program. Costs indicated are for O&M Program Document development only. Comprehensive survey costs, if required, will be identified as a result of O&M Program implementation.	$495
The well should be sampled if proposed for future use, or properly abandoned if the well is not intended to be used in the future.	To Be Determined

1.3 CERTIFICATION

EMG certifies that EMG has no undisclosed interest in the subject property, that EMG's relationship with the Client is at arms-length, and that EMG's employment and compensation are not contingent upon the findings or recommendations provided in the Report.

If you have any questions regarding this report, please contact Kelly Hoover at (800) 733-0660 x6279 or khoover@emgcorp.com.

Surveyed By: Kate Downey, Project Manager

Written By: Kate Downey, Project Manager

Reviewed By:

Kelly Hoover, Senior Environmental Consultant

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in § 312.10 of 40 CFR 312.

I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Project. I have developed and performed the all appropriate inquiries in conformance with the standard and practices set forth in 40 CFR Part 312.

1.4 RELIANCE

This report has been prepared for and is exclusively for the use and benefit of the Client identified on the cover page of this report. The purpose for which this report shall be used shall be limited to the use as stated in the contract between the client and EMG.

This report, or any of the information contained therein, is not for the use or benefit of, nor may it be relied upon by any other person or entity, for any purpose without the advance written consent of EMG. Any reuse or distribution without such consent shall be at the client's or recipient's sole risk, without liability to EMG.

2.0 SCOPE OF WORK

2.1 PURPOSE

The purpose of this report is to provide the Client the results of a commercially prudent and reasonable inquiry designed to identify recognized environmental conditions at the Project taking into account reasonably ascertainable information. In accordance with ASTM E1527-13, the level of environmental assessment was guided by several factors, including the type of property and the risk tolerance of the user.

The user informed EMG that the purpose of the assessment is for an acquisition.

2.2 SCOPE OF WORK

The assessment was conducted utilizing generally accepted Phase I industry standards, using American Society for Testing and Materials (ASTM) Standard Practice E 1527-13.

This assessment is based on the evaluation of the information gathered, laboratory analyses of samples collected (when required), and accessibility at the time of the assessment.

The Scope of Work included an evaluation of:

- Interviews with individuals knowledgeable about the Project for the purpose of gathering information regarding the potential for contamination at the Project.
- Available pertinent documents obtained by EMG or provided by the client.
- Reasonably ascertainable federal, state, and local records in an effort to identify sites of known or suspected hazardous waste activity located at or near the Project.
- The Project history in an attempt to identify possible ownership(s) and/or uses, as identified through review of reasonably ascertainable standard historical sources.
- The physical characteristics of the Project, as identified through review of reasonably ascertainable topographic data, wetlands, soils, geology, and groundwater data.
- Current Project conditions (as applicable) as they pertain to the presence or absence of: facility storage tanks, drums, containers (above or below ground), etc., transformers and other electrical equipment which utilize fluid which may potentially contain PCBs, the use of hazardous materials/chemicals and petroleum products, and/or the generation, treatment, storage, or disposal of hazardous, regulated, or medical wastes.
- An evaluation of information contained in programs such as the NPL, CERCLIS, SHWS, RCRIS, SWF, LUST, and other governmental information systems within specific search distances of the Project. This evaluation was performed to identify sites that represent a recognized environmental condition. The regulatory agency report provided is based on an evaluation of the data collected and compiled by a contracted data research company. The search is designed to meet the requirements of ASTM Standard Practice E 1527-13. The information provided is assumed to be correct and complete.
- Visual observation of the adjacent properties to identify high-risk neighbors and the potential for known or suspected contamination to migrate onto the Project.

2.3 ASTM E1527 NON-SCOPE CONSIDERATIONS

At the Client's request, the assessment included a screening approach for the following Non-ASTM Considerations, which are otherwise beyond the Scope of ASTM E1527-13.

NON-ASTM CONSIDERATIONS	
NON-ASTM CONSIDERATION	SCOPE OF WORK
Asbestos Containing Materials:	The identification of suspect asbestos containing materials in accessible areas. Sampling of suspect materials was not performed.
Radon Gas:	Radon gas propensity, through the review of the USEPA's Map of Radon Zones.
Lead Based Paint:	The identification of lead-based paint for residential and daycare properties constructed prior to 1978.
Lead In Drinking Water:	A screening for lead in water, based on information provided by the municipal water provider.
Moisture Conditions:	The identification of visible moisture conditions and conditions conducive for moisture conditions. In addition, EMG interviewed Project personnel regarding any known or suspected moisture conditions, water intrusion, or mildew like odors.
Wetlands:	Review of readily available wetlands map data available from the US Fish and Wildlife Service. A site specific wetland delineation is beyond the scope of this assessment.
Flood Zone:	Review of readily available flood zone map designations available from regulatory agencies, such as the Federal Emergency Management Agency (FEMA).

3.0 USER PROVIDED INFORMATION

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfield's Revitalization Act of 2001 (the "Brownfield's Amendments") (if desired), the user must provide certain information (if available) identified in the User Questionnaire to the environmental professional. Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete.

Within this Phase I Environmental Site Assessment, EMG's reference to the Client follows the ASTM guide's definition of user, that is, the party that retains EMG for the preparation of a baseline ESA of the Project. A user may include, without limitation, a purchaser, potential tenant, owner, existing or potential mortgagee, lender, or property manager of the Project.

3.1 USER QUESTIONNAIRE

EMG submitted the following User Questionnaire to the user pursuant to the responsibilities described in Section 6 of ASTM Standard E 1527-13. All Appropriate Inquires (40 CFR Part 312) requires that these questions be answered by or on behalf of a party seeking to qualify for limited liability protections to CERCLA liability.

A completed User Questionnaire was not returned to EMG. The lack of this information represents a data gap. However, based on the other information obtained during the completion of this assessment, the lack of the User Questionnaire does not represent a significant data gap. A copy of the User Questionnaire is included in Appendix D.

3.2 ENVIRONMENTAL LIEN/AUL SEARCH

The presence of an Activity and Use Limitations (AUL) at a property is an indication that there may be residual levels of hazardous substances or petroleum products present above unrestricted land use levels. Although Environmental Liens and AULs are often recorded with the property deed at the local land title office, in some cases they are filed in a separate environmental agency database or in project documentation, such as agency closure letters. ASTM E1527-13 does not require the environmental professional to undertake a review of recorded land title records and judicial records for environmental liens and AULs. Such a review is performed at the discretion of the user, based on their need to meet the requirements of 40 CFR 312.20 and 312.25.

The user did not engage EMG to review title and judicial records for environmental liens or AULs recorded against the Project. Furthermore, these documents were not provided to EMG for review. The lack of this information represents a data gap. However, based on the other information obtained during the completion of this assessment, the lack of the an Environmental AUL/Lien search does not represent a significant data gap.

3.3 PREVIOUS ENVIRONMENTAL ASSESSMENTS

In accordance with ASTM E1527-13, EMG requested that the user provide copies of previous environmental assessments for review. Furthermore, EMG may have obtained prior environmental assessments and regulatory records from local, state, and federal regulatory agencies. The purpose of reviewing prior environmental assessments is to determine if any recognized environmental conditions have previously been identified. Documentation provided to EMG which is unrelated to the identification of recognized environmental conditions may not be reviewed.

EMG was not provided with any previously conducted environmental assessment reports for the Project.

4.0 PHYSICAL SETTING

ASTM E1527-13 requires that the current 7.5-minute USGS Topographic Map (or equivalent) showing the area on which the Project is located be reviewed. Additional physical setting sources, such as soil survey maps, groundwater maps and geologic maps may be obtained and reviewed at the discretion of the environmental professional. The purpose of this review is to evaluate whether hazardous substances or petroleum products are likely to migrate to the Project.

4.1 TOPOGRAPHY

The most recent version of the USGS Topographic Map available is discussed below. Historical USGS Topographic Maps, if available, are discussed in Section 6.

USGS TOPOGRAPHIC MAP REVIEW	
Topographic Map Name:	Bachelor Mountain, California
Topographic Map Year:	2015
PROJECT TOPOGRAPHY	
Upper Elevation (feet):	1,465
Lower Elevation (feet):	1,415
Surface Slope:	Highly variable
Slope Direction:	Highly variable
GENERAL VICINITY TOPOGRAPHY	
Slope Direction:	Southeast
Nearest Surface Water Feature:	Unnamed intermittent creek
Nearest Surface Water Feature Distance:	1,300 feet
Nearest Surface Water Feature Direction:	South

4.2 GEOLOGY

The generalized geology of the Project area was researched using readily available geologic maps.

GENERALIZED GEOLOGY	
Source:	1:2,500,000 scale Geology of the Conterminous United States map published by the USGS and dated 1974
Geologic Description:	Lower Mesozoic eugeosynclinal materials

4.3 HYDROGEOLOGY

Groundwater conditions at the Project are estimated based on reasonably available data such as groundwater maps, previous subsurface investigations conducted at, or in the vicinity of the Project, and local conditions. Shallow groundwater flow is generally expected to follow the ground level slope of surface elevations towards the nearest open body of water. Estimated groundwater levels may vary due to seasonal fluctuations in precipitation, local usage demands, geology, underground structures, or dewatering operations.

HYDROGEOLOGY	
Source:	Groundwater well data provided the National Water Information System published by the USGS
Estimated Depth to Shallow Groundwater:	30-250 feet below ground surface
Estimated Direction of Groundwater Flow:	Southeast

4.4 SOILS

Review of the Natural Resources Conservation Service (NRCS) Web Soil Survey identified the following soil type(s) at the Project:

SOIL SERIES NAME	DRAINAGE	TEXTURE	DEPTH
Escondido	Well drained	Sandy loam	At least 5 inches
Friant	Well drained	Sandy loam	At least 13 inches
Garretson	Well drained	Sandy loam	At least 10 inches
Lodo	Somewhat excessively drained	Gravelly loam	At least 8 inches

5.0 SITE RECONNAISSANCE

The objective of the site reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions in connection with the property. In accordance with ASTM E1527-13, EMG attempted to visually observe the periphery of the Project and all structures to the extent not obstructed by obstacles. In addition, EMG attempted to visually observe interior common areas, maintenance and repair areas, and a representative sample of occupant spaces. In general, EMG does not look under floors, above ceilings, behind walls, in confined spaces, in transformer vaults, or in other areas not considered to be safe to access.

SITE RECONNAISSANCE CONDITIONS	
Date Completed:	May 26, 2016
EMG Project Manager:	Kate Downey
Weather Conditions:	Sunny
Temperature (F):	70s
Percent of Units Observed:	100%
Access Limitations:	No access limitations were encountered.

5.1 UNITS OBSERVED

The units observed at the Project are discussed below.

RESIDENTIAL UNITS OBSERVED
34155 Winchester Road, 34155-A Winchester Road

Interior garage structure

Interior permanent residence

Interior mobile home residence

5.2 PROJECT USE

ENVIRONMENTALLY SUSPECT PROJECT USE	
PROJECT USE	CURRENTLY LOCATED AT THE PROJECT
Cellular Communications Equipment:	No
Commercial Printing:	No
Dry Cleaner:	No
Emergency Generator or Diesel Fire Pump:	No
Gasoline Station:	No
Heavy Industrial Use:	No
Landfill:	No
Machine Shop:	No
Military Use:	No
Oil Well:	No
Photograph/X-Ray Developing:	No
Vehicle Repair:	No

5.3 HAZARDOUS MATERIALS AND PETROLEUM PRODUCTS

Accessible interior and exterior areas of the Project were observed for the presence of hazardous materials and petroleum products.

EMG evaluated any observed manways, vent pipes, fill connections, concrete pads, and unknown saw cuts to determine if USTs are present at the Project, or if USTs were historically located at the Project. In addition, the Key Site Manager and other property management personnel were interviewed regarding the presence of USTs at the Project.

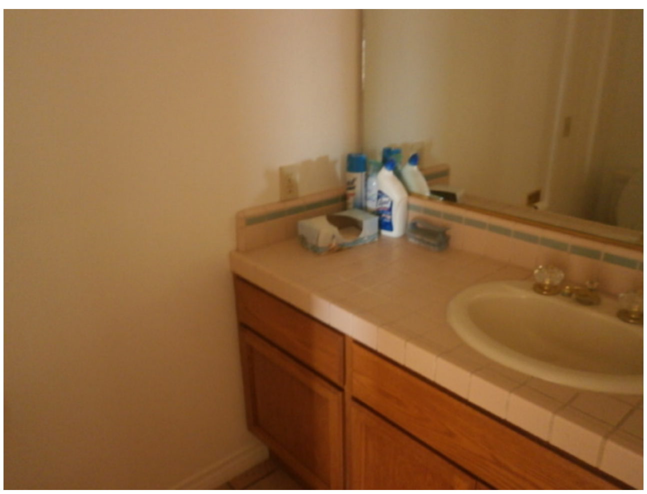
EMG observed the Project for the presence of potentially PCB-containing equipment such as electrical transformers and hydraulic lifts. Equipment installed after 1979 is unlikely to contain PCBs.

EMG observed the Project for visual evidence of petroleum and natural gas pipelines, such as pipeline markers.

STORAGE AND USE OF HAZARDOUS MATERIALS AND PETROLEUM PRODUCTS	
FEATURE	IDENTIFIED AT PROJECT
Drums and Small Containers:	Yes. Further discussed below.
Underground Storage Tanks (USTs):	No
Aboveground Storage Tanks (ASTs):	Yes. Further discussed below.
Oil Cooled Transformers:	No
Hydraulic Equipment:	No
Petroleum or Natural Gas Pipelines:	No

DRUMS AND SMALL CONTAINERS			
MATERIAL	QUANTITY	STORAGE LOCATION	SPILLS OR LEAKS
Janitorial and maintenance supplies	Retail-size containers	Janitor closets and other designated areas	No

Review of the hazardous materials use and storage at the Project did not identify any recognized environmental conditions or environmental concerns with regards to the materials listed in the table above.



Janitorial supplies

ABOVEGROUND STORAGE TANKS	
Tank #:	1 & 2
Owner:	Project
Year Installed:	1979 or later
Contents:	Propane
Capacity:	100-gallons
Visually Observable:	Yes
Weep Holes Present:	Not Applicable
Secondary Containment:	No

ABOVEGROUND STORAGE TANKS	
Location:	Behind buildings
Tank Construction:	Single-wall steel
Registered With State:	Not required
Leaks Observed:	No
Leaks Reported by POC:	No
Conclusion:	The Key Site Manager was unaware of any past releases from the ASTs. Furthermore, the ASTs appeared to be in good condition, with no evidence of current or past releases.

Propane tank

Propane tank

5.4 WASTE GENERATION, STORAGE, AND DISPOSAL

Visual observation for the generation, treatment, storage, and disposal of wastes was performed. The areas of waste generation and storage were observed for evidence of current and past releases.

Although a waste disposal regulatory compliance audit is beyond the scope of this assessment, general waste disposal procedures were evaluated to determine if any deficiencies exist that are likely to result in a release to the Project.

WASTE GENERATION AND DISPOSAL	
FEATURE	IDENTIFIED AT PROJECT
Waste Generation:	Yes. Further discussed below.
Septic Systems:	Yes. Further discussed below.
Oil Water Separators:	No
Unknown Drums or Containers:	No
Waste Disposal Ponds or Lagoons:	No

WASTE GENERATION			
WASTE TYPE	DISPOSAL METHOD	STORAGE LOCATION	SPILLS OR LEAKS
Domestic sewage	Septic system	Septic system	No
Municipal trash	Contracted waste hauler	Trash bins	No

Review of waste storage and disposal information did not identify any recognized environmental conditions or environmental concerns with regards to the wastes listed in the table above.

Trash bins

SEPTIC SYSTEM	
Type:	Tank with leach field
Wastes:	Domestic sewage
Year Installed:	1979
Currently Active:	Yes
Reported Condition:	Good
Leach Field Location:	Rear of residences
Tank Location:	Rear of residences
Health Department Violations:	Records are not reasonably ascertainable, as defined by ASTM
Conclusion:	Based on the information above, the presence of the septic systems do not represent a recognized environmental condition.

Approximate location of septic system

5.5 SURFACE AREAS

The interior and exterior surface areas were observed for environmentally significant features such as wells, sumps, staining, and pits.

SURFACE AREAS	
FEATURE	IDENTIFIED AT PROJECT
Floor Drains, Sumps and Pits:	No
Pools of Liquid Waste:	No
Surface Staining:	No
Unusual or Noxious Chemical Odors:	No
Landfilling:	No
Stressed Vegetation:	No
Stormwater Retention/Detention Basins:	No
Domestic Water Wells:	Yes. Further discussed below.
Monitoring Wells:	No
Irrigation Wells:	No
Dry Wells:	No

WELLS			
TYPE OF WELL	# OF WELLS	REGISTERED	LOCATION
Water (potable)	1	No	Entrance of residences (central portion)

Water well and water storage tanks

5.6 UTILITIES, HEATING, AND COOLING

UTILITIES	
Domestic Water:	Domestic water well
Electricity:	Public utility - Pacific Gas & Electric
Natural Gas:	Not applicable
Domestic Sewer:	Septic system

HEATING AND COOLING	
Type of Heating:	Propane units
Type of Cooling:	Electric units

Condensing unit

Water heater and furnace

5.7 ADJACENT PROPERTY USE

The adjacent properties were visually observed for evidence of recognized environmental conditions, such as property uses likely to result in a release, and visual evidence of surface migration of releases. The following adjacent properties were identified:

ADJACENT PROPERTIES			
DIRECTION	ADDRESSES	PROPERTY USE / BUSINESS NAME	ENVIRONMENTAL CONCERN
North	34119 Keller Flat Court	Single-family residence	No
East	Not applicable	Vacant, non-arable land	No
South	Not applicable	Vacant, non-arable land	No
West	34220-34550 Pourroy Road	Single-family residences	No

Review of the adjacent properties did not identify any visible evidence of a release. Furthermore, no releases were identified at the adjacent properties based on review of the regulatory database report (Section 7.1.2). Therefore, the adjacent property uses do not represent a recognized environmental condition.

North adjacent single family residence

East adjacent Winchester Road followed by vacant land

South adjacent vacant land

West adjacent single family residences

5.8 INTERVIEWS

5.8.1 KEY SITE MANAGER

EMG attempted to interview the Key Site Manager as part of this assessment. In addition, a Questionnaire was provided to the Key Site Manager to assist EMG in determining if recognized environmental conditions exist at the Project. A copy of the Key Site Manager Questionnaire is included in Appendix D.

KEY SITE MANAGER INTERVIEWS			
NAME	RELATIONSHIP TO PROPERTY	YEARS WITH PROPERTY	TELEPHONE NUMBER
William R. Liesman	Owner	28	951-333-3544

The Key Site Manager did not identify any recognized environmental conditions or environmental concerns with the current or historical use of the Project.

5.8.2 CURRENT OCCUPANTS

EMG made a reasonable attempt to interview all major occupants and also those other occupants whose operations are likely to indicate a recognized environmental condition.

No occupants of the Project were available or would agree to an interview. The lack of occupant interviews represents a data gap. However, based on the conditions observed in the accessed areas, discussions with the site contact, and review of other available information, the lack of this information does not represent a significant data gap.

5.8.3 CURRENT OWNER

EMG submitted an Owner Questionnaire to the user in an effort to identify the owner of the Project who could be interviewed to provide information regarding proceedings involving the Project.

34155 Winchester Road

A completed Owner Questionnaire was not returned to EMG. The lack of this information represents a data gap. However, based on the other information obtained during the completion of this assessment, the lack of the User Questionnaire does not represent a significant data gap. A copy of the Owner Questionnaire is included in Appendix D.

5.8.4 PAST OWNERS AND OCCUPANTS

No past owners of the Project, who likely would have material information regarding recognized environmental conditions at the Project, were identified.

5.8.5 NEARBY OWNERS AND OCCUPANTS

The Project was not an abandoned property with evidence of unauthorized uses or uncontrolled access; therefore, interviews were not conducted with adjacent or nearby property owners or occupants.

6.0 HISTORICAL USE INFORMATION

The purpose of the historical review is to determine the previous uses of the Project and surrounding area in order to identify the likelihood of past uses having led to a recognized environmental condition. Historical sources that are both reasonably ascertainable, and likely to be useful are reviewed in an attempt to document the historical use of the Project and surrounding areas dating back to 1940, or the first developed use, whichever is earlier.

Copies of representative historical maps/aerial photographs are included in Appendix C. Other historical documentation, such as City Directory abstracts, copies of building department records, and ownership records are included in Appendix F, when available.

The following standard historical sources were researched:

STANDARD HISTORICAL SOURCES		
DATA TYPE	SOURCE	YEARS COVERED
Aerial Photographs:	ERIS	1938, 1953, 1968, 1975, 1980, 1996, 2005, 2014
Fire Insurance (Sanborn) Maps:	ERIS	Not available
USGS Topographic Maps:	USGS	1953, 1973, 2012, 2015,
Local Street Directories:	Hemet Library	Not available
Building Department Records:	Riverside County Building Department	1997 - Current
Fire Department Records:	Riverside County Fire Department	Pending response from agency
Zoning/Land Use Records:	Riverside County Planning Department	1997 - Current
Property Tax Files and Land Title Records:	Riverside County Assessor	Current
Key Site Manager Interview:	Pre-Survey Questionnaire	1987-Current
Other Historical Sources:	Not applicable	Not applicable

EMG was not able to obtain standard historical sources that document the Project history in five year intervals. Furthermore, EMG was not able to document the use of the Project back to the first developed use, or back to 1940, whichever is earlier. The lack of this information represents a data gap. However, based on the other information obtained during the completion of this assessment, the lack of this information does not represent a significant data gap.

6.1 PROJECT HISTORICAL USE

Based on review of the historical resources identified in Section 6.0, the following chronological history was developed for the Project.

CHRONOLOGICAL HISTORY OF PROJECT			
YEARS	PROJECT USE	TENANTS	ENVIRONMENTAL CONCERN
Prior to 1938	No historical data available.	Not applicable	No
1938 - 1975	Vacant, non-arable land	Not applicable	No
1979 - Current	Residential and vacant, non-arable land	Not applicable	No

OWNERSHIP HISTORY OF PROJECT		
YEAR PURCHASED	OWNER NAME	ENVIRONMENTAL CONCERN
		No

6.2 OFF-SITE HISTORICAL USE

Based on review of the historical resources identified in Section 6.0, the following chronological history was developed for the adjacent properties.

CHRONOLOGICAL HISTORY OF ADJACENT PROPERTIES		
YEARS	ADJACENT PROPERTY USE	ENVIRONMENTAL CONCERN
NORTH		
Prior to 1938	No historical data available.	No
1938 - 1980s	Vacant, non-arable land	No
1980s - Current	Vacant, non-arable land and residential	No
EAST		
Prior to 1938	No historical data available.	No
1938 - Current	Vacant, non-arable land	No
SOUTH		
Prior to 1938	No historical data available.	No
1938 - Current	Vacant, non-arable land	No
WEST		
Prior to 1938	No historical data available.	No
1938 - 1980s	Vacant, non-arable land	No
1980s - Current	Residential	No

Review of the historical adjacent property uses did not identify visible evidence of a release. Furthermore, no releases were identified at the adjacent properties based on review of the regulatory database report (Section 7.1.2). Therefore, the historical adjacent property uses do not represent a recognized environmental condition.

7.0 ENVIRONMENTAL RECORDS REVIEW

The purpose of the records review is to obtain and review records that will help identify recognized environmental conditions. ASTM E1527-13 requires the review of reasonably ascertainable records from standard sources as defined in Section 8.2.1 of ASTM E1527-13. Additional records sources, such as local fire department records, local building department records, and local environmental health department records may be obtained and reviewed at the discretion of the environmental professional.

The availability of record information varies widely, depending on the source. Reasonably ascertainable records are those records that are publicly available, obtainable within reasonable time and cost constraints, and practically reviewable. In addition, the records must be provided by the agency within 20 calendar days of receiving a request, at no more than a nominal cost intended to cover the source's cost of retrieving and duplicating the information.

7.1 REGULATORY DATABASE REVIEW

EMG obtained a regulatory database report from a commercial database provider in an effort to determine if the Project is a listed regulatory site and whether there are any mappable regulatory database sites within the search distances specified by ASTM E1527-13. EMG attempted to field-verify the locations of the identified regulatory sites, as well as confirm distances and locations relative to the Project using available mapping software. Therefore, the distances and/or directions noted in this section may not match the Database Report. In addition, EMG reviewed the unmappable sites in the database report, cross-referencing addresses and site names.

In accordance with ASTM E1527-13, regulatory files and/or records associated with standard environmental record sources may be obtained and reviewed when the files and/or records are reasonably ascertainable, the files/records are expected to contain significant information for the purpose of identifying recognized environmental conditions, and an alternative source of the information is not available. Furthermore, review of regulatory files and/or records may be limited by the scope of work. Unless otherwise noted in Section 1.1, further review of regulatory agency files and/or records is not considered to be warranted based on the general nature of the regulatory database listing, the level of detail provided in the regulatory database, the availability of information from alternative sources, and/or the low likelihood that the agency files and/or records will contain information indicating the presence of a recognized environmental condition.

A copy of the full regulatory database report is included in Appendix H.

7.1.1 PROJECT REGULATORY DATABASE REVIEW

The search for sites listed on regulatory databases did not identify any listings for the Project.

7.1.2 OFF-SITE REGULATORY DATABASE REVIEW

The search for sites listed on regulatory databases in the area surrounding the Project did not identify any sites within the specified search radii.

7.1.3 VAPOR MIGRATION

Indoor air quality concerns are generally excluded from the scope of ASTM E1527-13 and this assessment. However, the migration of vapors caused by a release of hazardous substances or petroleum products to the environment can represent a recognized environmental condition in certain conditions.

For the purposes of this assessment, the potential for migrating vapors to represent a recognized environmental condition was evaluated using a limited screening method based on technical guidance documents from the US EPA and *ASTM E2600-15 Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*. In addition, screening tools created by regulatory agencies may be used to evaluate the significance of a release with respect to the vapor migration and/or vapor intrusion potential.

EMG's vapor migration screening is not a human health risk assessment and is not intended to comply with regulatory requirements that might exist for the evaluation of vapor migration.

Based on the review of regulatory database records in Section 7.1.1 and 7.1.2, no vapor migration concerns were identified.

7.2 LOCAL AGENCY RECORDS

The following additional environmental records were reviewed to supplement the standard environmental record sources discussed in Sections 7.1.1 and 7.1.2.

Reasonably ascertainable records for the Project may be reviewed for evidence of recognized environmental conditions and other environmental concerns such as underground storage tanks, significant hazardous materials use, the presence of septic systems, and/or the presence of wells.

BUILDING DEPARTMENT	
Name of Agency:	Riverside County Building Department
Contact Name/Telephone:	(951) 955-1800
Review Method:	Online records review
Records Date Back To:	1997 - Current
Summary of Records Reviewed:	No environmentally significant information was identified
Environmentally Significant Information:	None identified

FIRE DEPARTMENT	
Name of Agency:	Riverside County Fire Department
Contact Name/Telephone:	(951) 943-4970
Review Method:	A written request for information has been submitted. A response is currently pending. A copy of the request is included in Appendix F.
Records Date Back To:	Pending response from agency
Summary of Records Reviewed	Pending response from agency
Environmentally Significant Information:	Pending response from agency

PLANNING/ZONING DEPARTMENT	
Name of Agency:	Riverside County Planning Department
Contact Name/Telephone:	(760) 863-8277
Review Method:	Online records review.
Records Date Back To:	1997 - Current
Current Zoning:	RR - Rural Residential
Historical Zoning:	Not available
Environmentally Significant Information:	No environmentally significant information was identified

8.0 ASTM E1527 NON-SCOPE CONSIDERATIONS

The items discussed in this section are outside the scope of ASTM E1527-13. These are included at the discretion of the user based upon the scope of work.

8.1 ASBESTOS

In accordance with the scope of work, EMG performed a screening to document the presence of known and/or suspect asbestos containing materials (ACM) at the Project. This screening approach is not a comprehensive (i.e., AHERA-Style) asbestos survey, nor is it intended to fulfill the NESHAP requirements for demolition or renovation purposes. All materials listed in Appendix G of the United States Environmental Protection Agency (USEPA) publication Managing Asbestos in Place (the "Green Book") are considered suspect.

Some non-friable building products, such as sheet vinyl floor tile, vinyl floor tile, floor tile mastic, asbestos-cement board, and roofing materials can still be manufactured with asbestos and installed in the United States. However, U.S. manufacturers have largely excluded asbestos fibers from their building products since 1981. In addition to a visual assessment, EMG reviewed provided documentation to determine if asbestos has been previously documented at the Project.

SUSPECT ASBESTOS CONTAINING MATERIALS		
MATERIAL	FRIABLE	CONDITION
Roofing materials	No	Good
Vinyl composition tile	No	Good
Mastic	No	Good
Wallboard/joint compound	No	Good

Based on the scope of work, sampling of suspect asbestos containing materials was not performed. Refer to Section 1.1 for further discussion.

8.2 RADON GAS

Radon originates from the natural (radioactive) breakdown of uranium in soil, rock and water and is the second leading cause of lung cancer in the United States. Radon can move up through the ground and into living spaces through cracks and other holes in the foundation. The USEPA has developed the EPA Map of Radon Zones to assist National, State, and local organizations in implementing radon-resistant building codes. This map assigns each county in the U.S. to one of three zones based on radon potential. The USEPA uses a continuous exposure level of 4.0 pCi/L (picoCuries per liter of air) as an action level at which additional action is recommended.

For the purposes of this assessment, the radon zone and the use of the Project have been used to determine the level of risk associated with radon. However, the USEPA and the Surgeon General recommend testing all homes for radon, regardless of geographic location.

EPA RADON ZONE
Zone 2 (Moderate Potential) - Counties have a predicted average indoor radon screening level between 2 and 4 pCi/L.

Radon sampling was not performed based on the Scope of Work.

8.3 LEAD BASED PAINT

All paint applied prior to 1978 is considered suspect. The basis for this determination is taken from the Lead Paint Poisoning Act passed by the Congress of the United States that banned the use of lead paint starting January 1, 1978. This screening approach does not comply with Requirements for Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards in Housing. This approach does not constitute a pre-occupancy survey or the basis of attainment of "Lead Free" certification.

Generally, due to the date of construction, the potential use of lead-based paint was minimized due to regulatory requirements and sound business practice. Based on the date of construction and the Scope of Work, no samples were collected. No further action or investigation is recommended regarding lead-based paint.

8.4 LEAD IN DRINKING WATER

Lead is commonly used in household plumbing materials and water service lines. Exposure to lead in drinking water above the USEPA action level can result in adverse health effects in children and adults. Lead is rarely found in source water, but enters tap water through corrosion of plumbing materials. Homes built before 1986 are more likely to have lead pipes, fixtures and solder. The most common problem is with brass or chrome-plated brass faucets and fixtures which can leach significant amounts of lead into the water. The USEPA action level for lead-in-drinking water is 15 parts per billion (ppb).

The Project is served by a private well. No documentation regarding lead in water testing was provided to EMG. Refer to Section 1.1 for further discussion.

8.5 MOISTURE CONDITIONS

EMG performed a limited visual and olfactory assessment for evidence of moisture conditions in readily accessible interior areas of the Project. In addition, the Key Site Manager was interviewed regarding the presence of current and historical moisture conditions. This assessment was not designed to discover all areas which may be affected by moisture conditions. Rather, it is intended to provide an indication of significant moisture conditions observed during the site visit. Moisture conditions may be present in areas not observed, such as pipe chases, HVAC systems, and behind enclosed walls and ceilings. De minimis moisture conditions, such as small, isolated, water stains on ceiling tiles, and mildew at bathtubs and sinks are considered to be routine maintenance issues and are not addressed in this Report.

EMG did not observe visual or olfactory indications of significant moisture conditions in readily accessible interior areas of the Project. Furthermore, the Key Site Manager did not report any significant current or historical moisture conditions at the Project.

8.6 WETLANDS

For regulatory purposes under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas." A wetlands delineation is beyond the scope of this assessment. However, review of National Wetlands Inventory (NWI) data, provided by the United States Fish and Wildlife Service, indicated the following:

WETLANDS REVIEW	
PROJECT	ADJACENT PROPERTIES
Review of the NWI data did not identify any wetlands.	Review of the NWI data did not identify any wetlands.

No wetlands were identified. No further action or investigation is recommended regarding wetlands.

8.7 FLOOD ZONE

FEMA identifies flood hazards, assesses flood risks and partners with states and communities to provide accurate flood hazard and risk data to guide them to mitigation actions.Flood hazard mapping is the basis for the National Flood Insurance Program (NFIP) and flood insurance requirements. FEMA maintains and updates data through Flood Insurance Rate Maps (FIRMs) and risk assessments. FIRMs include statistical information such as data for river flow, storm tides, hydrologic/hydraulic analyses and rainfall and topographic surveys. Review of the FIRM indicated the following:

FLOOD ZONE MAP REVIEW	
MAP DATE	PROJECT FLOOD ZONE
Not applicable	The entire Project is located in an area of undetermined flood hazard that does not appear on a Flood Insurance Rate Map or Flood Hazard Boundary Map where flooding is possible.

The flood zone designation is provided for informational purposes only. A determination of the need for flood insurance is beyond the scope of this assessment.

9.0 LIMITATIONS, KEY TERMS, AND REFERENCES

9.1 LIMITATIONS

The opinions EMG expresses in this report were formed utilizing the degree of skill and care ordinarily exercised by any prudent Environmental Professional in the same community under similar circumstances. EMG assumes no responsibility or liability for the accuracy of information contained within this report that has been obtained from the Client or the Client's representatives, from other interested parties, or from the public domain. The conclusions presented represent EMG's professional judgment based on information obtained during the course of this assignment.

Factual information regarding operations, conditions, and test data provided by the Client or the Client's representative has been assumed to be correct and complete. The conclusions presented within this report are based on the data provided, observations made, and conditions that existed specifically on the date of the assessment.

EMG's ESA cannot wholly eliminate the uncertainty regarding the presence of recognized environmental conditions and environmental business risk. The report is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with the Project. The report is limited in budget and scope. The nature of subsurface soil and ground water at the Project cannot be confirmed, given the limited budget and scope of this ESA. The report is not and should not be considered a warranty or guarantee about the presence or absence of environmental contaminants which might affect the Project. It should be understood that EMG's suggested remedy may be determined under time constraints or may be formed without the aid of engineering calculations, testing, exploratory probing, the removal of materials, or design. Furthermore, there may be other alternate or more appropriate schemes or methods to remedy the noted environmental conditions.

9.2 REFERENCES

References are listed below. Additional references may be present within the applicable report sections.

Physical Setting

7 1/2 minute USGS Topographic Quadrangle (included in Appendix C)

1:2,500,000 scale Geology of the Conterminous United States map published by the USGS and dated 1974

Natural Resources Conservation Service (NRCS) Web Soil Survey

Regulatory Records

Database Report, Ecolog ERIS Ltd. (included in Appendix H)

Key Site Manager Interview

Key Site Manager Questionnaire, (included in Appendix D)

Historical References

STANDARD HISTORICAL SOURCES		
DATA TYPE	SOURCE	YEARS COVERED
Aerial Photographs:	ERIS	1938, 1953, 1968, 1975, 1980, 1996, 2005, 2014
Fire Insurance (Sanborn) Maps:	ERIS	Not available
USGS Topographic Maps:	USGS	1953, 1973, 2012, 2015,

STANDARD HISTORICAL SOURCES		
DATA TYPE	SOURCE	YEARS COVERED
Local Street Directories:	Hemet Library	Not available
Building Department Records:	Riverside County Building Department	1997 - Current
Fire Department Records:	Riverside County Fire Department	Pending response from agency
Zoning/Land Use Records:	Riverside County Planning Department	1997 - Current
Property Tax Files and Land Title Records:	Riverside County Assessor	Current
Key Site Manager Interview:	Pre-Survey Questionnaire	1987-Current
Other Historical Sources:	Not applicable	Not applicable

9.3 KEY TERMS

Business environmental risk - A risk which can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated in this practice. Consideration of business environmental risk issues may involve addressing one or more non-scope considerations. For the purposes of this assessment, a significant business environmental risk is both included in the agreed upon scope of work and requires further action at this time.

Controlled recognized environmental condition - A recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).

Data gap - The lack of or inability to obtain information required by ASTM E 1527-13 despite good faith efforts is considered a data gap. A data gap is considered significant if it affects the ability of the environmental professional to identify recognized environmental conditions.

De minimis condition - A condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimis conditions are not recognized environmental conditions nor controlled recognized environmental conditions.

Environmental Professional - A person meeting the education, training, and experience requirements set forth in 40 CFR 312.10(b).

Historical recognized environmental condition - A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted residential use criteria established by a regulatory authority, without subjecting the property to any required controls (e.g. property use restriction, AULS, institutional controls, or engineering controls), at the time the Phase I ESA is conducted (e.g., if there has been a change in the regulatory criteria). If the EP considers this past release to be a REC at the time the Phase I ESA is conducted, the condition shall be included in the conclusion section of the report as a REC.

Material threat - A physically observable or obvious threat which is reasonably likely to lead to a release that, in the opinion of the environmental professional, is threatening and might result in impact to public health or the environment.

Practically reviewable - Information that is provided by the source in a manner and in a form that, upon examination, yields information relevant to the property without the need for extraordinary analysis of irrelevant data.

Release - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant), with certain exclusions as defined in 42 U.S.C. 9601 (22).

Reasonably ascertainable - Information that is publicly available, obtainable from its source within reasonable time and cost constraints, and practically reviewable.

Recognized environmental condition - The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property 1) due to any release to the environment; 2) under conditions indicative of a release to the environment; or 3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions.

Standard environmental record sources - Environmental records contained in various regulatory databases, with search distances defined by ASTM E1527-13, unless otherwise specified by client in the scope of work.

Standard historical sources - Reasonably ascertainable records, including aerial photographs, fire insurance maps, property tax files, recorded land title records, USGS topographic maps, local street directories, building department records, and zoning/land use records.

APPENDIX A:
PHOTOGRAPHS

PHOTO #1	PROPERTY OVERVIEW

PHOTO #2	VACANT ON PROJECT

PHOTO #3	VACANT LAND ON WEST PORTION OF PROJECT

PHOTO #4	PERMANENT RESIDENCE

PHOTO #5	MOBILE HOME STRUCTURE

PHOTO #6	GARAGE STRUCTURE

PHOTO #7	INTERIOR GARAGE STRUCTURE

PHOTO #8	INTERIOR PERMANENT RESIDENCE

PHOTO #9	INTERIOR MOBILE HOME RESIDENCE

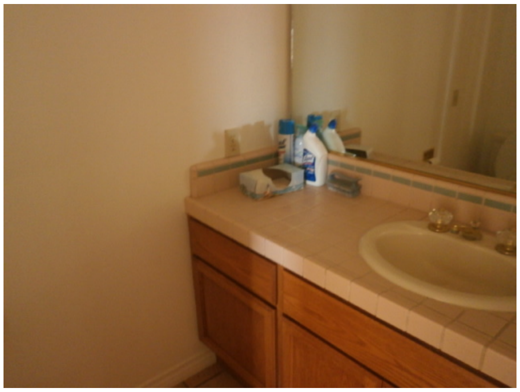


PHOTO #10	JANITORIAL SUPPLIES

PHOTO #11	PROPANE TANK

PHOTO #12	PROPANE TANK

PHOTO #13 *TRASH BINS*

PHOTO #14 *APPROXIMATE LOCATION OF SEPTIC SYSTEM*

PHOTO #15 *WATER WELL*

PHOTO #16 *WATER HEATER AND FURNACE*

PHOTO #17 *NORTH ADJACENT SINGLE FAMILY RESIDENCE*

PHOTO #18 *EAST ADJACENT WINCHESTER ROAD FOLLOWED BY VACANT LAND*

PHOTO #19	SOUTH ADJACENT VACANT LAND

PHOTO #20	WEST ADJACENT SINGLE FAMILY RESIDENCES

APPENDIX B:
FIELD SKETCH

Field Sketch

emg	R – Permanent residence M – Mobile home residence G – Garage W – Water well and water storage T – Trash bins S – Septic system - - Project Boundary	**Project Number:** 120191.16R000-001.135
N		**Project Name:** 34155 Winchester Road
	Not drawn to scale. The north arrow indicator is an approximation of 0° North.	**On-Site Date:** May 26, 2016

APPENDIX C:

MAPS AND AERIAL PHOTOGRAPHS

TOPOGRAPHIC MAP

emg	**Source:** **USGS Topographic Quadrangle:** **Bachelor Mountain, California** **Project Boundary**	**Project Number:** **120191.16R000-001.135**
N	**Date: 2015** **The north arrow indicator is an approximation of 0□ North.**	**Project Name:** **34155 Winchester Road** **On-Site Date:** **May 26, 2016**

WETLANDS MAP

Source:

U.S. Fish and Wildlife Service

Project Boundary

Date: 2016

The north arrow indicator is an approximation of 0° North.

Project Number:

120191.16R000-001.135

Project Name:

34155 Winchester Road

On-Site Date:

May 26, 2016

TAX MAP

Source:

Riverside County Assessor

Project Boundary

The north arrow indicator is an approximation of 0North.

Project Number:

120191.16R000-001.135

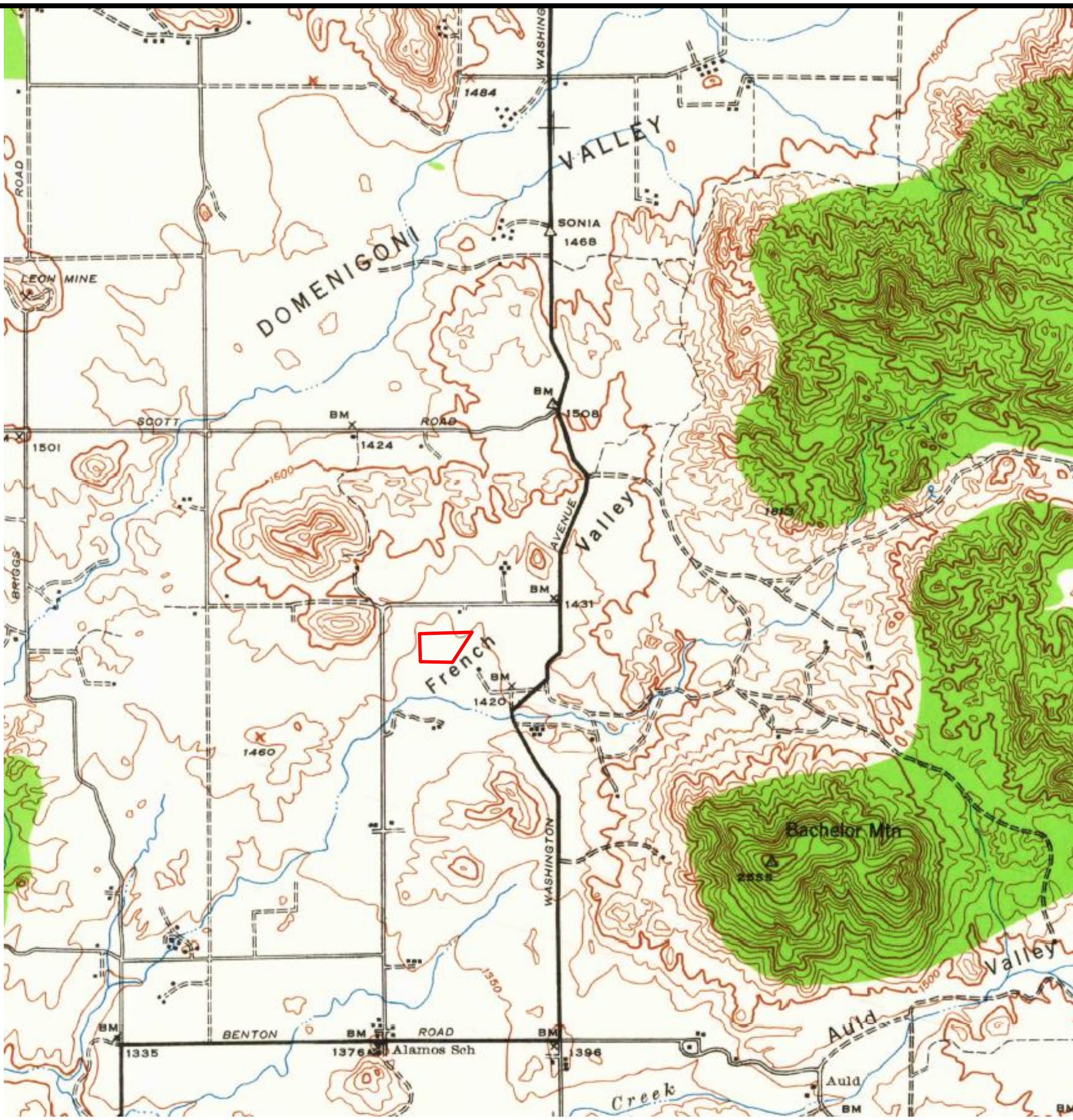
Project Name:

34155 Winchester Road

On-Site Date:

May 26, 2016

HISTORIC TOPOGRAPHIC MAP



Source:

USGS

Project Boundary

Date: 1942

The north arrow indicator is an approximation of 0□North.

Project Number:

120191.16R000-001.135

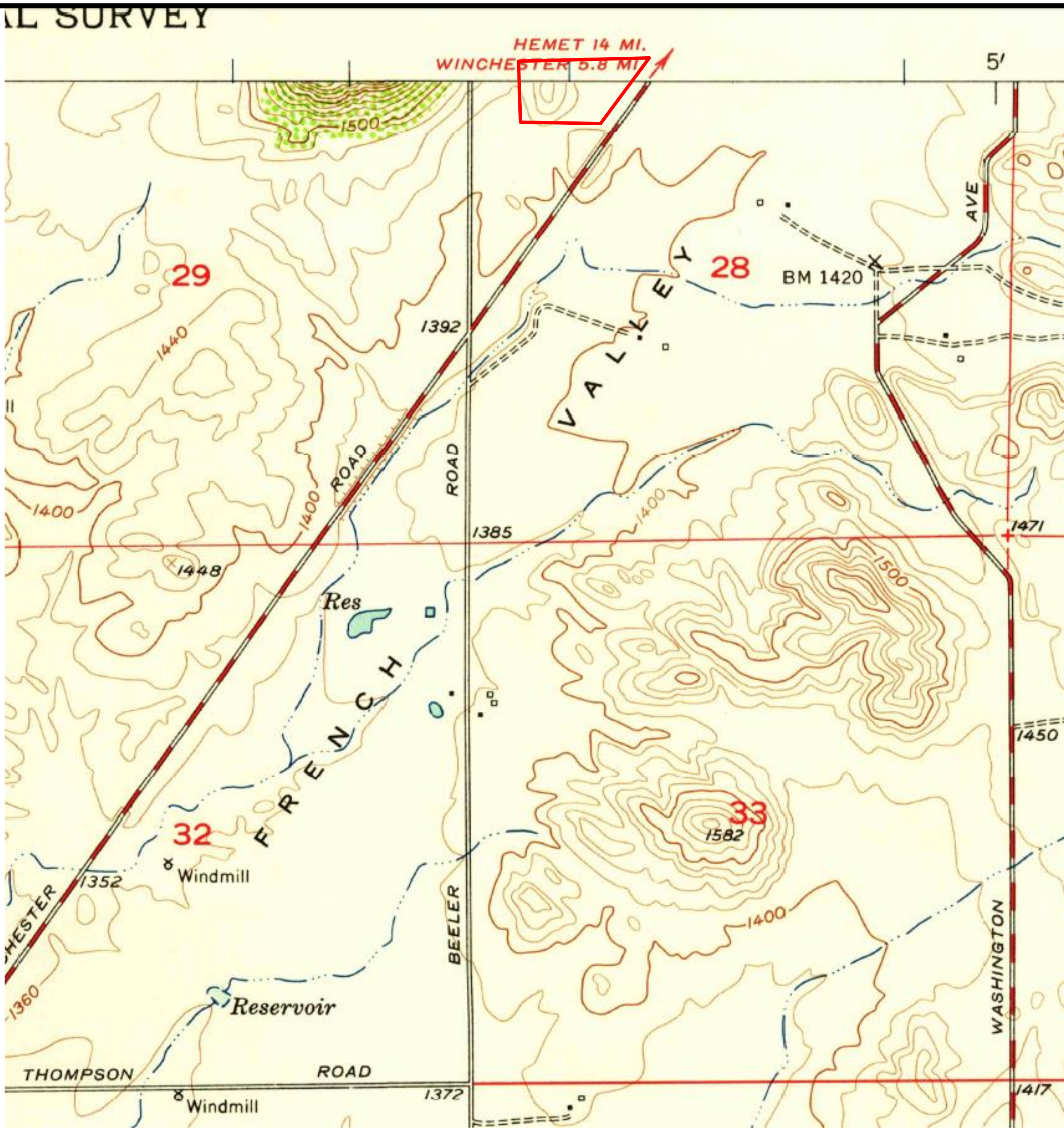
Project Name:

34155 Winchester Road

On-Site Date:

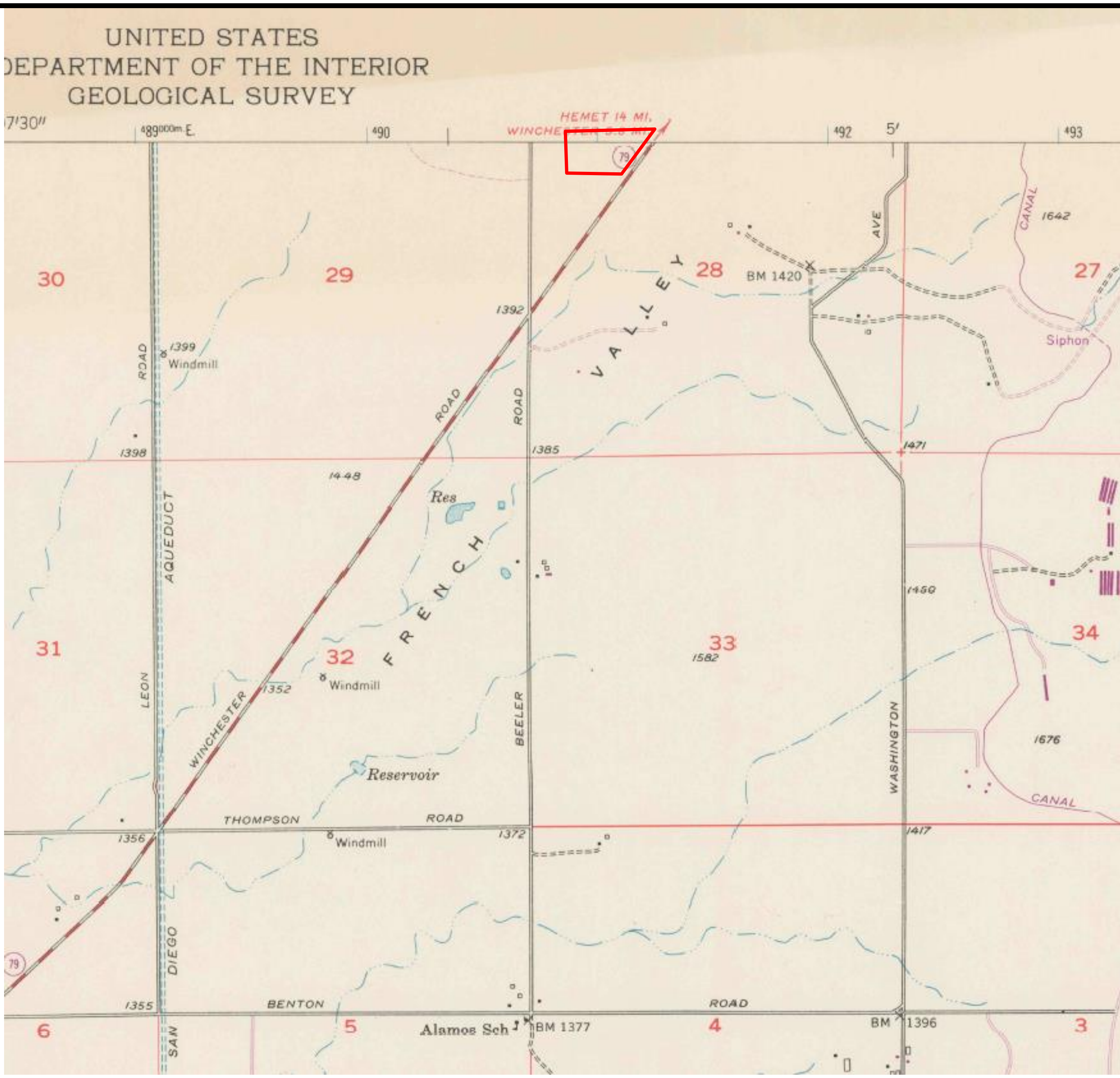
May 26, 2016

HISTORIC TOPOGRAPHIC MAP



emg	**Source:** USGS Project Boundary Date: 1953	**Project Number:** 120191.16R000-001.135
		Project Name: 34155 Winchester Road
N	The north arrow indicator is an approximation of 0□North.	**On-Site Date:** May 26, 2016

HISTORIC TOPOGRAPHIC MAP



	Source: USGS Project Boundary Date: 1973	**Project Number:** 120191.16R000-001.135
		Project Name: 34155 Winchester Road
	The north arrow indicator is an approximation of 0□North.	**On-Site Date:** May 26, 2016

AERIAL PHOTOGRAPH

emg	**Source:** ERIS Project Boundary Date: 1938 The north arrow indicator is an approximation of 0□North.	**Project Number:** 120191.16R000-001.135 **Project Name:** 34155 Winchester Road **On-Site Date:** May 26, 2016

AERIAL PHOTOGRAPH

	Source: ERIS — — Project Boundary Date: 1953	**Project Number:** 120191.16R000-001.135
		Project Name: 34155 Winchester Road
	The north arrow indicator is an approximation of 0□North.	**On-Site Date:** May 26, 2016

AERIAL PHOTOGRAPH

emg	**Source:** ERIS Project Boundary Date: 1975 The north arrow indicator is an approximation of 0□North.	**Project Number:** 120191.16R000-001.135 **Project Name:** 34155 Winchester Road **On-Site Date:** May 26, 2016

AERIAL PHOTOGRAPH

	Source: ERIS — Project Boundary Date: 1980	**Project Number:** 120191.16R000-001.135
		Project Name: 34155 Winchester Road
	The north arrow indicator is an approximation of 0□North.	**On-Site Date:** May 26, 2016

AERIAL PHOTOGRAPH

Source:	Project Number:
ERIS	120191.16R000-001.135
Project Boundary	
Date: 1995	Project Name:
	34155 Winchester Road
	On-Site Date:
The north arrow indicator is an approximation of 0□North.	May 26, 2016

AERIAL PHOTOGRAPH

	Source: ERIS Project Boundary Date: 2015	**Project Number:** 120191.16R000-001.135
		Project Name: 34155 Winchester Road
	The north arrow indicator is an approximation of 0□North.	**On-Site Date:** May 26, 2016

APPENDIX D:
QUESTIONNAIRES

engineering | environmental | capital planning | project management

KEY SITE MANAGER QUESTIONNAIRE

Name of person completing questionnaire:	**William R. Liesman**
Association with property:	**Owner/Trustee**
Length of association with property:	**28 years**
Date:	**5/20/2016**
Phone Number:	**951-333-3544**
Property Name:	34155 Winchester Road
EMG Project Number:	120191.16R000-001.135

-

Directions: Please answer all questions to the best of your knowledge and in good faith. Mark the column corresponding to the appropriate response. Additional details necessary to explain any **yes or unknown responses** should be provided in the "Comments" column.
Note: *U/NR* indicates *"Unknown"* or *"No Response"*.

QUESTION		RESPONSE			COMMENTS
		Y	N	U/NR	
1A.	Is the Project used for an industrial use?		X		
1B.	Are any adjoining properties used for an industrial use?		X		
2A.	To the best of your knowledge, has the Project been used for an industrial use in the past?		X		
2B.	To the best of your knowledge, has any adjoining properties been used for an industrial use in the past?		X		
3A.	Is the Project used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?		X		
3B.	Is any adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?		X		
4A.	To the best of your knowledge, has the Project been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?		X		

QUESTION		RESPONSE			COMMENTS
		Y	N	U/NR	
4B.	To the best of your knowledge, has any adjoining property been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility?		X		
5A.	Are there currently any automotive or industrial batteries, pesticides, paints, or other chemicals in individual containers of greater than five gallons in volume or fifty gallons in the aggregate, stored on or used at the Project?		X		
5B.	To the best of your knowledge, have there been previously any automotive or industrial batteries, pesticides, paints, or other chemicals in individual containers of greater than five gallons in volume or fifty gallons in the aggregate, stored on or used at the Project?		X		
6A.	Are there currently any industrial drums (typically 55 gallon) or sacks of chemicals located on the Project?		X		
6B.	To the best of your knowledge, have there been previously any industrial drums (typically 55 gallon) or sacks of chemicals located on the Project?		X		
7A.	Are there currently any groundwater monitoring wells or other groundwater wells (i.e., potable drinking water wells) located on the Project?	X			One well with pump and storage for 5,000 gallons serves dwelling and mobile
7B.	To the best of your knowledge, have there been previously any groundwater monitoring wells or other groundwater wells (i.e., potable drinking water wells) located on the Project?	X			Well has been on the property at the same site since at least the late 1970s
8A.	Has fill dirt been brought onto the Project which originated from a contaminated site?		X		
8B.	Has fill dirt been brought onto the Project which is of an unknown origin?		X		
9A.	Are there currently any pits, ponds or lagoons located on the Project in connection with waste treatment or waste disposal?		X		
9B.	To the best of your knowledge, have there been previously any pits, ponds or lagoons located on the Project in connection with waste treatment or waste disposal?		X		
10A.	Is there currently, any stained soil on the Project?		X		
10B.	To the best of your knowledge, has there been previously any stained soil on the Project?		X		
11A.	Are there currently any registered or unregistered storage tanks (above or underground) located on the Project?	X			Two 2500 gallon water storage tanks

QUESTION		RESPONSE			COMMENTS
		Y	N	U/NR	
11B.	To the best of your knowledge, have there been previously any registered or unregistered storage tanks (above or underground) located on the Project?	X			As above since 2000
12A.	Are there currently any vent pipes, fill pipes or access ways indicating a fill pipe protruding from the ground on the Project or adjacent to any structure located on the Project?		X		
12B.	To the best of your knowledge, have there been previously any vent pipes, fill pipes or access ways indicating a fill pipe protruding from the ground on the Project or adjacent to any structure located on the Project?		X		
13A.	Are there currently any flooring, drains, or walls located at the Project that are stained by substances other than water or are emitting foul odors?		X		
13B.	To the best of your knowledge, have there been previously any flooring, drains, or walls located at the Project that are stained by substances other than water or are emitting foul odors?		X		
14A.	If the Project is served by a private well or non-public water system, have contaminants been identified in the well or system that exceed guidelines applicable to the water system?		X		
14B.	If the Project is served by a private well or non-public water system, has the well been designated as contaminated by any government environmental/health agency?		X		
15A.	Have you been informed of the past existence of hazardous substances or petroleum products with respect to the Project or any facility located on the Project?		X		
15B.	Have you been informed of the current existence of hazardous substances or petroleum products with respect to the Project or any facility located on the Project?		X		
16A.	Are there any environmental liens or governmental notification relating to past or current violations of environmental laws with respect to the Project or any facility located on the Project?		X		
16B.	Have you been informed of the past existence of environmental violations with respect to the Project or any facility located on the Project?		X		
16C.	Are you aware of any pending, threatened, or past litigation relevant to hazardous substances of petroleum products in, on or from the property?		X		

QUESTION		RESPONSE			COMMENTS
		Y	N	U/NR	
16D.	Are you aware of any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on or from the property?		X		
16E.	Are you aware of any notices from any governmental entity regarding any possible violation or environmental laws or possible liability relating to hazardous substances or petroleum products?		X		
17.	Have there been any environmental site assessments of the Project that indicated the presence of hazardous substances or petroleum products on, or contamination of, the Project or recommended further assessment of the Project?		X		
18.	Does the Project discharge waste water on or adjacent to the project, other than storm water, into a storm water sewer system?		X		
19.	Does the Project discharge waste water on or adjacent to the project, other than storm water, or into a sanitary system?		X		
20.	Have any hazardous substances or petroleum products, unidentified waste materials, tires, automotive or industrial batteries or any other waste materials been dumped above grade, buried and/or burned on the Project?		X		
21.	Is there a transformer, capacitor or any hydraulic equipment for which there are any records indicating the presence of PCBs?		X		
22.	Is there now or has there ever been any asbestos-containing materials (ACM), in any application, on the Project?		X		
23.	Has there ever been any asbestos-containing materials testing conducted on the Project?		X		
24.	Is there an asbestos Operations and Maintenance (O&M) program in place at the Project?		X		
25.	Is there now or has there ever been any lead-based paint (LBP) applications on the Project?		X		
26.	Has there ever been lead-based paint testing conducted on the Project?		X		
27.	Is there a Lead Paint Operations and Maintenance (O&M) Program in place at the Project?		X		
28.	Has the water at the Project ever been tested for lead?	X			In the 1980s. No lead ever found
29.	Has Radon testing ever been conducted at the Project?		X		
30.	Are there any other Operations and Maintenance (O&M) programs in place that we should be made aware of?		X		

QUESTION		RESPONSE			COMMENTS
		Y	N	U/NR	
31.	Is the Project or any portion of the Project located or involved in any environmentally sensitive areas (i.e., wetlands, coastal barrier resource areas, coastal barrier improvement act areas, flood plains, endangered species, etc.)?		X		
32.	Do you know or suspect that suspect fungal growth was or is present in the building(s) or HVAC system? - If “Yes”, proceed to question #33. - If “No”, skip question #33 and proceed to question #34.		X		
33.	Are there reliable procedures that specify the actions (i.e. operations and maintenance) to be taken to prevent and/or respond to suspect fungal growth or suspect fungal growth producing problems?				
34.	Is there a suspect fungal growth Operations and Maintenance (O&M) program in place at the Project?		X		
35.	Is the HVAC system inspected at least annually?	X			
36.	Have identified HVAC problems been corrected in a timely manner?				Two HVAC units in the main house; one A/C is not functional; heater is OK
37.	Is there now, or has there ever been evidence of suspect fungal growth or mildew present at the building(s)? If so, when?		X		
38.	Is there now, or has there ever been any water damage in the building(s), whether from flooding, plumbing, roof leaks, or other sources? If so, when?	X			Two incidents of roof leaks/storm damage late 1990s and early 2000s; fixed at the time. A/C unit leak which was shut down 2012
39.	Has there ever been any sort of Indoor Air Quality (IAQ) or suspect fungal growth testing conducted in the building(s)?		X		

Summarize historical Project use (when was the Project developed with the current improvements, what modifications have taken place, what was the Project used for prior to it's current use)	A single family residence was constructed on the site in 1978 (approx.) upgraded 1992-3. Much of the land has been used exclusively for agricultural purposes.

Name (please print)**:** **William R. Liesman**

Date (MM/DD/YYYY)**:** **05/20/2016**

Signature: William R. Liesman

engineering | environmental | capital planning | project management

ASTM E1527-13 USER QUESTIONNAIRE
PHASE I ENVIRONMENTAL SITE ASSESSMENT

EMG has been retained to conduct a Phase I Environmental Site Assessment (ESA) on your behalf as contracted in EMG Project #112427.15P. The Phase I ESA will involve site observations, interviews, and a review of available documentation. To ensure the success of the assessment, and in accordance with the ASTM E1527-13 Scope of Work, we are required to ask the following questions to the User of the report seeking to fulfill the User Requirements of the Standard. Please complete and return this questionnaire to Courtney Bartlett via email at cbartlett@emgcorp.com or via fax at 410-785-6220 (within two days of receipt).

	Date:
Company name:	
Property Name/Street Address:	
Property City/State/Zip:	
Name of person completing questionnaire:	**Phone Number:**
Role/Title:	**Fax Number:**
Length of association with property:	**E-mail address:**
Please check one:	**User:** ☐ **User Representative:** ☐
Signature:	

Directions: Please answer all questions to the best of your knowledge and in good faith. Mark the column corresponding to the appropriate response. Additional details necessary to explain any yes or unknown responses should be provided in the "Comments" column. Note: *U* indicates *"Unknown", NR* indicates *"No Response"* and *"N/A"* indicates not applicable.

	QUESTION	RESPONSE				COMMENTS
		Y	N	U	NR	
1	Are you aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property?	☐	☐	☐	☐	
2	Are you aware of any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on or from the property?	☐	☐	☐	☐	
3	Are you aware of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?	☐	☐	☐	☐	

engineering | environmental | capital planning | project management

QUESTION			RESPONSE				COMMENTS
			Y	N	U	NR	
4	Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?		☐	☐	☐	☐	
5	Are you aware of any Activity and Use Limitations, such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?		☐	☐	☐	☐	
6	As the user of this ESA do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?		☐	☐	☐	☐	
7	Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?		☐	☐	☐	☐	
8	Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user		☐	☐	☐	☐	
	8 (a)	Do you know the past uses of the property?	☐	☐	☐	☐	
	8 (b)	Do you know of specific chemicals that are present or once were present at the property?	☐	☐	☐	☐	
	8 (c)	Do you know of spills or other chemical releases that have taken place at the property?	☐	☐	☐	☐	
	8 (d)	Do you know of any environmental cleanups that have taken place at the property?	☐	☐	☐	☐	
9	As the user of this ESA, based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of contamination at the property?		☐	☐	☐	☐	

If you have access to any of the following helpful documents, please indicate them below and then send them to EMG via standard mail or e-mail along with this questionnaire. Mailing address: 10461 Mill Run Circle, Suite 1100, Owings Mills, MD 21117

Helpful Documents to be forwarded EMG:

☐ Environmental site assessment reports (i.e., Phase I, Phase II, tank testing results, radon, lead paint, or asbestos testing, etc.)

☐ Environmental compliance audit reports; risk assessments; and recorded Activity and Use Limitations (AULs)

☐ Environmental permits (i.e., solid waste disposal, hazardous waste disposal, wastewater, NPDES, underground injection, etc.)

☐ Registrations for underground storage tanks (USTs) and aboveground storage tanks (ASTs)

- ☐ Registrations for underground injection systems
- ☐ Material safety data sheets
- ☐ Community right-to-know plan
- ☐ Safety plans; preparedness and prevention plans; spill prevention, countermeasure, and control plans, etc
- ☐ Reports regarding hydrogeological or geotechnical conditions on the property and surrounding area
- ☐ Notices/correspondence from any agency relating to past/current violations of environmental laws, or liens encumbering the property
- ☐ Hazardous waste generator notices or reports
- ☐ Other:

engineering | environmental | capital planning | project management

ASTM E1527-13 OWNER QUESTIONNAIRE
PHASE I ENVIRONMENTAL SITE ASSESSMENT

EMG has been retained to conduct a Phase I Environmental Site Assessment (ESA) on your property as contracted in EMG Project #112427.15P. The Phase I ESA will involve site observations, interviews, and a review of available documentation. To ensure the success of the assessment, and in accordance with the ASTM E1527-13 Scope of Work, we are required to ask the following questions to the Owner or Owner representative. Please complete and return this questionnaire to Courtney Bartlett via email at cbartlett@emgcorp.com or via fax at 410-785-6220 (within two days of receipt).

Date:

Company name:

Property Name/Street Address:

Property City/State/Zip:

Name of person completing questionnaire: **Phone Number:**

Role/Title: **Fax Number:**

Length of association with property: **E-mail address:**

Please check one: **Owner:** ☐ **Owner Representative:** ☐

Signature:

Directions: Please answer all questions to the best of your knowledge and in good faith. Mark the column corresponding to the appropriate response. Additional details necessary to explain any yes or unknown responses should be provided in the "Comments" column. Note: *U* indicates *"Unknown", NR* indicates *"No Response"* and *"N/A"* indicates not applicable.

	QUESTION	RESPONSE				COMMENTS
		Y	N	U	NR	
1	Are you aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property?	☐	☐	☐	☐	
2	Are you aware of any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on or from the property?	☐	☐	☐	☐	
3	Are you aware of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?	☐	☐	☐	☐	

Interviews with Owners and Occupants: Section 10 of the ASTM E1527-13 Standard recommends that in addition to the three specific questions above, the Environmental Professional shall attempt to interview owners, operators, and occupants of the property to obtain information indicating recognized environmental conditions in connection with the property. As such, EMG is providing a Pre-Survey Questionnaire under separate cover to the Key Site Manager or other site representative as designated by either the current owner or the intended User of the assessment data.

engineering | environmental | capital planning | project management

If you have access to any of the following helpful documents, please indicate them below and then send them to EMG via standard mail or e-mail along with this questionnaire. Mailing address: 10461 Mill Run Circle, Suite 1100, Owings Mills, MD 21117

Helpful Documents to be forwarded EMG:

- ☐ Environmental site assessment reports (i.e., Phase I, Phase II, tank testing results, radon, lead paint, or asbestos testing, etc.)
- ☐ Environmental compliance audit reports; risk assessments; and recorded Activity and Use Limitations (AULs)
- ☐ Environmental permits (i.e., solid waste disposal, hazardous waste disposal, wastewater, NPDES, underground injection, etc.)
- ☐ Registrations for underground storage tanks (USTs) and aboveground storage tanks (ASTs)
- ☐ Registrations for underground injection systems
- ☐ Material safety data sheets
- ☐ Community right-to-know plan
- ☐ Safety plans; preparedness and prevention plans; spill prevention, countermeasure, and control plans, etc
- ☐ Reports regarding hydrogeological or geotechnical conditions on the property and surrounding area
- ☐ Notices/correspondence from any agency relating to past/current violations of environmental laws, or liens encumbering the property
- ☐ Hazardous waste generator notices or reports
- ☐ Other:

APPENDIX E:

LABORATORY ANALYTICAL RESULTS

NO DOCUMENTS ASSOCIATED
WITH THIS APPENDIX

APPENDIX F:
SUPPORTING DOCUMENTATION

Peter Aldana , County Assessor

General Information

APN:	476-010-013
Situs Address:	34155 WINCHESTER RD WINCHESTER CA 92596-9771
Mailing Address:	31472 CORTE SALINAS TEMECULA CA 92592
Legal Desciption:	7.44 ACRES NET IN PAR 3 PM 118/043 PM 19
Use Type:	RESID. SINGLE FAMILY
Tax Rate Area:	094-297

Assessment

Year Assd:	2015
Land:	$167,211
Structure(s):	$383,209
Other:	
Total Land and Improv:	$550,420
HO Exempt?:	Y
Exemption Amt:	$7,000

Property Characteristics

Bedrooms:	3
Baths:	2
Bldg/Liv Area:	3,620
Year Built:	1979
Lot Acres:	7.440
Lot SqFt:	324,086

Recent Sale History

Document Image:	No Document Found
Recording Date:	05/20/2015
Document #:	0209857
Transfer Amount:	

**The information provided here is deemed reliable, but is not guaranteed.

Peter Aldana , County Assessor

General Information

APN:	476-010-059	**Use Type:**	VACANT
Situs Address:	34155 WINCHESTER RD WINCHESTER CA 92596-9771	**Tax Rate Area:**	094-297
Mailing Address:	34155 WINCHESTER RD WINCHESTER CA 92596		
Legal Desciption:	7.16 ACRES M/L IN POR PAR 4 PM 118/043 P		

Assessment

Year Assd:	2015
Land:	$146,159
Structure(s):	
Other:	
Total Land and Improv:	$146,159
HO Exempt?:	N
Exemption Amt:	

Property Characteristics

Bedrooms:	
Baths:	
Bldg/Liv Area:	
Year Built:	
Lot Acres:	7.160
Lot SqFt:	311,889

Recent Sale History

Document Image:	No Document Found
Recording Date:	
Document #:	N/A
Transfer Amount:	

**The information provided here is deemed reliable, but is not guaranteed.

FIRE INSURANCE MAP RESEARCH RESULTS
Date: 2016-05-19

Order Number:20160518126

34155 Winchester Road, Riverside, CA, 92596

ERIS has searched our in-house collection of close to 1 million Fire Insurance Maps for the address at 34155 Winchester Road, Riverside, CA, 92596.

Please note that no information was found for your site or adjacent properties.

If you have any questions regarding the enclosed information, please do not hesitate to contact us.

Individual Fire Insurance Maps for the subject property and/or adjacent sites are included with the ERIS environmental database report to be used for research purposes only and cannot be resold for any other commercial uses other than for use in a Phase I environmental assessment.

Address: 38 Lesmill Road Unit 2, Toronto, ON M3B 2T5
Phone: 416-510-5204 Fax: 416-510-5133
info@erisinfo.com www.erisinfo.com

Date: 5/27/2016
Dear Sir Or Madam:
Riverside County Fire Department

EMG is an environmental consulting firm conducting an investigation on behalf of the property owner of current and historical conditions which could potentially impact the environmental condition of the following property:

34155 Winchester Road
Winchester, CA 92596

Through the Freedom of Information Act (FOIA), we request any available information on file which is related to potential environmental issues concerning the above-referenced property. Specifically, we request your assistance by providing us with information concerning existing or historical conditions for the above-referenced property, including:

1) How far back are records maintained by this Department?

2) Are there any required Department environmental permits, registrations, or notifications, and if any, the compliance status and any reported violations (including violation status)?

3) Are there any petroleum product/hazardous material storage tanks, both aboveground and underground?

4) Are there any releases of petroleum products and/or hazardous materials?

Any follow-up documentation may be returned via email, faxed to 410.785.6220, or emailed to:

rfi@emgcorp.com

If you need additional information to complete this request, please contact me at 800.733.0660 x6547. Thank you for your prompt attention to this matter.

Sincerely,
Kate Downey
Project Manager
EMG

APPENDIX G:

PREVIOUS ENVIRONMENTAL ASSESSMENTS

NO DOCUMENTS ASSOCIATED
WITH THIS APPENDIX

APPENDIX H:

REGULATORY DATABASE REPORT

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICE

DATABASE REPORT

Project Property: *34155 Winchester Road*
34155 Winchester Road
Riverside CA 92596

Project No: *120191.16R000-001.13*

Report Type: *Database Report*

Order No: *20160518126*

Requested by: *EMG, Inc*

Date Completed: *May 19, 2016*

Ecolog ERIS Ltd.
Environmental Risk Information Service Ltd. (ERIS)
A division of Glacier Media Inc.
P: 1.866.517.5204
E: info@erisinfo.com

www.erisinfo.com

Table of Contents

Executive Summary

Property Information:

Project Property:		*34155 Winchester Road* *34155 Winchester Road Riverside CA 92596*
Project No:		*120191.16R000-001.13*
Coordinates:		
	Latitude:	*33.624545*
	Longitude:	*-117.098753*
	UTM Northing:	*3,720,531.94*
	UTM Easting:	*490,840.40*
	UTM Zone:	*UTM Zone 11S*
Elevation:		*1,458 FT*

Order Information:

Order No:	*20160518126*
Date Requested:	*May 18, 2016*
Requested by:	*EMG, Inc*
Report Type:	*Database Report*

Ancillary Products:

Aerial Photographs	*Historical Aerials*
Fire Insurance Maps	*US Fire Insurance Maps*

Executive Summary: Report Summary

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
Standard Environmental Records								
Federal								
NPL	Y	1	0	0	0	0	0	0
PROPOSED NPL	Y	1	0	0	0	0	0	0
DELETED NPL	Y	.5	0	0	0	0	-	0
SEMS	Y	.5	0	0	0	0	-	0
SEMS ARCHIVE	Y	.5	0	0	0	0	-	0
CERCLIS	Y	.5	0	0	0	0	-	0
CERCLIS NFRAP	Y	.5	0	0	0	0	-	0
CERCLIS LIENS	Y	PO	0	-	-	-	-	0
RCRA CORRACTS	Y	1	0	0	0	0	0	0
RCRA TSD	Y	.5	0	0	0	0	-	0
RCRA LQG	Y	.25	0	0	0	-	-	0
RCRA SQG	Y	.25	0	0	0	-	-	0
RCRA CESQG	Y	.25	0	0	0	-	-	0
RCRA NON GEN	Y	.25	0	0	0	-	-	0
FED ENG	Y	.5	0	0	0	0	-	0
FED INST	Y	.5	0	0	0	0	-	0
ERNS 1982 TO 1986	Y	PO	0	-	-	-	-	0
ERNS 1987 TO 1989	Y	PO	0	-	-	-	-	0
ERNS	Y	PO	0	-	-	-	-	0
FED BROWNFIELDS	Y	.5	0	0	0	0	-	0
MLTS	Y	PO	0	-	-	-	-	0
State								
RESPONSE	Y	1	0	0	0	0	0	0
ENVIROSTOR	Y	1	0	0	0	0	0	0
SWF/LF	Y	.5	0	0	0	0	-	0
HWP	Y	1	0	0	0	0	0	0
LDS	Y	.5	0	0	0	0	-	0
LUST	Y	.5	0	0	0	0	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
DLST	Y	.5	0	0	0	0	-	0
UST	Y	.25	0	0	0	-	-	0
AST	Y	.25	0	0	0	-	-	0
DELISTED TNK	Y	.25	0	0	0	-	-	0
UST CLOSURE	Y	.25	0	0	0	-	-	0
HHSS	Y	.25	0	0	0	-	-	0
LUR	Y	.5	0	0	0	0	-	0
HLUR	Y	.5	0	0	0	0	-	0
DEED	Y	.5	0	0	0	0	-	0
VCP	Y	.5	0	0	0	0	-	0
CLEANUP SITES	Y	.5	0	0	0	0	-	0
WIP	Y	.25	0	0	0	-	-	0
Tribal								
INDIAN LUST	Y	.5	0	0	0	0	-	0
INDIAN UST	Y	.25	0	0	0	-	-	0
DELISTED ILST	Y	.5	0	0	0	0	-	0
DELISTED IUST	Y	.25	0	0	0	-	-	0
County								
ALAMEDA LOP	Y	.5	0	0	0	0	-	0
ALAMEDA UST	Y	.25	0	0	0	-	-	0
AMADOR CUPA	Y	.25	0	0	0	-	-	0
BUTTE CUPA	Y	.25	0	0	0	-	-	0
CALAVERAS CUPA	Y	.25	0	0	0	-	-	0
CALAVERAS LF	Y	.5	0	0	0	0	-	0
CALAVERAS LUST	Y	.5	0	0	0	0	-	0
COLUSA CUPA	Y	.25	0	0	0	-	-	0
CONTRACO CUPA	Y	.25	0	0	0	-	-	0
DELNORTE CUPA	Y	.25	0	0	0	-	-	0
ELDORADO CUPA	Y	.25	0	0	0	-	-	0
FRESNO CUPA	Y	.25	0	0	0	-	-	0
HUMBOLDT CUPA	Y	.25	0	0	0	-	-	0
IMPERIAL CUPA	Y	.25	0	0	0	-	-	0
INYO CUPA	Y	.25	0	0	0	-	-	0
KERN CUPA	Y	.25	0	0	0	-	-	0
KERN UST	Y	.25	0	0	0	-	-	0
KINGS CUPA	Y	.25	0	0	0	-	-	0
LAKE CUPA	Y	.25	0	0	0	-	-	0
ELSEGUNDO UST	Y	.25	0	0	0	-	-	0
TORRANCE UST	Y	.25	0	0	0	-	-	0
LA HMS	Y	.25	0	0	0	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
LA LONGB UST	Y	.25	0	0	0	-	-	0
LA SWF	Y	.5	0	0	0	0	-	0
MADERA CUPA	Y	.25	0	0	0	-	-	0
MARIN CUPA	Y	.25	0	0	0	-	-	0
MERCED CUPA	Y	.25	0	0	0	-	-	0
MONO CUPA	Y	.25	0	0	0	-	-	0
MONTEREY CUPA	Y	.25	0	0	0	-	-	0
NAPA UST	Y	.25	0	0	0	-	-	0
NEVADA CUPA	Y	.25	0	0	0	-	-	0
ORANGE AST	Y	.25	0	0	0	-	-	0
ORANGE UST	Y	.25	0	0	0	-	-	0
PLACER CUPA	Y	.25	0	0	0	-	-	0
RIVERSIDE LOP	Y	.5	0	0	0	0	-	0
RIVERSIDE UST	Y	.25	0	0	0	-	-	0
SACRAMENTO HAZ	Y	.5	0	0	0	0	-	0
SACRAMENTO TOX	Y	.5	0	0	0	0	-	0
SANBERN CUPA	Y	.25	0	0	0	-	-	0
SANDIEGO HAZ	Y	.25	0	0	0	-	-	0
SANDIEGO SAM	Y	.5	0	0	0	0	-	0
SANDIEGO SWF	Y	.5	0	0	0	0	-	0
SANFRAN AST	Y	.25	0	0	0	-	-	0
SANFRAN CUPA	Y	.25	0	0	0	-	-	0
SANFRAN LOP	Y	.5	0	0	0	0	-	0
SANFRAN UST	Y	.25	0	0	0	-	-	0
SANJOAQUIN AST	Y	.25	0	0	0	-	-	0
SANJOAQUIN UST	Y	.25	0	0	0	-	-	0
SANJOAQUIN HW	Y	.5	0	0	0	0	-	0
SANMATEO CUPA	Y	.25	0	0	0	-	-	0
SANMATEO LOP	Y	.5	0	0	0	0	-	0
SANTACLARA CUPA	Y	.25	0	0	0	-	-	0
SANTACLARA LO	Y	.5	0	0	0	0	-	0
SANTACRUZ CUPA	Y	.25	0	0	0	-	-	0
SHASTA CUPA	Y	.25	0	0	0	-	-	0
SANLUISOB CUPA	Y	.25	0	0	0	-	-	0
SOLANO CUPA	Y	.25	0	0	0	-	-	0
SOLANO LOP	Y	.5	0	0	0	0	-	0
SOLANO UST	Y	.25	0	0	0	-	-	0
SONOMA CUPA	Y	.25	0	0	0	-	-	0
SONOMA LOP	Y	.5	0	0	0	0	-	0
SONOMA PETAL	Y	.25	0	0	0	-	-	0
SUTTER CUPA	Y	.25	0	0	0	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
TUOLUMNE CUPA	Y	.25	0	0	0	-	-	0
VENTURA CUPA	Y	.25	0	0	0	-	-	0
OXNARD CUPA	Y	.25	0	0	0	-	-	0
VENTURA INUST	Y	.25	0	0	0	-	-	0
VENTURA HLUFT	Y	.5	0	0	0	0	-	0
YOLO UST	Y	.25	0	0	0	-	-	0
YUBA CUPA	Y	.25	0	0	0	-	-	0
BKRSFIELD CUPA	Y	.25	0	0	0	-	-	0
SANTACLARA GIL	Y	.25	0	0	0	-	-	0
ALPINE CUPA	Y	.25	0	0	0	-	-	0
GLENN CUPA	Y	.25	0	0	0	-	-	0
LASSEN CUPA	Y	.25	0	0	0	-	-	0
MARIPOSA CUPA	Y	.25	0	0	0	-	-	0
SISKIYOU CUPA	Y	.25	0	0	0	-	-	0
STANISLAUS CUPA	Y	.25	0	0	0	-	-	0
TRINITY CUPA	Y	.25	0	0	0	-	-	0
TULARE CUPA	Y	.25	0	0	0	-	-	0

Additional Environmental Records

Federal

FINDS/FRS	Y	PO	0	-	-	-	-	0
TRIS	Y	PO	0	-	-	-	-	0
HMIRS	Y	.125	0	0	-	-	-	0
NCDL	Y	PO	0	-	-	-	-	0
ODI	Y	.5	0	0	0	0	-	0
IODI	Y	.5	0	0	0	0	-	0
TSCA	Y	.125	0	0	-	-	-	0
HIST TSCA	Y	.125	0	0	-	-	-	0
FTTS ADMIN	Y	PO	0	-	-	-	-	0
FTTS INSP	Y	PO	0	-	-	-	-	0
PRP	Y	PO	0	-	-	-	-	0
SCRD DRYCLEANER	Y	.5	0	0	0	0	-	0
ICIS	Y	PO	0	-	-	-	-	0
FED DRYCLEANERS	Y	.25	0	0	0	-	-	0

State

DRYCLEANERS	Y	.25	0	0	0	-	-	0
INSP COMP ENF	Y	1	0	0	0	0	0	0
CDL	Y	.125	0	0	-	-	-	0
SCH	Y	1	0	0	0	0	0	0
CHMIRS	Y	PO	0	-	-	-	-	0
SWAT	Y	.5	0	0	0	0	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
HAZNET	Y	PO	0	-	-	-	-	0
CDO/CAO	Y	.5	0	0	0	0	-	0
HIST CHMIRS	Y	PO	0	-	-	-	-	0
HIST MANIFEST	Y	PO	0	-	-	-	-	0

Tribal

No Tribal additional environmental record sources available for this State.

County

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.12mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
LA SML	Y	.5	0	0	0	0	-	0
RIVERSIDE HZH	Y	.125	0	0	-	-	-	0
RIVERSIDE HWG	Y	.125	0	0	-	-	-	0
SANJOAQUIN HM	Y	.125	0	0	-	-	-	0
VENTURA HAZR	Y	.5	0	0	0	0	-	0
HW INACTIVE	Y	.5	0	0	0	0	-	0
DELISTED COUNTY	Y	.25	0	0	0	-	-	0
	Total:		0	0	0	0	0	0

**** PO – Property Only***
**** 'Property and adjoining properties' database search radii are set at 0.25 miles.***

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Dir/Dist mi	Elev diff ft	Page Number

No records found in the selected databases for the project property.

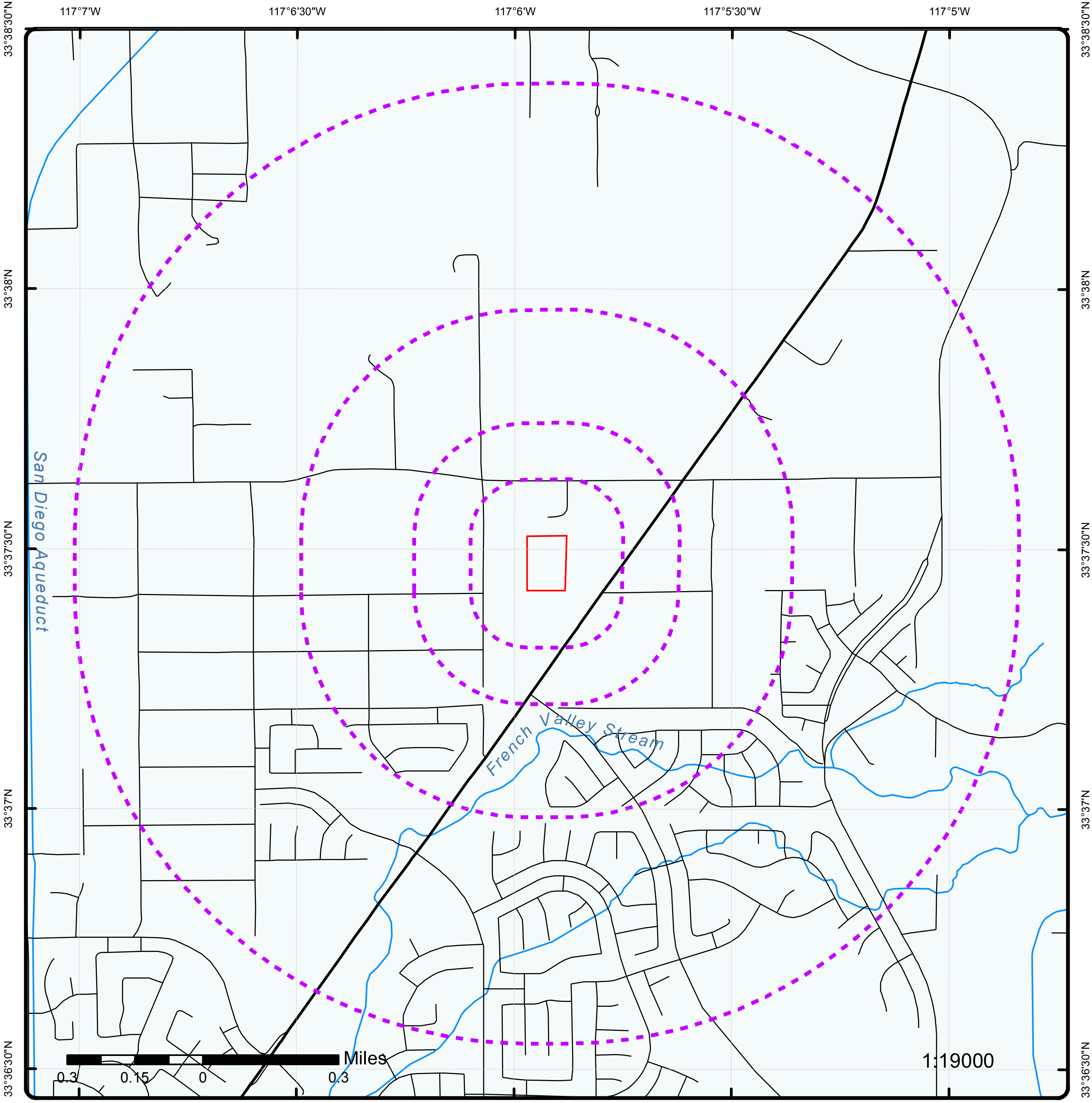
Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Dir/Dist mi	Elev Diff ft	Page Number

No records found in the selected databases for the surrounding properties.

Executive Summary: Summary by Data Source

No records found in the selected databases for the project property or surrounding properties.



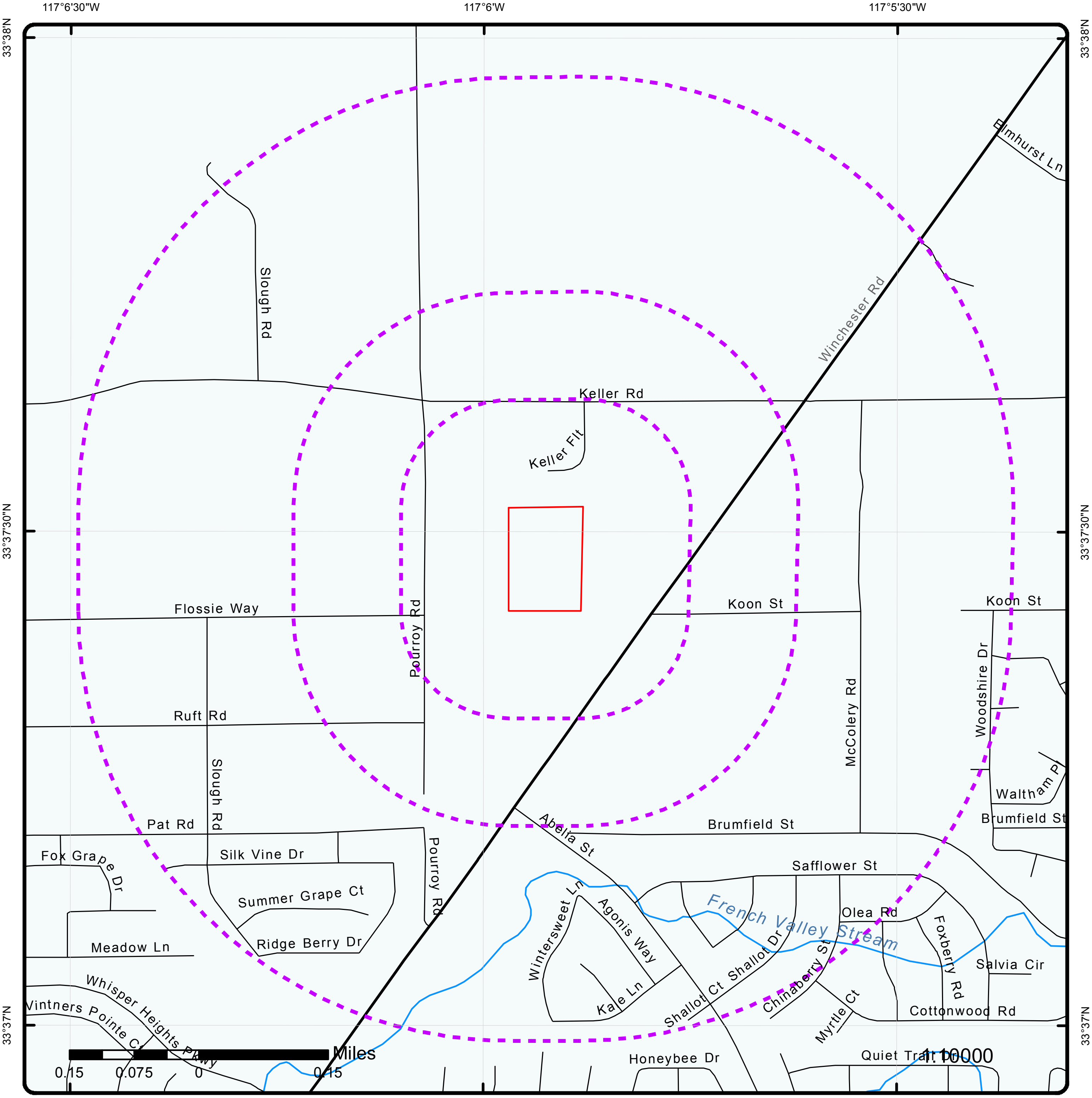
Map : 1 Mile Radius

Order No: 20160518126

Address: 34155 Winchester Road, Riverside, CA, 92596

Project Property	Major Highways	County Boundary	Indian Reserve Land
Buffer Outline	Major Highways Ramps	State Boundary	Historic Fill
Eris Sites with Higher Elevation	Major Roads	500 Year Flood Zone	State Brownfield Sites
Eris Sites with Same Elevation	Major Roads Ramps	100 Year Flood Zone	State Brownfield Areas
Eris Sites with Lower Elevation	Secondary Roads	National Priority List Sites	State Superfund Areas:Dept. of Defense
Eris Sites with Unknown Elevation	Secondary Roads Ramps	National Wetland	State Superfund Areas:NPL
Rails	Local Roads and Ramps	FWS Special Designation Areas	WQARF Areas

Source: © 2012 ESRI



Map : 0.5 Mile Radius

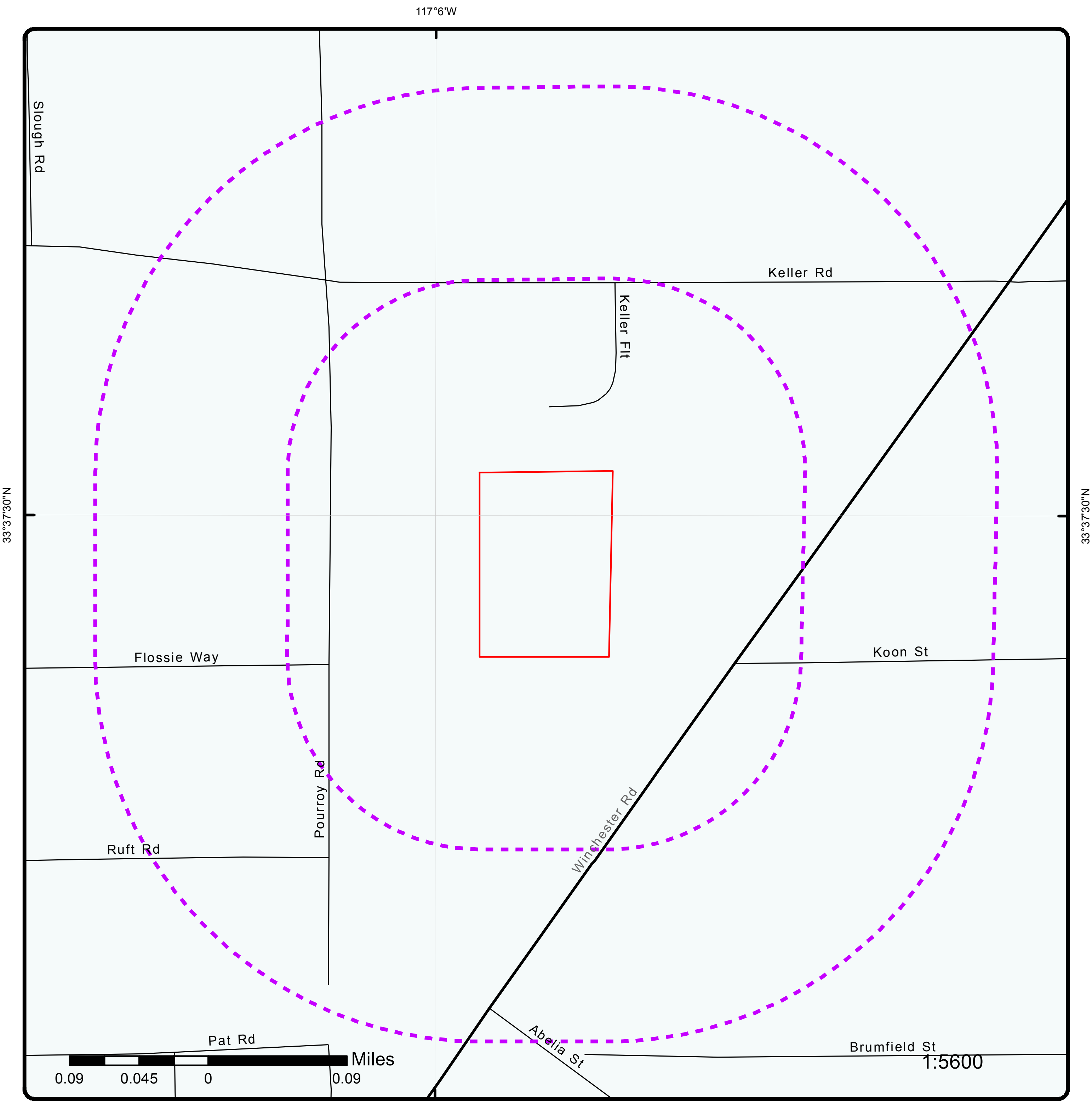
Order No: 20160518126

Address: 34155 Winchester Road, Riverside, CA, 92596

ERIS ENVIRONMENTAL RISK INFORMATION SERVICE

Project Property	Major Highways	County Boundary	Indian Reserve Land
Buffer Outline	Major Highways Ramps	State Boundary	Historic Fill
Eris Sites with Higher Elevation	Major Roads	500 Year Flood Zone	State Brownfield Sites
Eris Sites with Same Elevation	Major Roads Ramps	100 Year Flood Zone	State Brownfield Areas
Eris Sites with Lower Elevation	Secondary Roads	National Priority List Sites	State Superfund Areas:Dept. of Defense
Eris Sites with Unknown Elevation	Secondary Roads Ramps	National Wetland	State Superfund Areas:NPL
Rails	Local Roads and Ramps	FWS Special Designation Areas	WQARF Areas

Source: © 2012 ESRI



Map : 0.25 Mile Radius

Order No: 20160518126

Address: 34155 Winchester Road, Riverside, CA, 92596

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICE

Project Property	Major Highways	County Boundary	Indian Reserve Land
Buffer Outline	Major Highways Ramps	State Boundary	Historic Fill
Eris Sites with Higher Elevation	Major Roads	500 Year Flood Zone	State Brownfield Sites
Eris Sites with Same Elevation	Major Roads Ramps	100 Year Flood Zone	State Brownfield Areas
Eris Sites with Lower Elevation	Secondary Roads	National Priority List Sites	State Superfund Areas:Dept. of Defense
Eris Sites with Unknown Elevation	Secondary Roads Ramps	National Wetland	State Superfund Areas:NPL
Rails	Local Roads and Ramps	FWS Special Designation Areas	WQARF Areas

Source: © 2012 ESRI

Aerial

Order No: 20160518126

Address: 34155 Winchester Road, Riverside, CA, 92596

Source: ESRI World Imagery, Updated October 2014

Detail Report

Map Key	Number of Records	Direction/ Distance mi	Elevation ft	Site	DB

No records found in the selected databases for the project property or surrounding properties.

Unplottable Summary

Total: 15 Unplottable sites

DB	Company Name/Site Name	Address	City	Zip	ERIS ID
CDL		ANTELOPE ROAD, 1/4 MILE S. OF KELLER	MURRIETA CA	92592	820126139
CLEANUP SITES	DOUBLE BUTTE LANDFILL (CLOSED)	Grand Ave; 600 Ft W Winchester	WINCHESTER CA		820150507
ENVIROSTOR	ELEMENTARY SCHOOL NO. 10	BEELER ROAD/PATTON AVENUE	WINCHESTER CA	92596	820293357
ENVIROSTOR	PROPOSED ELEMENTARY SCHOOL NO. 10-A	NORTHEAST CORNER ELLIOTT ROAD AND PAT ROAD	WINCHESTER CA	92596	820300702
HHSS	ALIVE POLARITY-FLEETMAINT SH	29480 MURRIETA HOT SPRINGS RD WINCHESTER RD	MURRIETA CA	92362	822979831
HHSS	LAWRENCE T LASAGNA	30885 NICOLAS RD WINCHESTER RD	MURRIETA CA	92362	822953352
LDS	DOUBLE BUTTE LANDFILL (CLOSED)	GRAND AVE; 600 FT W WINCHESTER	WINCHESTER CA		820224599
RCRA SQG	NORTH ORANGE COAST PAINTING	WINCHESTER RD 1 MILE E OF HWY HUNTER POINT HOUSING COMPLEX	FRENCH VALLEY CA	92563	810613800
RIVERSIDE HZH	Sprint Cell Site RV54XC505	36625 Pourroy Rd	Winchester CA	92596	820088238
RIVERSIDE HZH	T-Mobile West Corp(IE25829A)	36627 Pourroy Rd	Murrieta CA	92563	820086836
RIVERSIDE HZH	EMWD Pourroy Lift Station	Pourroy Rd	Murrieta CA	92563	820085330

SCH	PROPOSED ELEMENTARY SCHOOL NO. 10-A	NORTHEAST CORNER ELLIOTT ROAD AND PAT ROAD	WINCHESTER CA	92596	820263437
SCH	ELEMENTARY SCHOOL NO. 10	BEELER ROAD/PATTON AVENUE	WINCHESTER CA	92596	820264673
SWAT	RIVERSIDE COUNTY-DOUBLE BUTTE LANDFILL	GRAND AVE 600 FT. W. WINCHESTER RD. WINCHESTER, CA 92396	CA		822570421
SWF/LF	Double Butte Disposal Site	Grand Ave; 600 Ft W Winchester	Winchester CA		820220593

Unplottable Report

Site:
ANTELOPE ROAD, 1/4 MILE S. OF KELLER MURRIETA CA 92592 CDL

Clue:	1996-01-004	***Date:***	1/2/1996
Lab Type:	L	***County:***	RIVERSIDE

Lab Type Description: Illegal Drug Lab - location where an illegal drug lab was operated or drug lab equipment and/or materials were stored.

Site: ***DOUBLE BUTTE LANDFILL (CLOSED)***
Grand Ave; 600 Ft W Winchester WINCHESTER CA CLEANUP SITES

Global ID:	L10004864228
Case Type:	Land Disposal Site
Status:	Open - Closed/with Monitoring
Status Date:	1965-01-01 00:00:00
RB Case Number:	8 330305012
LOC Case Number:	
CUF Case:	NO
County:	Riverside
Latitude:	33.7167
Longitude:	-117.10833
Lead Agency:	SANTA ANA RWQCB (REGION 8)
Case Worker:	JPL
Local Agency:	
File Location:	
Potential Cntm of Concrn:	
Potential Media Affected:	

Site History:

The Double Butte Sanitary Landfill is owned and was operated by the Riverside County Waste Management Department. The site is located in Section 20, T5S, R2W, Riverside County, California. It was operated as a Class III non-hazardous municipal solid waste landfill from 1973 to 1995. The landfill covers about 580 acres, of which 112 acres were filled with wastes. The landfill site lies in the San Jacinto Ground Water Basin near Winchester and west of Hemet, California. It is divided into four fill areas along the eastern margin of the main valley and one other small fill area in the southwest corner. The types of waste received consisted of 42 percent residential, 42 percent commercial, 11 percent demolition, and 5 percent special. The site underwent closure from November 1995 through May 1997. The Riverside County Waste Management Dept. is currently conducting a Corrective Action Program for groundwater monitoring at the site.

Activities

--	--
Action Type:	RESPONSE
Date:	1988-01-19 00:00:00
Action:	Site Assessment Report
--	--
Action Type:	ENFORCEMENT
Date:	1994-04-22 00:00:00
Action:	Waste Discharge Requirements
--	--
Action Type:	ENFORCEMENT
Date:	1998-11-20 00:00:00
Action:	Waste Discharge Requirements
--	--
Action Type:	ENFORCEMENT

Date:	1998-12-07 00:00:00
Action:	Waste Discharge Requirements
--	--
Action Type:	ENFORCEMENT
Date:	1999-02-11 00:00:00
Action:	Staff Letter
--	--
Action Type:	ENFORCEMENT
Date:	1999-06-07 00:00:00
Action:	Staff Letter
--	--
Action Type:	ENFORCEMENT
Date:	2000-03-16 00:00:00
Action:	Staff Letter
--	--
Action Type:	ENFORCEMENT
Date:	2000-06-07 00:00:00
Action:	Staff Letter
--	--
Action Type:	ENFORCEMENT
Date:	2000-10-11 00:00:00
Action:	Staff Letter
--	--
Action Type:	ENFORCEMENT
Date:	2002-02-08 00:00:00
Action:	Staff Letter
--	--
Action Type:	ENFORCEMENT
Date:	2002-10-01 00:00:00
Action:	13267 Requirement
--	--
Action Type:	ENFORCEMENT
Date:	2002-10-10 00:00:00
Action:	Clean-up and Abatement Order
--	--
Action Type:	ENFORCEMENT
Date:	2003-09-19 00:00:00
Action:	Staff Letter
--	--
Action Type:	ENFORCEMENT
Date:	2004-08-30 00:00:00
Action:	Staff Letter
--	--
Action Type:	ENFORCEMENT
Date:	2006-12-29 00:00:00
Action:	Staff Letter
--	--
Action Type:	ENFORCEMENT
Date:	2009-07-29 00:00:00
Action:	Staff Letter
--	--
Action Type:	RESPONSE
Date:	2010-10-31 00:00:00
Action:	Monitoring Report - Semi-Annually
--	--
Action Type:	ENFORCEMENT
Date:	2011-02-16 00:00:00
Action:	Staff Letter
--	--
Action Type:	RESPONSE
Date:	2011-04-30 00:00:00
Action:	Monitoring Report - Semi-Annually
--	--

Action Type: RESPONSE
Date: 2011-04-30 00:00:00
Action: Monitoring Report - Annually
-- --
Action Type: RESPONSE
Date: 2011-10-31 00:00:00
Action: Monitoring Report - Semi-Annually
-- --
Action Type: RESPONSE
Date: 2011-12-31 00:00:00
Action: Monitoring Report - Annually
-- --
Action Type: ENFORCEMENT
Date: 2012-07-03 00:00:00
Action: Staff Letter
-- --
Action Type: ENFORCEMENT
Date: 2012-10-16 00:00:00
Action: Technical Correspondence / Assistance / Other
-- --
Action Type: ENFORCEMENT
Date: 2012-12-19 00:00:00
Action: Technical Correspondence / Assistance / Other
-- --
Action Type: ENFORCEMENT
Date: 2013-03-07 00:00:00
Action: Technical Correspondence / Assistance / Other
-- --
Contact Information
-- --
Contact Type: Regional Board Caseworker
Contact Name: JOANNE LEE
Organization Name: SANTA ANA RWQCB (REGION 8)
Address: 3737 MAIN STREET, SUITE 500
City: RIVERSIDE
Email: jplee@waterboards.ca.gov
Phone Number:
-- --

Site: ***ELEMENTARY SCHOOL NO. 10***
BEELER ROAD/PATTON AVENUE WINCHESTER CA 92596 ENVIROSTOR

Estor/EPA ID: 60000105
Site Code: 404639
Cleanup Status: NO FURTHER ACTION AS OF 6/1/2006
Site Type: SCHOOL
Potential Media Affected: NO MEDIA AFFECTED
Past Uses Caused Contam: AGRICULTURAL - ROW CROPS
APN: 461-18-0036
National Priorities List: NO
Cleab up Oversight Agenci: DTSC - SITE CLEANUP PROGRAM - LEAD
Special Program: VOLUNTARY CLEANUP PROGRAM
Funding: SCHOOL DISTRICT
Acres: 12 ACRES
School District: HEMET UNIFIED SCHOOL DISTRICT
Assembly District: 67
Senate District: 28
Zip: 92596

POTENTIAL CONTAMI:

METALS: Arsenic, Lead, Total Chromium (1:6 ratio Cr VI:Cr III)
ORGANOCHLORINE PESTICIDES (8081 OCPS): Chlordane, DDD, DDE, DDT, Dieldrin, Endrin

SITE HISTORY:

The approximately 12-acre Site is surrounded by vacant land, slated for residential housing. The Site has been historically utilized for agricultural activities, indicating potential chemicals of concern.

Facility Information	
--	--
Program Type:	SCHOOL EVALUATION
Status:	NO FURTHER ACTION
Summary Link:	http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60000105
--	--
Completed Activities	
--	--
Doc Link:	http://www.envirostor.dtsc.ca.gov/public/final_documents2.asp?global_id=60000105&doc_id=6008879
Area Name:	
Sub Area:	
Document Type:	Preliminary Endangerment Assessment Report
Date Completed:	1/18/2006
Comments:	NFA
Activity Type:	Completed Activities
--	--
Doc Link:	
Area Name:	
Sub Area:	
Document Type:	Preliminary Endangerment Assessment Workplan
Date Completed:	10/19/2005
Comments:	Tech Memo Approved
Activity Type:	Completed Activities
--	--
Doc Link:	http://www.envirostor.dtsc.ca.gov/public/final_documents2.asp?global_id=60000105&enforcement_id=6007449
Area Name:	
Sub Area:	
Document Type:	Environmental Oversight Agreement
Date Completed:	7/15/2005
Comments:	
Activity Type:	Completed Activities
--	--

Site: ***PROPOSED ELEMENTARY SCHOOL NO. 10-A***
NORTHEAST CORNER ELLIOTT ROAD AND PAT ROAD   WINCHESTER CA 92596   ENVIROSTOR

Estor/EPA ID:	60001559
Site Code:	404867
Cleanup Status:	NO FURTHER ACTION AS OF 1/19/2012
Site Type:	SCHOOL
Potential Media Affected:	NO MEDIA AFFECTED
Past Uses Caused Contam:	NONE, WAREHOUSING
APN:	480-030-025, 480-030-026
National Priorities List:	NO
Cleab up Oversight Agenci:	DTSC - SITE CLEANUP PROGRAM - LEAD
Special Program:	
Funding:	RESPONSIBLE PARTY
Acres:	17.42 ACRES
School District:	MENIFEE UNION SCHOOL DISTRICT
Assembly District:	67
Senate District:	28
Zip:	92596

POTENTIAL CONTAMI:

LEAD

SITE HISTORY:

The Site is currently vacant undeveloped land. Dry land grain farming was condcted on the Site in the late 1970s, early 1980s. Two residential dwellings were located on the Site between about 1986 and 2006, as well as what appears to be a barn and horse stables. Since abut 2006, the Site has been vacant.

Facility Information

--	--
Program Type:	SCHOOL EVALUATION
Status:	NO FURTHER ACTION
Summary Link:	http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60001559
--	--
Completed Activities	
--	--
Doc Link:	http://www.envirostor.dtsc.ca.gov/public/final_documents2.asp?global_id=60001559&doc_id=60280911
Area Name:	
Sub Area:	
Document Type:	Phase 1
Date Completed:	11/15/2011
Comments:	The Report was considered to be a Phase I Addendum due to the inclusion of samping results for lead from lead-based paint and OCPs from termiticides. DTSC approved the Phase I Addendum with a No Further Action determination
Activity Type:	Completed Activities
--	--

Site: ***ALIVE POLARITY-FLEETMAINT SH***
29480 MURRIETA HOT SPRINGS RD WINCHESTER RD MURRIETA CA 92362 HHSS

County:	
Pdf File Url:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001f88d.pdf

Site: ***LAWRENCE T LASAGNA***
30885 NICOLAS RD WINCHESTER RD MURRIETA CA 92362 HHSS

County:	
Pdf File Url:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001f7ab.pdf

Site: ***DOUBLE BUTTE LANDFILL (CLOSED)***
GRAND AVE; 600 FT W WINCHESTER WINCHESTER CA LDS

Facility ID:	L10004864228
Site Facility Type:	LAND DISPOSAL SITE
Cleanup Status:	OPEN - CLOSED/WITH MONITORING
Cleanup Status Detail:	OPEN - CLOSED/WITH MONITORING AS OF 1/1/1965
Cleanup History Link:	http://geotracker.waterboards.ca.gov/profile_report_include.asp?global_id=L10004864228&tabname=regulatoryhistory
Report Link:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=L10004864228
File Location:	
County:	RIVERSIDE
DWR Grndwtr Sub Basin:	
RB Watershed:	San Jacinto Valley - Perris - Winchester (802.13)
Future LU Reptd at Closure:	
Potential Contaminants:	NONE SPECIFIED
Beneficial Use:	NONE SPECIFIED
Post Closure Site Mgmt R:	

SITE HISTORY:

The Double Butte Sanitary Landfill is owned and was operated by the

Riverside County Waste Management Department. The site is located in Section 20, T5S, R2W, Riverside County, California. It was operated as a Class III non-hazardous municipal solid waste landfill from 1973 to 1995.

The landfill covers about 580 acres, of which 112 acres were filled with wastes. The landfill site lies in the San Jacinto Ground Water Basin near Winchester and west of Hemet, California. It is divided into four fill areas along the eastern margin of the main valley and one other small fill area in the southwest corner. The types of waste received consisted of 42 percent residential, 42 percent commercial, 11 percent demolition, and 5 percent special. The site underwent closure from November 1995 through May 1997.

The Riverside County Waste Management Dept. is currently conducting a Corrective Action Program for groundwater monitoring at the site.

Cleanup History

--	--
Date:	
Status:	NO STATUS HISTORY HAS BEEN ENTERED FOR THIS SITE
--	--

Regulatory Activities

--	--
Action Type:	ENFORCEMENT/ORDERS
Action:	Staff Letter
Action Date:	12/29/2006
Received Issue Date:	12/29/2006
Doc Link:	http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6117145
--	--
Action Type:	ENFORCEMENT/ORDERS
Action:	Clean-up and Abatement Order
Action Date:	10/10/2002
Received Issue Date:	10/10/2002
Doc Link:	http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6259547
--	--
Action Type:	OTHER REGULATORY ACTIONS
Action:	Technical Correspondence / Assistance / Other
Action Date:	12/19/2012
Received Issue Date:	12/19/2012
Doc Link:	http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6145595
--	--
Action Type:	ENFORCEMENT/ORDERS
Action:	Staff Letter
Action Date:	2/16/2011
Received Issue Date:	2/16/2011
Doc Link:	http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6128958
--	--
Action Type:	ENFORCEMENT/ORDERS
Action:	Staff Letter
Action Date:	2/8/2002
Received Issue Date:	2/8/2002
Doc Link:	http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6119413
--	--
Action Type:	ENFORCEMENT/ORDERS
Action:	Staff Letter
Action Date:	6/7/2000
Received Issue Date:	6/7/2000
Doc Link:	http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6118924
--	--

Action Type: ENFORCEMENT/ORDERS
Action: Staff Letter
Action Date: 2/11/1999
Received Issue Date: 2/11/1999
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6116256
-- --
Action Type: RESPONSE REQUESTED - OTHER
Action: Other Report / Document
Action Date:
Received Issue Date: 12/10/2010
Doc Link:
-- --
Action Type: OTHER REGULATORY ACTIONS
Action: Technical Correspondence / Assistance / Other
Action Date: 3/7/2013
Received Issue Date: 3/7/2013
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6158974
-- --
Action Type: RESPONSE REQUESTED - REPORTS
Action: Monitoring Report - Annually
Action Date: 12/31/2011
Received Issue Date: 1/3/2012
Doc Link:
-- --
Action Type: RESPONSE REQUESTED - REPORTS
Action: Monitoring Report - Semi-Annually
Action Date: 10/31/2010
Received Issue Date: 10/31/2010
Doc Link:
-- --
Action Type: ENFORCEMENT/ORDERS
Action: Staff Letter
Action Date: 7/29/2009
Received Issue Date: 7/29/2009
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6116889
-- --
Action Type: RESPONSE REQUESTED - REPORTS
Action: Monitoring Report - Semi-Annually
Action Date: 4/30/2011
Received Issue Date: 4/30/2011
Doc Link:
-- --
Action Type: ENFORCEMENT/ORDERS
Action: Waste Discharge Requirements
Action Date: 12/7/1998
Received Issue Date: 12/7/1998
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6030938
-- --
Action Type: ENFORCEMENT/ORDERS
Action: Waste Discharge Requirements
Action Date: 11/20/1998
Received Issue Date: 11/20/1998
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6030937
-- --
Action Type: OTHER REGULATORY ACTIONS
Action: Technical Correspondence / Assistance / Other
Action Date: 10/16/2012
Received Issue Date: 10/16/2012
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement

_id=6239315

-- --

Action Type: ENFORCEMENT/ORDERS
Action: Staff Letter
Action Date: 7/3/2012
Received Issue Date: 7/3/2012
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6128451

-- --

Action Type: RESPONSE REQUESTED - REPORTS
Action: Monitoring Report - Semi-Annually
Action Date: 10/31/2011
Received Issue Date: 10/31/2011
Doc Link:

-- --

Action Type: ENFORCEMENT/ORDERS
Action: 13267 Requirement
Action Date: 10/1/2002
Received Issue Date: 10/1/2002
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6259548

-- --

Action Type: ENFORCEMENT/ORDERS
Action: Staff Letter
Action Date: 3/16/2000
Received Issue Date: 3/16/2000
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6118899

-- --

Action Type: ENFORCEMENT/ORDERS
Action: Staff Letter
Action Date: 6/7/1999
Received Issue Date: 6/7/1999
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6116708

-- --

Action Type: ENFORCEMENT/ORDERS
Action: Staff Letter
Action Date: 8/30/2004
Received Issue Date: 8/30/2004
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6117561

-- --

Action Type: ENFORCEMENT/ORDERS
Action: Waste Discharge Requirements
Action Date: 4/22/1994
Received Issue Date: 4/22/1994
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6030933

-- --

Action Type: RESPONSE REQUESTED - REPORTS
Action: Monitoring Report - Annually
Action Date: 4/30/2011
Received Issue Date: 4/30/2011
Doc Link:

-- --

Action Type: ENFORCEMENT/ORDERS
Action: Staff Letter
Action Date: 10/11/2000
Received Issue Date: 10/11/2000
Doc Link: http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6118968

-- --

Action Type: ENFORCEMENT/ORDERS

Action:	Waste Discharge Requirements
Action Date:	11/20/1998
Received Issue Date:	11/20/1998
Doc Link:	http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6030935
--	--
Action Type:	RESPONSE REQUESTED - REPORTS
Action:	Site Assessment Report
Action Date:	1/19/1988
Received Issue Date:	1/19/1988
Doc Link:	http://geotracker.waterboards.ca.gov/view_documents_all.asp?global_id=L10004864228&doc_id=5725994
--	--
Action Type:	ENFORCEMENT/ORDERS
Action:	Staff Letter
Action Date:	9/19/2003
Received Issue Date:	9/19/2003
Doc Link:	http://geotracker.waterboards.ca.gov/view_documents.asp?global_id=L10004864228&enforcement_id=6118511
--	--

Site: ***NORTH ORANGE COAST PAINTING***
WINCHESTER RD 1 MILE E OF HWY HUNTER POINT HOUSING COMPLEX FRENCH VALLEY CA 92563

RCRA SQG

EPA Handler ID:	CAR000120980
Current Site Name:	NORTH ORANGE COAST PAINTING
Generator Status Universe:	Small Quantity Generator
Land Type:	Private
Activity Location:	CA
TSD Activity:	N
Mixed Waste Generator:	N
Importer Activity:	N
Transporter Activity:	N
Transfer Facility:	N
Recycler Activity:	N
Onsite Burner Exemption:	N
Furnace Exemption:	N
Underground Inject Activity:	N
Rece Waste From Off Site:	N
Used Oil Transporter:	
Used Oil Transfer Facility:	
Used Oil Processor:	
Used Oil Refiner:	
Used Oil Burner:	
Used Oil Market Burner:	
Used Oil Spec Marketer:	
Mailing Address:	P O BOX 520, , NORCO, CA, 91720,
Contact Name:	JOHN FOTION
Contact Address:	P O BOX 520, , NORCO, CA, 928600520, US
Contact Email:	
Location Street 2:	HUNTER POINT HOUSING COMPLEX
--	--

Owner/Operator Information

Owner/Operator Indicator:	CO
Owner/Operator Name:	NORTH ORANGE COAST PAINTING
Owner/Operator Address:	P O BOX 520 NORCO CA 928600520
Owner/Operator Phone:	9092792694
Owner/Operator Type:	P
Date Became Current:	
Date Ended Current:	

--	--
NAICS Information	
--	--
Handler Information	
--	--
Date Received:	20020516
Facility Name:	NORTH ORANGE COAST PAINTING
Classification:	Small Quantity Generator
--	--
Hazardous Waste Information	
--	--
Waste Code:	D001
Waste:	IGNITABLE WASTE
--	--
Violation/Evaluation Information	
--	--

Site: ***Sprint Cell Site RV54XC505***
36625 Pourroy Rd   Winchester CA 92596 RIVERSIDE HZH

Site: ***T-Mobile West Corp(IE25829A)***
36627 Pourroy Rd   Murrieta CA 92563 RIVERSIDE HZH

Site: ***EMWD Pourroy Lift Station***
Pourroy Rd   Murrieta CA 92563 RIVERSIDE HZH

Site: ***PROPOSED ELEMENTARY SCHOOL NO. 10-A***
NORTHEAST CORNER ELLIOTT ROAD AND PAT ROAD   WINCHESTER CA 92596 SCH

ESTOR/EPA ID:	60001559
Site Code:	404867
Status:	NO FURTHER ACTION
Cleanup Status:	NO FURTHER ACTION AS OF 1/19/2012
Program Type:	SCHOOL EVALUATION
Site Type:	SCHOOL
National Priorities List:	NO
Cl Up Oversight Agencies:	DTSC - SITE CLEANUP PROGRAM - LEAD
Special Program:	
County:	RIVERSIDE
Funding:	RESPONSIBLE PARTY
APN:	480-030-025, 480-030-026
Past Use Caused Contam:	NONE, WAREHOUSING
Potential Contam of Cncrn:	LEAD
Potential Media Affected:	NO MEDIA AFFECTED
Acres:	17.42 ACRES
School District:	MENIFEE UNION SCHOOL DISTRICT
Summary Link:	http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60001559
Assembly District:	67
Senate District:	28
Latitude:	33.6207
Longitude:	-117.1089

SITE HISTORY:

The Site is currently vacant undeveloped land. Dry land grain farming was condcted on the Site in the late 1970s, early 1980s. Two residential dwellings were located on the Site between about 1986 and 2006, as well as what appears to be a barn and horse stables. Since abut 2006, the Site has been vacant.

Completed Activities

--	--
Date Completed:	11/15/2011
Doc Link:	http://www.envirostor.dtsc.ca.gov/public/final_documents2.asp?global_id=60001559&doc_id=60280911
Area Name:	
Sub Area:	
Document Type:	Phase 1
Comments:	The Report was considered to be a Phase I Addendum due to the inclusion of samping results for lead from lead-based paint and OCPs from termiticides. DTSC approved the Phase I Addendum with a No Further Action determination
--	--

Site: ***ELEMENTARY SCHOOL NO. 10***
BEELER ROAD/PATTON AVENUE WINCHESTER CA 92596 SCH

ESTOR/EPA ID:	60000105
Site Code:	404639
Status:	NO FURTHER ACTION
Cleanup Status:	NO FURTHER ACTION AS OF 6/1/2006
Program Type:	SCHOOL EVALUATION
Site Type:	SCHOOL
National Priorities List:	NO
Cl Up Oversight Agencies:	DTSC - SITE CLEANUP PROGRAM - LEAD
Special Program:	VOLUNTARY CLEANUP PROGRAM
County:	RIVERSIDE
Funding:	SCHOOL DISTRICT
APN:	461-18-0036
Past Use Caused Contam:	AGRICULTURAL - ROW CROPS
Potential Contam of Cncrn:	METALS: Arsenic, Lead, Total Chromium (1:6 ratio Cr VI:Cr III) ORGANOCHLORINE PESTICIDES (8081 OCPS): Chlordane, DDD, DDE, DDT, Dieldrin, Endrin
Potential Media Affected:	NO MEDIA AFFECTED
Acres:	12 ACRES
School District:	HEMET UNIFIED SCHOOL DISTRICT
Summary Link:	http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60000105
Assembly District:	67
Senate District:	28
Latitude:	33.6943
Longitude:	-117.1044

SITE HISTORY:

The approximately 12-acre Site is surrounded by vacant land, slated for residential housing. The Site has been historically utilized for agricultural activities, indicating potential chemicals of concern.

Completed Activities

--	--
Date Completed:	1/18/2006
Doc Link:	http://www.envirostor.dtsc.ca.gov/public/final_documents2.asp?global_id=60000105&doc_id=6008879
Area Name:	
Sub Area:	
Document Type:	Preliminary Endangerment Assessment Report
Comments:	NFA
--	--
Date Completed:	10/19/2005
Doc Link:	
Area Name:	
Sub Area:	
Document Type:	Preliminary Endangerment Assessment Workplan
Comments:	Tech Memo Approved

-- --
Date Completed: 7/15/2005
Doc Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2.asp?global_id=60000105&enforcement_id=6007449
Area Name:
Sub Area:
Document Type: Environmental Oversight Agreement
Comments:
-- --

Site: ***RIVERSIDE COUNTY-DOUBLE BUTTE LANDFILL***
GRAND AVE 600 FT. W. WINCHESTER RD. WINCHESTER, CA 92396 CA SWAT

Rank:	1
SWIS Number:	33-AA-0008
Report Status Code:	R
Report Status:	RETURNED FOR REVISION
Transcribe Source:	Solid Waste Assessment Test (SWAT) Program Report to the Legislature 1989-1990
Site Classification Code:	
Site Classification:	
Activity Status Code:	
Activity Description:	
Character of Site Code:	
Character of Site:	
Size of Site Code:	
Size of Site:	
Proposal Status:	
Site Leak:	
Site Leak Desc:	
Type of Leak:	
Enforce Action:	
Enforce Action Desc:	
Waste Management Unit:	
Waste Discharger Sys NO:	8 330305012
Initial Notif Date:	
Proposal Due Date:	
Report Due Date:	07/01/87
Anticipated Rprt Submit Dt:	01/19/88
Report Received Date:	01/27/88
Report Target Review Date:	02/01/91
Report Resubmitted Due Date:	01/01/91
Report Resubmitted Rcvd Dt:	08/19/88
Report Approval Date:	
Anticip Proposal Submit Dt:	
Proposal Received Date:	
Proposal Target Review Date:	
Proposal Status Code:	
Proposal Resubmitted Due Dt:	
Proposal Resubmitted Received Due Date:	
Proposal Accepted Date:	
Exemption Questionnaire Approved Date:	
Waiver Approved Date:	
Type of Leak Code:	
DHS & CWMB Notif Date:	
Report Summ Sent Date:	
Monitor Program Revise Date:	
Revise WDR Target Date:	
Hazardous Waste Surface:	
Above Reg Level Surface:	
Below Reg Level Surface:	
Hazardous Waste Ground:	

Above Reg Level Ground:
Below Reg Level Ground:
Hazardous Waste Vadose:
Above Reg Level Vadose:
Below Reg Level Vadose:
Surface:
Ground:
Vadose:
Operator Name: REIVERSIDE COUNTY
Agency Name:
County Number:
County Name: RIVERSIDE
Regional Board Contact:
Region: SANTA ANA REGION 8
Remarks: Requested follow up quarterly ground water monitoring necessary to complete the SWAT was received by March 1990. County has been requested to conduct Subchapter 15 water level/water quality monitoring, and advised that failure to do so will result in enforcement action. Target date for final report review is Feb.1, 1991. Time schedule for completion of work on remaining SWAT deficiencies has been requested by September 21, 1990. ACL is likely.

Site: ***Double Butte Disposal Site***
Grand Ave; 600 Ft W Winchester Winchester CA SWF/LF

SWIS NO:	33-AA-0008	**Operator Phone:**	9514863200
Permit Status:	Permitted	**Operator Addr 1:**	
Permit Date:	12/1/1992	**Operator Addr 2:**	14310 Frederick Street
Landuse Name:		**Operator City:**	Moreno Valley
County:	Riverside	**Operator State:**	CA
Latitude:	33.71862	**Operator Zip:**	92553
Longitude:	-117.10652	**Operator:**	County Of Riverside Waste Mgmt Dept
GIS Source:	Map		

Owner
-- --
Owner: County Of Riverside Waste Mgmt Dept
Phone: 9514863200
Address1:
Address2: 14310 Frederick Street
City: Moreno Valley
State: CA
Zip: 92553
-- --
Unit
-- --
Category: Disposal
Unit No.: 01
Activity: Solid Waste Disposal Site
Regulatory Status: Permitted
Operational Status: Closed
Inspection Frequency: Quarterly
Accepted Waste: Contaminated soil,Mixed municipal
Program Type: Financial Assurance Responsibilities
Closure Date: 9/17/1994
Closure Type: Actual
Thorough Put: 500
Thorough Put Units: Tons/day
Capacity:
Acreage: $580.00
Disposal Acreage: $93.00
Remaining Capacity: 312000
WDRNO: II
-- --

Appendix: Database Descriptions

Ecolog Environmental Risk Information Services Ltd (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ERIS updates databases as set out in ASTM Standard E1527-13, Section 8.1.8 Sources of Standard Source Information:

"Government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public."

Standard Environmental Record Sources

Federal

National Priority List: NPL

National Priorities List (Superfund)-NPL: EPA's (United States Environmental Protection Agency) list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. The NPL, which EPA is required to update at least once a year, is based primarily on the score a site receives from EPA's Hazard Ranking System. A site must be on the NPL to receive money from the Superfund Trust Fund for remedial action.

Government Publication Date: Feb 11, 2016

National Priority List - Proposed: PROPOSED NPL

Includes sites proposed (by the EPA, the state, or concerned citizens) for addition to the NPL due to contamination by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

Government Publication Date: Feb 11, 2016

Deleted NPL: DELETED NPL

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Government Publication Date: Feb 11, 2016

SEMS List 8R Active Site Inventory: SEMS

The Superfund Program has deployed the Superfund Enterprise Management System (SEMS), which integrates multiple legacy systems into a comprehensive tracking and reporting tool. This inventory contains active sites evaluated by the Superfund program that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The Active Site Inventory Report displays site and location information at active SEMS sites. An active site is one at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted.

Government Publication Date: Mar 07, 2016

SEMS List 8R Archive Sites: SEMS ARCHIVE

The Superfund Enterprise Management System (SEMS) Archived Site Inventory displays site and location information at sites archived from SEMS. An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time.

Government Publication Date: Mar 07, 2016

Comprehensive Environmental Response, Compensation and Liability Information System - CERCLIS:

CERCLIS

Superfund is a program administered by the United States Environmental Protection Agency (EPA) to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The EPA administers the Superfund program in cooperation with individual states and tribal governments; this database is made available by the EPA.

Government Publication Date: Oct 25, 2013

CERCLIS - No Further Remedial Action Planned:

CERCLIS NFRAP

An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. The Archive designation means that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Government Publication Date: Oct 25, 2013

CERCLIS Liens:

CERCLIS LIENS

A Federal Superfund lien exists at any property where EPA has incurred Superfund costs to address contamination ("Superfund site") and has provided notice of liability to the property owner. A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 30, 2014

RCRA CORRACTS-Corrective Action:

RCRA CORRACTS

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. At these sites, the Corrective Action Program ensures that cleanups occur. EPA and state regulators work with facilities and communities to design remedies based on the contamination, geology, and anticipated use unique to each site.

Government Publication Date: Mar 14, 2016

RCRA non-CORRACTS TSD Facilities:

RCRA TSD

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Government Publication Date: Mar 14, 2016

RCRA Generator List:

RCRA LQG

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Government Publication Date: Mar 14, 2016

RCRA Small Quantity Generators List: RCRA SQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Small Quantity Generators (SQGs) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Government Publication Date: Mar 14, 2016

RCRA Conditionally Exempt Small Quantity Generators List: RCRA CESQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Conditionally Exempt Small Quantity Generators (CESQG) generate 100 kilograms or less per month of hazardous waste or one kilogram or less per month of acutely hazardous waste.

Government Publication Date: Mar 14, 2016

RCRA Non-Generators: RCRA NON GEN

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Non-Generators do not presently generate hazardous waste.

Government Publication Date: Mar 14, 2016

Federal Engineering Controls-ECs: FED ENG

Engineering controls (ECs) encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jul 30, 2014

Federal Institutional Controls- ICs: FED INST

Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Although it is EPA's (United States Environmental Protection Agency) expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable, ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site.

Government Publication Date: Jul 30, 2014

Emergency Response Notification System: ERNS 1982 TO 1986

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1982-1986

Emergency Response Notification System: ERNS 1987 TO 1989

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1987-1989

Emergency Response Notification System: ERNS

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Oct 7, 2015

The Assessment, Cleanup and Redevelopment Exchange System (ACRES) Brownfield Database: FED BROWNFIELDS

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Apr 05, 2016

Material Licensing Tracking System (MLTS): MLTS

A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC.

Government Publication Date: Oct 7, 2014

State

State Response Sites: RESPONSE

A list of identified confirmed release sites where the Department of Toxic Substances Control (DTSC) is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. This database is state equivalent NPL.

Government Publication Date: Feb 03, 2016

EnviroStor Database: ENVIROSTOR

The EnviroStor Data Management System is made available by the Department of Toxic Substances Control (DTSC). Includes Corrective Action sites, Tiered Permit sites, Historical Sites and Evaluation/Investigation sites. This database is state equivalent CERCLIS.

Government Publication Date: Dec 31, 2015

Solid Waste Information System (SWIS): SWF/LF

The Solid Waste Information System (SWIS) database made available by the Department of Resources Recycling and Recovery (CalRecycle) contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.

Government Publication Date: Apr 28, 2016

EnviroStor Hazardous Waste Facilities: HWP

A list of hazardous waste facilities including permitted, post-closure and historical facilities found in the Department of Toxic Substances Control (DTSC) EnviroStor database.

Government Publication Date: Apr 21, 2016

Land Disposal Sites: LDS

Land Disposal Sites in GeoTracker, the State Water Resources Control Board (SWRCB)'s data management system. The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units. Waste management units include waste piles, surface impoundments, and landfills.

Government Publication Date: Apr 25, 2016

Leaking Underground Fuel Tank Reports: LUST

List of Leaking Underground Storage Tanks within the Cleanup Sites data in GeoTracker database. GeoTracker is the State Water Resources Control Board's (SWRCB) data management system for managing sites that impact groundwater, especially those that require groundwater cleanup (Underground Storage Tanks, Department of Defense and Site Cleanup Program) as well as permitted facilities such as operating Underground Storage Tanks. The Leak Prevention Program that overlooks LUST sites is the SWRCB in California's Environmental Protection Agency.

Government Publication Date: Mar 21, 2016

Delisted Leaking Storage Tanks: DLST

This database contains a list of leaking storage tank sites that were removed from the GeoTracker is the State Water Resources Control Board's (SWRCB) data management system.

Government Publication Date: Aug 31,2015

Permitted Underground Storage Tank (UST) in GeoTracker: UST

List of Permitted Underground Storage Tank (UST) sites made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA).

Government Publication Date: Mar 28, 2016

Aboveground Storage Tanks: AST

A statewide list from 2009 of aboveground storage tanks (ASTs) made available by the Cal FIRE Office of the State Fire Marshal (OSFM). This list is no longer maintained or updated by the Cal FIRE OSFM.

Government Publication Date: Aug 31, 2009

Delisted Storage Tanks: DELISTED TNK

This database contains a list of storage tank sites that were removed by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA) and the Cal FIRE Office of State Fire Marshal (OSFM).

Government Publication Date: Mar 28, 2016

Proposed Closure of Underground Storage Tank Cases: UST CLOSURE

List of UST cases that are being considered for closure by either the California Environmental Protection Agency, State Water Resources Control Board or the Executive Director that have been posted for a 60-day public comment period.

Government Publication Date: Feb 26, 2016

Historical Hazardous Substance Storage Information Database: HHSS

The Historical Hazardous Substance Storage database contains information collected in the 1980s from facilities that stored hazardous substances. The information was originally collected on paper forms, was later transferred to microfiche, and recently indexed as a searchable database. When using this database, please be aware that it is based upon self-reported information submitted by facilities which has not been independently verified. It is unlikely that every facility responded to the survey and the database should not be expected to be a complete inventory of all facilities that were operating at that time. This database is maintained by the California State Water Resources Control Board's (SWRCB) Geotracker.

Government Publication Date: Aug 27, 2015

Site Mitigation and Brownfields Reuse Program Facility Sites with Land Use Restrictions: LUR

The Department of Toxic Substances Control (DTSC) Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents land use restrictions that are active. Some sites have multiple land use restrictions.

Government Publication Date: Mar 4, 2016

Hazardous Waste Management Program Facility Sites with Deed / Land Use Restrictions: HLUR

The Department of Toxic Substances Control (DTSC) Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Government Publication Date: Mar 29, 2016

Deed Restrictions and Land Use Restrictions: DEED

List of Deed Restrictions, Land Use Restrictions and Covenants in GeoTracker made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency. A deed restriction (land use covenant) may be required to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to residual hazardous materials.

Government Publication Date: Mar 29, 2016

Voluntary Cleanup Program: VCP

List of sites in the Voluntary Cleanup Program made available by the Department of Toxic Substances and Control (DTSC). The Voluntary Cleanup Program was designed to respond to lower priority sites. Under the Voluntary Cleanup Program, DTSC enters site-specific agreements with project proponents for DTSC oversight of site assessment, investigation, and/or removal or remediation activities, and the project proponents agree to pay DTSC's reasonable costs for those services.

Government Publication Date: Apr 7, 2016

GeoTracker Cleanup Sites Data: CLEANUP SITES

A list of cleanup sites in the state of California made available by The State Water Resources Control Board (SWRCB) of the California Environmental Protection Agency (EPA). SWRCB tracks leaking underground storage tank cleanups as well as other water board cleanups.

Government Publication Date: Mar 21, 2016

Well Investigation Program Case List: WIP

The Well Investigation Program (WIP) was developed by the State Water Resources Control Board (SWRCB) to locate, assess and remediate sources of solvent contamination impacting drinking water wells. This list contains WIP cases (active and historical) for the San Gabriel and San Fernando Valley area and was provided by the Los Angeles Regional Water Quality Control Board.

Government Publication Date: Nov 13, 2015

Tribal

Leaking Underground Storage Tanks (LUSTs) on Indian Lands: INDIAN LUST

LUSTs on Tribal/Indian Lands in Region 9, which includes California.

Government Publication Date: Aug 28, 2014

Underground Storage Tanks (USTs) on Indian Lands: INDIAN UST

USTs on Tribal/Indian Lands in Region 9, which includes California.

Government Publication Date: Aug 28, 2014

Delisted Tribal Leaking Storage Tanks: DELISTED ILST

Underground Storage Tank facilities which have been removed from the Regional Tribal UST lists made available by the EPA.

Government Publication Date: Jan 31, 2016

Delisted Tribal Underground Storage Tanks: DELISTED IUST

Underground Storage Tank facilities which have been removed from the Regional Tribal UST lists made available by the EPA.

Government Publication Date: Jan 31, 2016

County

Alameda County LOP Sites List: ALAMEDA LOP

A list of Leaking Underground Storage Tanks (LUST) facilities in Alameda County. This list is made available by Alameda County Department of Environmental Health (ACEH). ACEH implements a Local Oversight Program (LOP) under contract with the State Water Resources Control Board to provide regulatory oversight of the investigation and cleanup of soil and groundwater contamination from leaking petroleum USTs.

Government Publication Date: Apr 6, 2016

Alameda County UST List: ALAMEDA UST

A list of all registered Underground Storage Tanks (USTs) in the County of Alameda. The list is made available by Alameda County Department of Environmental Health.

Government Publication Date: Apr 6, 2016

Amador County CUPA List: AMADOR CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Amador County. This list is made available by Amador County Environmental Health Department which is the CUPA for Amador County and administers a consolidated hazardous materials program.

Government Publication Date: Mar 21, 2016

Butte County CUPA List: BUTTE CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Butte County. This list is made available by Butte County Public Health Department, Environmental Health Division which was certified by the California Environmental Protection Agency as the CUPA for Butte County.

Government Publication Date: Mar 22, 2016

Calaveras County CUPA Facilities List: CALAVERAS CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in the County of Calaveras. This list is made available by Calaveras County Environmental Health Department which has been certified by CalEPA to implement the Unified program as a CUPA.

Government Publication Date: Mar 15, 2016

Calaveras County Landfills List: CALAVERAS LF

A list of landfills in Calaveras County. This list is made available by Calaveras County Environmental Health Department which has been designated as the CUPA for the County.

Government Publication Date: Mar 15, 2016

Calaveras County UST Remediation Sites: CALAVERAS LUST

A list of Leaking Underground Storage Tank (LUST) facilities in Calaveras County. This list is made available by Calaveras County Environmental Health Department. Local Implementing Agency (LIA) provides oversight of site remediation with soil contamination while CalEPA - California Regional Water Quality Control Board - Central Valley Region oversees remediation of sites with groundwater contamination.

Government Publication Date: Mar 15, 2016

Colusa County CUPA List: COLUSA CUPA

A list of facilities associated with Business Plan and Hazardous Generator programs in the County of Colusa. This list is made available by Colusa County Environmental Health which was certified by the California Environmental Protection Agency as Certified Unified Program Agency for Colusa County.

Government Publication Date: Jan 26, 2016

Contra Costa County CUPA List: CONTRACO CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in the County of Contra Costa. This list is made available by Contra Costa County which has been certified by CalEPA to implement the Unified program as a CUPA.

Government Publication Date: Apr 27, 2016

Del Norte County CUPA Facility List: DELNORTE CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Del Norte County. This list is made available by Del Norte County Environmental Health Division which is the designated CUPA for the county.

Government Publication Date: Jan 22, 2016

El Dorado County CUPA Facility List: ELDORADO CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in El Dorado County. This list is made available by El Dorado County Department of Environmental Management - Hazardous Waste Division which is approved by CalEPA as CUPA for El Dorado County.

Government Publication Date: Dec 28, 2015

Fresno County CUPA/Solid Waste Programs Resource List: FRESNO CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Fresno County. This list is made available by Fresno County Department of Environmental Health Division which is approved by Cal-EPA as CUPA for the County.

Government Publication Date: Jan 05, 2016

Humboldt County CUPA Facility List: HUMBOLDT CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Humboldt County. This list is made available by Humboldt County Division of Environmental Health which is approved by the State Secretary for Environmental Protection as CUPA for the County.

Government Publication Date: Feb 9, 2016

Imperial County CUPA Facility List: IMPERIAL CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Imperial County. This list is made available by the California Department of Toxic Substances Control (DTSC) which is appointed as CUPA for Imperial County.

Government Publication Date: Apr 28, 2016

Inyo County CUPA Facility List: INYO CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in the County of Inyo. This list is made available by the Inyo County Environmental Health Services Department which has been certified by CalEPA to implement the Unified program as a CUPA.

Government Publication Date: Jul 16, 2014

Kern County CUPA List: KERN CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in the County of Kern. This list is made available by Kern County Environmental Health Services Department which has been certified by CalEPA to implement the Unified program as a CUPA for Kern County.

Government Publication Date: May 19, 2015

Kern County UST List: KERN UST

A list of all registered and inactive Underground Storage Tanks in the County of Kern. The list is made available by Kern County Environmental Health Division.

Government Publication Date: May 19, 2015

Kings County CUPA Facility List: KINGS CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Kings County. This list is made available by Kings County Department of Public Health which is appointed as CUPA for the county.

Government Publication Date: Jan 31, 2016

Lake County CUPA Facility List: LAKE CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Lake County. This list is made available by Lake County Division of Environmental Health which is CUPA for the entire county.

Government Publication Date: Apr 28, 2016

Los Angeles County - El Segundo City Underground Storage Tanks List: ELSEGUNDO UST

A list of all registered Underground Storage Tanks (USTs) in the City of El Segundo of Los Angeles County. The list is made available by El Segundo City Fire Department.

Government Publication Date: Mar 11, 2016

Los Angeles County - Torrance City Underground Storage Tanks: TORRANCE UST

A list of registered Underground Storage Tank (UST) sites in Torrance City of Los Angeles County. This list is made available by Torrance City Office of Clerk.

Government Publication Date: Mar 29, 2016

Los Angeles County HMS List: LA HMS

This list contains sites that have or had permits for Industrial Waste, Underground Storage Tanks, or Storm water in the County of Los Angeles. This list is made available by the County of Los Angeles Department of Public Works.

Government Publication Date: Feb 9, 2016

Los Angeles County Long Beach UST List: LA LONGB UST

A list of all registered active Underground Storage Tanks in the City of Long Beach of Los Angeles County. The list is made available by Long Beach Certified Unified Program Agency.

Government Publication Date: Jan 6, 2016

Los Angeles County Solid Waste Sites: LA SWF

List of permitted solid waste facilities, closed landfills, historical dumpsites and other solid waste sites in Los Angeles County, made available by the Department of Public Works in Los Angeles County.

Government Publication Date: Apr 20, 2016

Madera County CUPA Facility List: MADERA CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Madera County. This list is made available by Madera County Environmental Health Department which is CUPA for the entire county.

Government Publication Date: Sep 16, 2015

Marin County CUPA List: MARIN CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in the County of Marin. This list is made available by Marin County which has been certified by CalEPA to implement the Unified program as a CUPA.

Government Publication Date: Jan 19, 2016

Merced County CUPA Facilities List: MERCED CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in the County of Merced. This list is made available by Merced County which has been certified by CalEPA to implement the Unified program as a CUPA for the entire county.

Government Publication Date: Jan 15, 2016

Mono County CUPA Facility List: MONO CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Mono County. This list is made available by Mono County Environmental Health Department which has been certified by CalEPA to implement the Unified program as a CUPA for the entire county.

Government Publication Date: Apr 7, 2016

Monterey County CUPA Facility List: MONTEREY CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Monterey County. This list is made available by Monterey County Hazardous Materials Management Services which is designated as the CUPA in Monterey County.

Government Publication Date: Feb 25m 2016

Napa County UST List: NAPA UST

A list of all registered active Underground Storage Tanks (USTs) in the County of Napa. This list is made available by Napa County Environmental Health Division.

Government Publication Date: Mar 09, 2016

Nevada County CUPA Facility List: NEVADA CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Nevada County. This list is made available by Nevada County Department of Environmental Health which is the CUPA for all cities and unincorporated areas within Nevada County.

Government Publication Date: Apr 18, 2016

Orange County Aboveground Petroleum Storage Tank Listing: ORANGE AST

A list of Aboveground Petroleum Storage Tank (APST) facilities inspected by Orange County Certified Unified Program Agency (CUPA) Under the Aboveground Petroleum Storage Act (APSA). This list is made available by the Environmental Health Division of Orange County Health Care Agency.

Government Publication Date: Apr 01, 2016

Orange County Underground Storage Tanks Listing: ORANGE UST

A list of registered Underground Storage Tank (UST) sites in Orange County. This list is made available by Orange County Health Care Agency (OCHCA), Environmental Health Division which oversees the underground storage tank inspection program in most of the cities of Orange County, with the exception of Anaheim, Fullerton, and Orange.

Government Publication Date: Apr 01, 2016

Placer County CUPA Facilities List: PLACER CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Placer County. This list is made available by Placer County Environmental Health which is designated CUPA for all areas of the county except for the City of Roseville.

Government Publication Date: Apr 19, 2016

Riverside County Local Oversight Program List: RIVERSIDE LOP

A list of Leaking Underground Storage Tank (LUST) facilities in Riverside County. This list is made available by Riverside County Department of Environmental Health. Environmental Cleanup Program provides oversight of assessments and cleanups at properties that have been, or may have been, contaminated with hazardous substances from LUSTs or releases associated with other commercial/industrial use.

Government Publication Date: Feb 17, 2016

Riverside County Underground Storage Tanks List: RIVERSIDE UST

A list of registered Underground Storage Tank (UST) sites in Riverside County. This list is made available by Riverside County Department of Environmental Health. The Hazardous Materials Management Branch (HMMB) regulates and oversees the inspections of constructions, repairs, upgrades, system operation and removal of UST systems.

Government Publication Date: Feb 17, 2016

Sacramento County Master Hazardous Materials Facility List: SACRAMENTO HAZ

A list of Hazardous Materials Facilities in Sacramento County. This list is made available by Sacramento County Environmental Management Department which has been designated as the Certified Unified Program Agency (CUPA) for the County.

Government Publication Date: Nov 2, 2015

Sacramento Toxic Site Cleanup List: SACRAMENTO TOX

Sacramento County Environmental Management Department (EMD)'s Toxic Site Cleanup List includes sites where unauthorized releases of potentially hazardous materials have occurred. The EMD's Site Assessment & Mitigation Program, also referred to as Toxic Site Cleanup Program, provides mandated regulatory oversight of the assessment and remediation of properties on which there has been a release of hazardous materials to soil and/or groundwater.

Government Publication Date: May 2, 2016

San Bernardino County CUPA List: SANBERN CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in San Bernardino County. This list is made available by San Bernardino County Fire Department which is the CUPA for all areas of the County except the city of Victorville.

Government Publication Date: Apr 13, 2016

San Diego County Hazardous Materials Management Division Database: SANDIEGO HAZ

A list of facilities with Unified Program Facility Permit in San Diego County. This list has been made available by County of San Diego Environmental Health.

Government Publication Date: Apr 20, 2016

San Diego County Site Assessment and Mitigation Investigation Sites: SANDIEGO SAM

List of sites which have undergone a Site Assessment and Mitigation investigation. This list is made available by the County of San Diego Department of Environmental Health.

Government Publication Date: Apr 20, 2016

San Diego County Solid Waste Facility List: SANDIEGO SWF

A list of open and closed Solid Waste Facilities in the County of San Diego. The list is made available by San Diego County Department of Environmental Health.

Government Publication Date: Feb 10, 2016

San Francisco County Aboveground Storage Tanks List: SANFRAN AST

A list of Aboveground Storage Tanks (ASTs) facilities inspected by San Francisco Department of Public Health's (SFDPH) Hazardous Materials and Waste Program. Aboveground storage containers or tanks include oil-filled equipment (such as hydraulic systems/reservoirs and heat transfer systems) which have a petroleum storage capacity of 55 gallons or greater.

Government Publication Date: Mar 12, 2016

San Francisco County CUPA Facilities List: SANFRAN CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in San Francisco County. This list is made available by San Francisco County Hazardous Materials and Waste Program which is the CUPA for all areas of the County.

Government Publication Date: Mar 12, 2016

San Francisco County LOP Sites: SANFRAN LOP

A list of Underground Storage Tank (UST) release sites in the County of San Francisco. This list is made available by San Francisco County Department of Public Health Environmental Health Protection Branch.

Government Publication Date: Oct 6, 2015

San Francisco County UST List: SANFRAN UST

A list of all registered Underground Storage Tanks (USTs) in the County of San Francisco. This ist is made available by San Francisco County Environmental Health Division. The Hazardous Materials and Waste Program provides regulatory oversight for the construction, operation, repair and removal of USTs in San Francisco.

Government Publication Date: Mar 12, 2016

San Joaquin County Aboveground Tank List: SANJOAQUIN AST

A list of Aboveground Storage Tanks (ASTs) inspected by San Joaquin County Environmental Health Department (SJCEHD) under Aboveground Petroleum Storage Act (APSA).

Government Publication Date: Jan 29, 2016

San Joaquin County UST List: SANJOAQUIN UST

A list of all registered Underground Storage Tanks in the County of San Joaquin. The list is made available by San Joaquin County Environmental Health Division.

Government Publication Date: Jan 29, 2016

San Joaquin Hazardous Waste Facilities: SANJOAQUIN HW

A list of Hazardous Waste Facilities in San Joaquin County. This list is made available by San Joaquin County Environmental Health Department which has been designated as the CUPA for the County.

Government Publication Date: Jan 29, 2016

San Mateo County CUPA Facilities List: SANMATEO CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in San Mateo County. This list is made available by San Mateo County Environmental Health Department which has been designated as the CUPA for the County.

Government Publication Date: May 2, 2016

San Mateo County LOP List: SANMATEO LOP

A list of Leaking Underground Storage Tank (LUST) facilities in San Mateo County. This list is made available by San Mateo County Environmental Health Services Division.

Government Publication Date: Jan 27, 2016

Santa Clara County CUPA Facilities List: SANTACLARA CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Santa Clara County. This list is made available by Santa Clara County Department of Environmental health (DEH). DEH's Hazardous Materials Compliance Division (HMCD) is CUPA for the county with jurisdiction within the Cities of Los Altos Hills, Monte Sereno, and Saratoga; and in all unincorporated areas of Santa Clara County, including Moffett Field, San Martin, and Stanford.

Government Publication Date: Mar 3, 2016

Santa Clara Local Oversight Program Listing: SANTACLARA LO

A list of Leaking Underground Storage Tanks (LUST) facilities in Santa Clara County Provided by Santa Clara Department of Environmental Health (DEH). Since July 1, 2004 the DEH has served as the oversight agency for investigations and clean-up of petroleum releases from underground storage tanks through implementation of the Local Oversight Program (LOP) contract with the State Water Resources Control Board.

Government Publication Date: Apr 20, 2016

Santa Cruz County CUPA Facility List: SANTACRUZ CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Santa Cruz County. This list is made available by Santa Cruz County Environmental Health Services (EHS) Division which has been designated as the CUPA for the County.

Government Publication Date: Apr 20, 2016

Shasta County CUPA Facility List: SHASTA CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Shasta County. This list is made available by Shasta County Environmental Health Division which has been designated as the CUPA for Shasta County by CalEPA.

Government Publication Date: Feb 16, 2016

San Luis Obispo County CUPA Facilities List: SANLUISOB CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in San Luis Obispo County. This list is made available by County of San Luis Obispo Environmental Health Services Division which has been designated as the CUPA for the County.

Government Publication Date: Apr 21, 2016

Solano County CUPA List: SOLANO CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in the County of Solano. This list is made available by Solano County Environmental Health Division which has been certified by CalEPA to implement the Unified program as a CUPA.

Government Publication Date: Apr 28, 2016

Solano County Local Oversight Program List: SOLANO LOP

A list of Leaking Underground Storage Tank (LUST) facilities in the Solano County. This list is made available by the Solano County Environmental Health Services. Since April 1993, the State Water Resources Control Board has contracted with the County of Solano to provide regulatory oversight for the cleanup of LUSTs under Local Oversight Program (LOP) contract.

Government Publication Date: Apr 28, 2016

Solano County Underground Storage Tanks List: SOLANO UST

A list of all registered Underground Storage Tanks (USTs) in the County of Solano. The list is made available by Solano County Environmental Health Services Division. There are an estimated 190 facilities throughout the county that are subject to the regulatory requirements of the UST program.

Government Publication Date: Apr 28, 2016

Sonoma County CUPA Facilities List: SONOMA CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Sonoma County. This list is made available by Sonoma County Hazardous Materials (HazMat) Division which has been designated as the CUPA for the County.

Government Publication Date: Jan 11, 2016

Sonoma County LOP Site List: SONOMA LOP

A list of Leaking Underground Storage Tank (LUST) facilities in Sonoma County. This list is made available by Sonoma County Department of Health Services. Sonoma County Local Oversight Program (LOP) oversees the investigation and cleanup of fuel releases from underground storage tanks in all areas of the County with the exception of the Cities of Santa Rosa and Healdsburg.

Government Publication Date: Apr 01, 2016

Sonoma County Petaluma City CUPA Facilities: SONOMA PETAL

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Petaluma City. This list is made available by Petaluma Fire Prevention Bureau which is the CUPA for Petaluma City in Sonoma County.

Government Publication Date: May 21, 2015

Sutter County CUPA List: SUTTER CUPA

A list of facilities associated with Aboveground Petroleum Storage Tank (APSA) regulation, Hazardous Materials Business Plan (HMBP) Program and Underground Storage Tank (UST) regulation of Certified Unified Program Agency (CUPA) programs in Sutter County. This list is made available by Sutter County Enviornmental Health Division which has been designated as the CUPA for the County.

Government Publication Date: Dec 8, 2015

Tuolumne County CUPA Facility List: TUOLUMNE CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Tuolumne County. This list is made available by Tuolumne County Environmental Health which is the CUPA for all areas of the County.

Government Publication Date: May 2, 2016

Ventura County CUPA Facilities List: VENTURA CUPA

A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Ventura County. This list is made available by Ventura County Environmental health Division.

Government Publication Date: Mar 28, 2016

Ventura County City of Oxnard CUPA Facility List: OXNARD CUPA
A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Oxnard City. This list is made available by Oxnard City Fire Department which is the CUPA for Oxnard City in Ventura County.
Government Publication Date: May 04, 2016

Ventura County Inactive Underground Storage Tanks Sites: VENTURA INUST
A list of inactive Underground Storage Tank (UST) sites in Ventura County. This list is made available by Ventura County Environmental Health Division.
Government Publication Date: Apr 20, 2016

Ventura County Leaking Underground Fuel Tanks - Historic: VENTURA HLUFT
A historical list of cleanup oversight of the Leaking Underground Fuel Tank (LUFT) program provided by Ventura County Environmental Health Division. All new and existing underground fuel storage tank releases are now referred to the Los Angeles Regional Water Quality Control Board.
Government Publication Date: May 31, 2008

Yolo County UST List: YOLO UST
A list of registered Underground Storage Tank (UST) sites in Yolo County. This list is made available by Yolo County Environmental Health Department which regulates the construction, operation, repair and removal of USTs throughout Yolo County.
Government Publication Date: Apr 20, 2016

Yuba County CUPA Facilities List: YUBA CUPA
A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in Yuba County. This list is made available by Yuba County Environmental Health Division which is the CUPA for all areas of the County.
Government Publication Date: Jan 29, 2016

City of Bakersfield CUPA List: BKRSFIELD CUPA
A list of facilities associated with various Certified Unified Program Agency (CUPA) programs in the City of Bakersfield. This list is made available by the City of Bakersfield Fire Department.
Government Publication Date: Mar 07, 2016

Gilroy City CUPA Facilities List: SANTACLARA GIL
The Gilroy City Fire Marshal's office maintains a list of CUPA Facilities located in Gilroy City.
Government Publication Date: Jan 19, 2016

Alpine County CUPA List: ALPINE CUPA
The Alpine County Health Department has been certified by Cal / EPA to implement the Unified program and maintains a list of Certified Unified Program Agency (CUPA) facilities.
Government Publication Date: Feb 24, 2015

Glenn County CUPA List: GLENN CUPA
The Glenn County Air Pollution Control District is the Administering Agency and the Certified Unified Program Agency (CUPA) for Glenn County with responsibility for regulating hazardous materials handlers, hazardous waste generators, underground storage tank facilities, above ground storage tanks, and stationary sources handling regulated substances.
Government Publication Date: May 02, 2016

Lassen County CUPA List: LASSEN CUPA
The Environmental Health Program of Lassen County tracks Certified Unified Program Agencies (CUPA) facilities.
Government Publication Date: May 9, 2016

Mariposa County CUPA List: MARIPOSA CUPA
Mariposa County Health Department, Environmental Health Services, is certified by Cal-EPA as the Certified Unified Program Agency (CUPA) that administers specific hazardous materials/hazardous waste programs.
Government Publication Date: Apr 8, 2016

Siskiyou County CUPA List: SISKIYOU CUPA

The Hazardous Materials Management Group of Siskiyou County's Environmental Health Division Certified Unified Program Agency (CUPA) regulates underground tanks, hazardous materials (including but not limited to: hazardous substances, hazardous waste, and any material which a handler or the CUPA has reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

Government Publication Date: Oct 14,2015

Stanislaus County CUPA List: STANISLAUS CUPA

The Environmental Resources Department of Stanislaus County maintains a list of Certified Unified Program Agency (CUPA) facilities.

Government Publication Date: Jan 25, 2016

Trinity County CUPA List: TRINITY CUPA

On January 1, 2005, the Department of Toxic Substances Control (DTSC) was authorized by the California Environmental Protection Agency (Cal/EPA) as the Trinity County Certified Unified Program Agency (CUPA). This CUPA list was made available by the DTSC.

Government Publication Date: Apr 15, 2016

Tulare County CUPA List: TULARE CUPA

The Certified Unified Program Agency (CUPA) unifies and consolidates under one roof the various requirements for businesses handling hazardous materials, generating or treating hazardous wastes, or operating aboveground or underground storage tanks. CUPA thereby enhances consistency, reduces duplication, and simplifies compliance for the regulated public. The Tulare County Environmental Health Division was certified as a CUPA in December, 1996.

Government Publication Date: Dec 3, 2015

Additional Environmental Record Sources

Federal

Facility Registry Service/Facility Index: FINDS/FRS

The US Environmental Protection Agency (EPA)'s Facility Registry System (FRS) is a centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. FRS creates high-quality, accurate, and authoritative facility identification records through rigorous verification and management procedures that incorporate information from program national systems, state master facility records, data collected from EPA's Central Data Exchange registrations and data management personnel.

Government Publication Date: Sep 24, 2015

Toxics Release Inventory (TRI) Program: TRIS

The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U.S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment.

Government Publication Date: Dec 31, 2014

Hazardous Materials Information Reporting System: HMIRS

US DOT - Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) Incidents Reports Database taken from Hazmat Intelligence Portal, U.S. Department of Transportation.

Government Publication Date: Dec 8, 2015

National Clandestine Drug Labs: NCDL

The U.S. Department of Justice ("the Department") provides this data as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy.

Government Publication Date: Sep 5, 2015

Inventory of Open Dumps, June 1985: ODI

The Resource Conservation and Recovery Act (RCRA of the Act) provides for publication of an inventory of open dumps. The Act defines "open dumps" as facilities which do not comply with EPA's "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR 257).

Government Publication Date: Jun 1985

EPA Report on the Status of Open Dumps on Indian Lands: IODI

Public Law 103-399, The Indian Lands Open Dump Cleanup Act of 1994, enacted October 22, 1994, identified ongressional concerns that solid waste open dump sites located on American Indian or Alaska Native (AI/AN) lands threaten the health and safety of residents of those lands and contiguous areas. The purpose of the Act is to identify the location of open dumps on Indian lands, assess the relative health and environment hazards posed by those sites, and provide financial and technical assistance to Indian tribal governments to close such dumps in compliance with Federal standards and regulations or standards promulgated by Indian Tribal governments or Alaska Native entities.

Government Publication Date: Dec 31, 1998

Toxic Substances Control Act: TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The CDR enables EPA to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures (referred to hereafter as chemical substances) on the TSCA Chemical Substance Inventory (TSCA Inventory). This includes current information on chemical substance production volumes, manufacturing sites, and how the chemical substances are used. This information helps the Agency determine whether people or the environment are potentially exposed to reported chemical substances. EPA publishes submitted CDR data that is not Confidential Business Information (CBI).

Government Publication Date: Jun 30, 2014

Hist TSCA: HIST TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The 2006 IUR data summary report includes information about chemicals manufactured or imported in quantities of 25,000 pounds or more at a single site during calendar year 2005. In addition to the basic manufacturing information collected in previous reporting cycles, the 2006 cycle is the first time EPA collected information to characterize exposure during manufacturing, processing and use of organic chemicals. The 2006 cycle also is the first time manufacturers of inorganic chemicals were required to report basic manufacturing information.

Government Publication Date: 2006

FTTS Administrative Case Listing: FTTS ADMIN

An administrative case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

FTTS Inspection Case Listing: FTTS INSP

An inspection case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

Potentially Responsible Parties List: PRP

Early in the cleanup process, the Environmental Protection Agency (EPA) conducts a search to find the potentially responsible parties (PRPs). EPA looks for evidence to determine liability by matching wastes found at the site with parties that may have contributed wastes to the site.

Government Publication Date: Nov 12, 2013

State Coalition for Remediation of Drycleaners Listing: SCRD DRYCLEANER

The State Coalition for Remediation of Drycleaners (SCRD) was established in 1998, with support from the U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation. It is comprised of states with established drycleaner remediation programs. Coalition members are states with mandated programs and funding for drycleaner site remediation. Coalition members are states with mandated programs and funding for drycleaner site remediation. Current members are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Government Publication Date: Jan 1, 2016

Integrated Compliance Information System (ICIS): ICIS

The Integrated Compliance Information System (ICIS) is a system that provides information for the Federal Enforcement and Compliance (FE&C) and the National Pollutant Discharge Elimination System (NPDES) programs. The FE&C component supports the Environmental Protection Agency's (EPA) Civil Enforcement and Compliance program activities. These activities include Compliance Assistance, Compliance Monitoring and Enforcement. The NPDES program supports tracking of NPDES permits, limits, discharge monitoring data and other program reports.

Government Publication Date: Dec 17, 2015

Drycleaner Facilities: FED DRYCLEANERS

A list of drycleaner facilities from the Integrated Compliance Information System (ICIS). The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

Government Publication Date: Feb 11, 2016

State

Drycleaner Facilities: DRYCLEANERS

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial, linen supply, commericial laundry, dry cleaning and pressing machines - Coin Operated Laundry and Dry Cleaning. This is provided by the Department of Toxic Substance Control.

Government Publication Date: Feb 22, 2016

EnviroStor Inspection, Compliance, and Enforcement: INSP COMP ENF

A list of permitted facilities with inspections and enforcements tracked in the Department of Toxic Substance Control (DTSC) EnviroStor.

Government Publication Date: Mar 14, 2016

Clandestine Drug Lab Sites: CDL

The Department of Toxic Substances Control (DTSC) maintains a listing of drug lab sites. DTSC is responsible for removal and disposal of hazardous substances discovered by law enforcement officials while investigating illegal/clandestine drug laboratories.

Government Publication Date: Dec 31, 2015

School Property Evaluation Program Sites: SCH

A list of sites registered with The Department of Toxic Substances Control (DTSC) School Property Evaluation and Cleanup (SPEC) Division. SPEC is responsible for assessing, investigating and cleaning up proposed school sites. The Division ensures that selected properties are free of contamination or, if the properties were previously contaminated, that they have been cleaned up to a level that protects the students and staff who will occupy the new school.

Government Publication Date: Dec 7, 2015

California Hazardous Material Incident Report System (CHMIRS): CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS). This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Mar 08, 2016

Sites Listed in the Solid Waste Assessment Test (SWAT) Program Report: SWAT

In a 1993 Memorandum of Understanding, the State Water Resources Control Board (SWRCB) agreed to submit a comprehensive report on the Solid Waste Assessment Test (SWAT) Program to the California Integrated Waste Management Board (CIWMB). This report summarizes the work completed to date on the SWAT Program, and addresses both the impacts that leakage from solid waste disposal sites (SWDS) may have upon waters of the State and the actions taken to address such leakage.

Government Publication Date: Dec 31, 1995

Hazardous Waste Manifest Data: HAZNET

A list of hazardous waste manifests received each year by Department of Toxic Substances Control (DTSC). The volume of manifests is typically 900,000 - 1,000,000 annually, representing approximately 450,000 - 500,000 shipments.

Government Publication Date: Oct 2,2015

Cease and Desist Orders and Cleanup and Abatement Orders: CDO/CAO

The California Environment Protection Agency "Cortese List" of active Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO). This list contains many CDOs and CAOs that do NOT concern the discharge of wastes that are hazardous materials. Many of the listed orders concern, as examples, discharges of domestic sewage, food processing wastes, or sediment that do not contain hazardous materials, but the Water Boards' database does not distinguish between these types of orders.

Government Publication Date: Feb 28, 2012

Historical California Hazardous Material Incident Report System (CHMIRS): HIST CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS) prior to 1993. This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Jan 1, 1993

Historical Hazardous Waste Manifest Data: HIST MANIFEST

A list of historic hazardous waste manifests received by the Department of Toxic Substances Control (DTSC) from year the 1980 to 1992. The volume of manifests is typically 900,000 - 1,000,000 annually, representing approximately 450,000 - 500,000 shipments.

Government Publication Date: Dec 31, 1992

Tribal

No Tribal additional environmental record sources available for this State.

County

Los Angeles County Site Mitigation List: LA SML

A Site Mitigation List in the County of Los Angeles. The list is made available by Los Angeles County Fire Department. Site mitigation is handled by the Site Mitigation Unit (SMU) which facilitates completion of site clean-up projects of contaminated sites in an expeditious manner in all cities of the Los Angeles County except El Segundo, Glendale, Long Beach, Santa Fe Springs, and Vernon.

Government Publication Date: Jun 23, 2015

Riverside County Disclosure Facility List: RIVERSIDE HZH

A list of facilities disclosed to Riverside County Department of Environmental Health (DEH). This list is made available by Riverside County DEH which has been designated as the CUPA for the County. A business is required to establish and submit a Business Plan if the facility handles hazardous material equal to or greater than 55 gallons, 500 pounds or 200 cubic feet at any time during the year.

Government Publication Date: Feb 17, 2016

Riverside County Hazardous Waste Generator Sites List: RIVERSIDE HWG

A list of Hazardous Waste Generator Sites in the County of Riverside. This list is made available by Riverside County Department of Environmental Health which has been designated as the CUPA for the County.

Government Publication Date: Feb 17, 2016

San Joaquin County Hazardous Materials Facilities List: SANJOAQUIN HM

A list of Hazardous Materials Facilities in San Joaquin County. This list is made available by San Joaquin County Environmental Health Department which has been designated as the CUPA for the County.

Government Publication Date: Jan 29, 2016

Ventura County Hazardous Material Release (Prop 65) Sites: VENTURA HAZR

A historic list of hazardous material releases from the Hazardous Material Release Report collected by the Environmental Health Division of Ventura County. As per the department this report contains records from 1987 to 2014.

Government Publication Date: 1987 - 2014

Ventura County Inactive Hazardous Waste Sites: HW INACTIVE

A list of Inactive Hazardous Waste Sites in Ventura County collected by Ventura County's Environmental Health Division.

Government Publication Date: Jun 26, 2015

Delisted County Records: DELISTED COUNTY

Records removed from county or CUPA databases. Records may be removed from the county lists made available by the respective county departments because they are inactive, or because they have been deemed to be below reportable thresholds.

Government Publication Date: May 9, 2016

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries". All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and were included as reference.

APPENDIX I:
KEY PERSONNEL RESUMES

Kelly Hoover

SENIOR ENVIRONMENTAL CONSULTANT

Education

Bachelor of Science, Biology, University of Glasgow, Scotland, United Kingdom, 2002

Project Experience

Industrial Development; **Deland**, **FL** – Ms. Hoover performed a Phase I Environmental Site Assessment of this 47.70 acre industrial facility that was constructed in phases between 1971 and 2002. Previous occupants had included an aluminum fence manufacturing company, and a defense related manufacturing facility, which developed ultra-lightweight camouflage nets, chemical and biological warfare alarms and detectors, carbon fiber resin reinforced aircraft components, and equipment/ordnance components.

Former Airport Property; **Opa Locka**, **FL** – Ms. Hoover performed a Phase I Environmental Site Assessment of this 176 acre airport property that had been developed to include an automobile dealership, a 150,000 square foot multiple tenant industrial building, a 500,000 square foot mail sorting and distribution center, and a gasoline station.

Marina Property; **Fort Myers**, **FL** – Ms. Hoover performed a Phase I Environmental Site Assessment of this 30 acre property that had been developed as a full-service marina since the early 1950s. Based upon findings of the assessment, a Phase II Subsurface Investigation was conducted, which revealed contaminants of concern above reportable levels. The report was critical in assisting the client make the appropriate business decision regarding the site.

INDUSTRY TENURE

Environmental: 2002
EMG: 2014

RELATED EXPERIENCE

- Phase I Environmental Site Assessment
- Transaction Screen Reports
- Asbestos Surveys
- Asbestos Management Plans
- Asbestos Project Design
- Indoor Air Quality (IAQ) Assessment
- Mold Assessment
- LEED IAQ Testing
- Industrial Hygiene Surveys
- Financial Portfolios
- Retail Portfolios

INDUSTRY EXPERIENCE

- Government
- Office
- Industrial
- Housing/Multi-family
- Higher Education
- Hospitality
- Petroleum
- Financial
- Healthcare
- Retail/Wholesale

ACTIVE LICENSES/REGISTRATIONS

- Florida Mold Assessor
- Florida Asbestos Inspector
- Florida Asbestos Contractor Supervisor
- Florida Asbestos Management Planner
- Florida Asbestos Project Designer

REGIONAL LOCATION

Tampa, FL

Project Experience Cont.

Marina Property; **Key West**, **FL** – Ms. Hoover performed a Phase I Environmental Site Assessment of a former marina in Key West, Florida as part of the refinance of the property. During review of regulatory files, Ms. Hoover identified that the Project was listed as a Leaking Underground Storage Tank (LUST) site; however, through file review determined that the LUST case had been attributed to the wrong property in error. Ms. Hoover was able to resolve the discrepancy with the regulators, which led to the release being rescinded and the case was closed prior to foreclosure.

Kate Downey

PROJECT MANAGER

Education

Bachelor of Science, Biological Sciences, California Polytechnic State University, San Luis Obispo, 2010

Project Experience

Auto Repair Center; **Los Angeles**, **California** – Ms. Downey conducted a Phase I Environmental Site Assessment for a large auto repair center. She reviewed previous investigations and on-site waste disposal records to create a thorough report with specific recommendations for the client. Her work helped EMG complete this project on schedule and within budget.

Retail Shopping Complex, Fresno, California; **Fresno**, **California** – Ms. Downey served as Project Manager for the Phase I ESA for a13-acre multi-tenant retail shopping center and identified two recognized environmental conditions in connection with the Project, through her review of monitoring reports and interviews with case managers. The client found her observations critical to their final business decision.

Fitness Center Portfolio; **Multiple Cities**, **Missouri** – Ms. Downey completed 17 consecutive on-site investigations for a multi-state fitness center portfolio, collecting data and contributing to the findings of the reports. Her on-site investigations helped EMG's staff write the ESA reports quickly and precisely.

Property Condition Assessment for Professional Office Tower; **Los Angeles**, **California** – Ms. Downey performed a PCA for a professional office tower with a complex HVAC central system, and multiple costs for a 12 year reserve term. Her detailed findings included ADA costs, HVAC and mechanical replacement costs and life/safety deficiencies. These findings were instrumental in the client's budgeting decisions.

INDUSTRY TENURE

Environmental: 2013
EMG: 2013

RELATED EXPERIENCE

- A/E Project Manager since 2014

INDUSTRY EXPERIENCE

- Hospitality
- Multifamily
- Automotive repair
- Industrial warehouses
- Assisted living
- Dry cleaners
- Vacant land
- Office
- Retail

ACTIVE LICENSES/REGISTRATIONS

- AHERA – Certified Building Inspector

REGIONAL LOCATION

Los Angeles, CA

Appendix

This page intentionally left blank.

Appendix G Noise and Vibration Background and Modeling Data

Noise Background and Modeling Data

NOISE

Noise is most often defined as unwanted sound; whether it is loud, unpleasant, unexpected, or otherwise undesirable. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

Noise Descriptors

The following are brief definitions of terminology used in this chapter:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.

- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

- **Decibel (dB).** A unitless measure of sound, expressed on a logarithmic scale and with respect to a defined reference sound pressure. The standard reference pressure is 20 micropascals (20 μPa).

- **Vibration Decibel (VdB).** A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is 1 micro-inch per second (1×10^{-6} in/sec).

- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

- **Equivalent Continuous Noise Level (L_{eq}); also called the Energy-Equivalent Noise Level.** The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the L_{eq} metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.

- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."

- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.

- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added from 7:00 PM to 10:00 PM and 10 dB from 10:00 PM to 7:00 AM. NOTE: For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB (with the CNEL being only slightly more restrictive – that is, higher than the L_{dn} value). As a matter of practice, L_{dn} and CNEL values are interchangeable and are treated as equivalent in this assessment.

- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.

Characteristics of Sound

When an object vibrates, it radiates part of its energy in the form of a pressure wave. Sound is that pressure wave transmitted through the air. Technically, airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure that creates sound waves.

Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). Loudness or amplitude is measured in dB, frequency or pitch is measured in Hertz [Hz] or cycles per second, and duration or time variations is measured in seconds or minutes.

Amplitude

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 1 presents the subjective effect of changes in sound pressure levels. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud). Changes of 1 to 3 dB are detectable under quiet, controlled conditions, and changes of less than 1 dB are usually not discernible (even under ideal conditions). A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernible to most people in an exterior environment, and a 10 dB change is perceived as a doubling (or halving) of the sound.

Table 1 Noise Perceptibility

Change in dB	Noise Level
± 3 dB	Threshold of human perceptibility
± 5 dB	Clearly noticeable change in noise level
± 10 dB	Half or twice as loud
± 20 dB	Much quieter or louder

Source: Bies, David A. and Colin H. Hansen. 2009. *Engineering Noise Control: Theory and Practice*. 4th ed. New York: Spon Press.

Frequency

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all, but are "felt" more as a vibration. Similarly, though people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz.

When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to approximate the response of the human ear. The A-weighted noise level has been found to correlate well with people's judgments of the "noisiness" of different sounds and has been used for many years as a measure of community and industrial noise. Although the A-weighted scale and the energy-equivalent metric are commonly used to quantify the range of human response to individual events or general community sound levels, the degree of annoyance or other response also depends on several other perceptibility factors, including:

- Ambient (background) sound level
- General nature of the existing conditions (e.g., quiet rural or busy urban)
- Difference between the magnitude of the sound event level and the ambient condition
- Duration of the sound event
- Number of event occurrences and their repetitiveness
- Time of day that the event occurs

Duration

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time; half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2, L_8 and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour, respectively. These "n" values are typically used to demonstrate compliance for stationary noise sources with many cities' noise ordinances. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period, respectively.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law and many local jurisdictions use an adjusted 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (L_{dn}). The CNEL descriptor requires that an artificial increment (or "penalty") of 5 dBA be added to the actual noise level for the hours from 7:00 PM to 10:00 PM and 10 dBA for the hours from 10:00 PM to 7:00 AM. The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 PM and 10:00 PM. Both descriptors give roughly the same 24-hour level, with the CNEL being only slightly more restrictive (i.e., higher). The CNEL or L_{dn} metrics are commonly applied to the assessment of roadway and airport-related noise sources.

Sound Propagation

Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single-point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source (conservatively neglecting ground attenuation effects, air absorption factors, and barrier shielding). For example, if a backhoe at 50 feet generates 84 dBA, at 100 feet the noise level would be 79 dBA, and at 200 feet it would be 73 dBA. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance over a reflective ("hard site") surface such as concrete or asphalt. Line source noise in a relatively flat environment with ground-level absorptive vegetation decreases by an additional 1.5 dB for each doubling of distance.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA results in permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. For community environments, the ambient or background noise problem is widespread, through generally worse in urban areas than in outlying, less-developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level number means. To help relate noise level values to common experience, Table 2 shows typical noise levels from familiar sources.

Table 2 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation (Caltrans). 2009, November. Technical Noise Supplement ("TeNS"). Prepared by ICF International.

Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. As with noise, vibration can be described by both its amplitude and frequency. Vibration displacement is the distance that a point on a surface moves away from its original static position; velocity is the instantaneous speed that a point on a surface moves; and acceleration is the rate of change of the speed. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is the maximum instantaneous peak of the vibration signal and RMS is the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage and RMS is typically more suitable for evaluating human response.

The units for PPV and RMS velocity are normally inches per second (in/sec). However, vibration is often presented and discussed in dB units in order to compress the range of numbers. In this analysis, PPV and RMS velocities are in in/sec, and vibration levels are in dB relative to 1 micro-inch per second (abbreviated as VdB). Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration, therefore, man-made vibration problems are usually confined to relatively short distances from the source (500 to 600 feet or less).

As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. Table 3 displays the human response and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

Table 3 Human Reaction to Typical Vibration Levels

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e. not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: California Department of Transportation (Caltrans). 2004, June. Transportation- and Construction-Induced Vibration Guidance Manual. Prepared by ICF International.

Construction operations can generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures, but can achieve the audible and perceptible ranges in buildings close to the construction site. Table 4 lists vibration levels for typical construction equipment (not all of which is expected to be used at the proposed project site).

Table 4 Vibration Levels for Typical Construction Equipment

Equipment	Approximate Velocity Level at 25 Feet (VdB)	Approximate RMS[1] Velocity at 25 Feet (in/sec)
Pile Driver (impact) Upper Range	112	1.518
Pile Driver (impact) Lower Range	104	0.644
Pile Driver (sonic) Upper Range	105	0.734

Table 4 Vibration Levels for Typical Construction Equipment

Equipment		Approximate Velocity Level at 25 Feet (VdB)	Approximate RMS[1] Velocity at 25 Feet (in/sec)
Pile Driver (sonic) Lower Range		93	0.170
Large Bulldozer		87	0.089
Caisson Drilling		87	0.089
Jackhammer		79	0.035
Small Bulldozer		58	0.003
Loaded Trucks		86	0.076
Criteria	*FTA – Human Annoyance (Residential Daytime)* *FTA – Human Annoyance (Residential Nighttime)* *FTA – Human Annoyance (Office)*	*78* *72* *84*	—
	FTA – Structural Damage (Residential)	—	*0.20*
	FTA – Structural Damage (Office)	—	*0.30*

Source: FTA 2006
[1] RMS velocity calculated from vibration level (VdB) using the reference of 1 microinch/second.

As shown in Table 4, vibration generated by certain, vibration-intensive construction equipment has the potential to be substantial (should those particular items be employed at any given construction site), since these items have the potential to exceed the FTA criteria for structural damage of 0.20 in/sec.

Construction Equipment Noise Levels

Construction Equipment
Each stage of construction involves the use of different kinds of construction equipment and therefore has its own distinct noise characteristics. Noise levels from construction activities are dominated by the loudest piece of equipment and generally occur during the site preparation and grading phase, when bulldozers, backhoes, and graders are used. Table 5 shows the average noise levels from individual pieces of construction equipment. Table 6 shows the maximum operational noise levels of heavy construction equipment.

Table 5 Average Construction Equipment Noise Levels

Type of Equipment	Average Measured Sound Levels (dBA at 50 feet)
Pile Driver, Impact	101
Pile Driver, Sonic	96
Ballast Tamper	83
Compactor	82
Concrete Mixer	85
Crane, Mobile	83
Crane, Derrick	88
Loader, Large	85
Loader, Front-End	79
Paver	89
Scraper	89
Jack Hammers	88
Pneumatic Tools	85
Pumps	76
Dozer, Small	80

Table 5 Average Construction Equipment Noise Levels

Type of Equipment	Average Measured Sound Levels (dBA at 50 feet)
Dozer, Large	86
Hydraulic Backhoe	85
Hydraulic Excavators	82
Graders	85
Air Compressors	81
Trucks	91

Source: Bolt, Beranek and Newman, 1971; FTA, 2006.[1]

Table 6 Maximum Heavy Construction Equipment Noise Levels

Type of Equipment	Range of Maximum Sound Levels Measured (dBA at 50 ft.)	Suggested Maximum Sound Levels for Analysis (dBA at 50 ft.)
Jack Hammers	75–88	82
Pneumatic Tools	78–88	85
Pumps	74–84	80
Dozers	77–90	85
Pile Driver, Impact	95–110	105
Pile Driver, Sonic	90-105	100
Scrapers	83–91	87
Haul Trucks	83–94	88
Cranes	79–86	82
Portable Generators	71–87	80
Rollers	75–82	80
Tractors	77–82	80
Front-End Loaders	77–90	86
Hydraulic Backhoe	81–90	86
Hydraulic Excavators	81–90	86
Graders	79–89	86
Air Compressors	76–89	86
Trucks	81–87	86

Source: Bolt, Beranek & Newman; Noise Control for Buildings and Manufacturing Plants, 1987.

Construction equipment typically moves around on the project site and under variable power levels. Noise from construction equipment decreases by 6 to 7.5 dB with each doubling of distance between the source and receptor.[2] For example, the noise levels from a bulldozer that generates 85 dBA at 50 feet would measure 79 dBA at 100 feet, 73 dBA at 200 feet, 67 dBA at 400 feet, and 61 dBA at 800 feet (conservatively using a 6 dB

[1] Bolt, Beranek & Newman (BBN); Noise Control for Buildings and Manufacturing Plants, 1987; Federal Transit Administration (FTA). 2006, May. Transit Noise and Vibration Impact Assessment. U.S. Department of Transportation (DoT). FTA-VA-90-1003-06.

[2] As sound energy travels outward from the source, spreading loss accounts for a 6 dB decrease in noise level. Soft ground and atmospheric absorption effects can add another decrement of 1.5 dB (for a total of 7.5 dB per distance doubling).

per doubling of distance attenuation factor). Also, noise levels are typically reduced from this value due to usage factors[3] as well as the barrier effects provided by the physical structures once erected.

Existing Setting

The proposed buildout of the Temecula Valley Charter School is to be located in the census-designated-place (CDP) of French Valley; in unincorporated Riverside County. The proposed project site is located on the west side of Winchester Road (State Road 79) between Keller Road and Pourroy Road. The site encompasses approximately 15 acres and is mostly undeveloped except for residential uses in the westerly part of the project site. This residential area consists of two single-family residences, one garage, and two above-ground water tanks. The garage in the south-central part of the site, the mobile home, and the garage are to be demolished at commencement of the project, while the vacant single-family residence in the northwestern part of the site would be left as is.

The major existing noise source on the proposed project site is traffic noise from vehicles along Winchester Road (State Road 79). Other noise sources include aircraft noise from nearby airports/heliports and operational noise from residences in the vicinity of the project; including people talking and general property maintenance.

The project site is surrounded by rural residences to the west and north, vacant land to the south, and a mix of vacant and agricultural land to the east (beyond Winchester Road). The nearest residence to the project site (not including the vacant single family residence in the northwestern part of the site) is a single-family home just north of the western part of the site. There are also multiple single-family residences between 200 and 500 feet north of the proposed project site, and approximately 350 feet west of the proposed project site. This residential land surrounding the project site is considered rural residential, as there are less than 20 residences within a 1,000-foot radius around the project site.

REGULATORY FRAMEWORK

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise.

Federal Regulations

Federal Highway Administration

The FHWA values are the maximum desirable values by land use type and area based on a "trade-off" of what is desirable and what is reasonably feasible. These values recognize that in many cases lower noise exposures would result in greater community benefits. The FHWA design noise levels are included in Table 4.

[3] Usage factor is the percentage of time during the workday that the equipment is operating at full power (on which the reference noise ratings for typical average and typical maximum noise emissions are based).

Table 4 FHWA Design Noise Levels

Activity Category	Design Noise Levels [1] L_{eq} (dBA)	L_{10} (dBA)	Description of Activity Category
A	57 (exterior)	60 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	70 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (exterior)	75 (exterior)	Developed lands, properties, or activities not included in Categories A or B, above
D	–	–	Undeveloped lands.
E	52 (interior)	55 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: FHWA

[1] Either L_{eq} or L_{10} (but not both) design noise levels may be used on a project.

U.S. Environmental Protection Agency

In addition to FHWA standards, the United States Environmental Protection Agency (EPA) has identified the relationship between noise levels and human response. The EPA has determined that over a 24-hour period, a L_{eq} of 70 dBA will result in some hearing loss. Interference with activity and annoyance will not occur if exterior levels are maintained at an L_{eq} of 55 dBA and interior levels at or below 45 dBA. While these levels are relevant for planning and design and useful for informational purposes, they are not land use planning criteria because they do not consider economic cost, technical feasibility, or the needs of the community.

The EPA also set 55 dBA L_{dn} as the basic goal for exterior residential noise intrusion. However, other federal agencies, in consideration of their own program requirements and goals, as well as difficulty of actually achieving a goal of 55 dBA L_{dn}, have settled on the 65 dBA L_{dn} level as their standard. At 65 dBA L_{dn}, activity interference is kept to a minimum, and annoyance levels are still low. It is also a level that can realistically be achieved.

Occupational Health and Safety Administration

The federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) under the EPA. Such limitations would apply to the operation of construction equipment and could also apply to any proposed industrial land uses. Noise exposure of this type is dependent on work conditions and is addressed through a facility's Health and Safety Plan, as required under OSHA, and is therefore not addressed further in this analysis.

California State Regulations

The State regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise insulation standards and provides guidance for local land use compatibility.

The California Building Code (CBC), Title 24, Part 2, Volume 1, Chapter 12, *Interior Environment*, Section 1207.11.2, *Allowable Interior Noise Levels*, requires that interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The noise metric is evaluated as either the day-night average sound level (Ldn) or the community noise equivalent level (CNEL), consistent with the noise element of the local general plan.

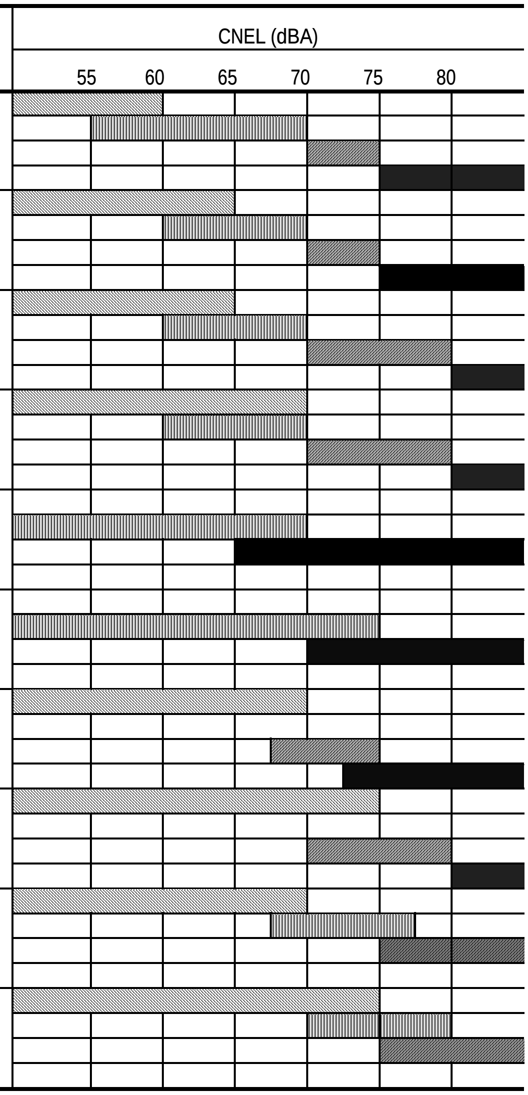
The California Green Building Standards Code (CALGreen), Chapter 5, Division, 5.5 has additional requirements for insulation that affect exterior-interior noise transmission for non-residential structures: Pursuant to section 5.507.4.1, *Exterior Noise Transmission, Prescriptive Method*, Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite sound transmission class (STC) rating of at least 50 L_{dn} or CNEL or a composite outdoor-indoor transmission class (OITC) rating of no less than 40 L_{dn} or CNEL with exterior windows of a minimum STC of 40 or OITC of 30 within a 65 dBA CNEL noise contour of an airport or within a 65 dBA CNEL or L_{dn} noise contour of a freeway, expressway, railroad, industrial source, or fixed-guideway source as determined by the noise element of the general plan. Where noise contours are not readily available, buildings exposed to a noise level of 65 dBA L_{eq} 1-hour during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 L_{dn} or CNEL (or OITC 35), with exterior windows of a minimum of STC 40 (or OITC 30).

Residential structures located within the noise contours identified above require an acoustical analysis showing that the structure has been designed to limit intruding noise in the prescribed allowable levels. To comply with these regulations, applicants for new the residential projects are required to submit an acoustical analysis report. The report is required to show topographical relationship of noise sources and dwelling site, identification of noise sources and their characteristics, predicted noise spectra at the exterior of the proposed dwelling structure considering present and future land usage, basis for the prediction (measured or obtained from published data), noise attenuation measures to be applied, and an analysis of the noise insulation effectiveness of the proposed construction showing that the prescribed interior noise level requirements are met. If interior allowable noise levels are met by requiring that windows be unopenable or closed, the design for the structure must also specify the means that will be employed to provide ventilation and cooling, if necessary, to provide a habitable interior environment.

Table 5, presents a land use compatibility chart for community noise prepared by the California Office of Noise Control. This table provides urban planners with a tool to gauge the compatibility of land uses relative to existing and future noise levels. Table 5 identifies ‘normally acceptable’, ‘conditionally acceptable’, ‘normally unacceptable’, and ‘clearly unacceptable’ noise levels for various land uses. The ‘conditionally acceptable’ and ‘normally unacceptable’ designations indicate that new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use is made and needed noise insulation features are incorporated into the design. By comparison, a ‘normally acceptable’ designation indicates that standard construction can occur with no special noise reduction requirements.

Table 5 Community Noise and Land Use Compatibility

Land Uses	CNEL (dBA) 55 60 65 70 75 80
Residential-Low Density Single Family, Duplex, Mobile Homes	
Residential- Multiple Family	
Transient Lodging: Hotels and Motels	
Schools, Libraries, Churches, Hospitals, Nursing Homes	
Auditoriums, Concert Halls, Amphitheaters	
Sports Arena, Outdoor Spectator Sports	
Playground, Neighborhood Parks	
Golf Courses, Riding Stables, Water Recreation, Cemeteries	
Office Buildings, Businesses, Commercial and Professional	
Industrial, Manufacturing, Utilities, Agricultural	



Explanatory Notes

Normally Acceptable:
With no special noise reduction requirements assuming standard construction.

Normally Unacceptable:
New construction is discouraged. If new construction does not proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Conditionally Acceptable:
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design.

Clearly Unacceptable:
New construction or development should generally not be undertaken.

Source: California Office of Noise Control. *Guidelines for the Preparation and Content of Noise Elements of the General Plan.* February 1976. Adapted from the US EPA Office of Noise Abatement Control, Washington D.C. Community Noise. Prepared by Wyle Laboratories. December 1971.

County of Riverside Municipal Code

Chapter 9.52 - NOISE REGULATION

Sections: **9.52.010 - Intent.**

At certain levels, sound becomes noise and may jeopardize the health, safety or general welfare of Riverside County residents and degrade their quality of life. Pursuant to its police power, the board of supervisors declares that noise shall be regulated in the manner described in this chapter. This chapter is intended to establish county-wide standards regulating noise. This chapter is not intended to establish thresholds of significance for the purpose of any analysis required by the California Environmental Quality Act and no such thresholds are established.

(Ord. 847 § 1, 2006)

15.04.020 - General regulations

F.

Construction noise.

1.

Whenever a construction site is within one-quarter of a mile of an occupied residence or residences, no construcition activities shall be undertaken between the hours of six p.m. and six a.m. during the months of June through September and between the hours of six p.m. and six a.m. during the months of October through May. Exceptions to these standards shall be allowed only with the written consent of the building official.

2.

The generation of construction noise other than as permitted in subsection (F)(1) of this section, shall be a violation of this title, and the building official or his or her designee shall have the authority to undertake enforcement actions in accordance with the procedures, remedies and penalties for violations as provided for in Riverside County Ordinance No. 725 (Chapter 1.16 of this code), which is incorporated into this chapter by reference.

County of Riverside Noise Element

(appended below)

Methodology

The analysis of noise impacts considers project construction and operations noise as defined by the County of Riverside (for noise compatibility, construction noise impacts, and stationary noise impacts) and the Federal Transit Administration (FTA) methodology (for construction vibration impacts). The proposed project would have a significant adverse noise impact if the project results in any of the following:

Traffic Noise Levels

The traffic noise thresholds are based on human tolerance to noise and are widely used for assessing traffic noise impacts. The threshold for increase in traffic noise levels is based on the potential for traffic noise to become considerably louder than the ambient noise level. In general, noise levels must increase by 10 dB in order to double ambient noise levels. An increase of 5 dB is readily perceptible to the public, and a 3 dB increase is barely perceivable to the average healthy human ear (Caltrans 2009). An audible noise level increase in project-related traffic noise of 3 dB or more is to be considered substantial and will be treated as a significant impact. Traffic noise analysis was conducted by [traffic org] on the major roadways in the vicinity of the project area. Based on the FHWA-RD77-108 roadway noise calculation method[4], noise levels along nearby roadways were analyzed with respect to both existing traffic conditions and to traffic conditions estimated at full build-out of the project. These values were compared, and a noise level increase of 3 dB or more would signify a potential impact.

Stationary-Source Noise

The stationary noise thresholds are based on a combination of the human tolerance to noise and local criteria for stationary noise sources as established by the County of Riverside for noise control. Nuisance noise criteria is found in the County' Noise Element which established an exterior threshold of 65 dBA L_{eq} for noise that occurs in daytime (7:00 AM to 10:00 PM) and 45 dBA L_{eq} for noise that occurs in the nighttime (10:00 PM to 7:00 AM). Any project related operations that are expected to exceed the criteria included in the Riverside County Noise Element and Municipal Code will be treated as a noise impact.

Construction

The potential for construction noise impacts to be objectionable depends on the magnitude of noise generated by the construction equipment, the frequency of noise sources during the construction day, and total duration of construction activities. The County Code regulates the timing of construction activities. The county of Riverside restricts construction activities to the daytime hours of 6:00 AM to 6:00 PM (Section 15.04.020 of the County Code). In order to calculate construction noise as it affects sensitive receptors, the FWHA Roadway Construction Noise Model calculation methodology was used. Using information provided by the County of Riverside, coupled with methodologies and inputs employed in the air quality assessment, the expected construction equipment mix was estimated and categorized by construction activity. FWHA RCNM includes reference noise levels for numerous equipment items, which were combined based on the equipment mix to establish a baseline noise levels per construction phase. Distances from construction activities were measured using aerial maps, and these distances were used to account for spreading loss between the source (construction activities) and receiver (sensitive receptor). Since this calculation does not account for shielding due to intervening buildings and structures, ground effects, or air absorption, the results of these calculations are conservative.

Vibration

Based on the FTA vibration criteria, vibration annoyance impacts are considered significant when average vibration levels produced by construction equipment would produce excessive levels of vibration (78 VdB) during the daytime at offsite vibration-sensitive structures. In addition, the vibration level at which there is a risk of architectural damage is based on the FTA criteria (0.2 in/sec for typical wood-framed buildings or 0.5

[4] Barry, T.M., and J. Regan. FHWA Traffic Noise Prediction Model. Report No. FHWA-RD-77-108. Washington, DC: Federal Highway Administration, December 1978.

in/sec for reinforced concrete, steel, or timber). The FTA Transit Noise and Vibration Impact Assessment Manual includes reference levels for numerous equipment items. Distances from construction activities were measured using aerial maps, and these distances were used to account for spreading loss between the source (construction equipment) and receiver (sensitive receptor). An impact due to vibration will occur if the measured vibration levels at any sensitive receiver exceeds the vibration criteria for that receiver.

Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would result in:

N-1 Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

N-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

N-3 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

N-4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

N-5 For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

N-6 For a project within the vicinity of a private airstrip, expose people residing or working the project area to excessive noise levels.

Calculations

[insert calculation docs]

Bibliography

Beranek, Leo. *Noise and Vibration Control.* Revised Edition. Institute of Noise Control Engineering. Washington, D.C. 1988.

Bies, David A. and Colin H. Hansen. 2009. *Engineering Noise Control: Theory and Practice*. 4th ed. New York: Spon Press.

Bolt, Beranek & Newman (BBN); *Noise Control for Buildings and Manufacturing Plants*, 1987.

California Department of Transportation (Caltrans). 2006, August. *Traffic Noise Analysis Protocol.*

California Department of Transportation (Caltrans). 2009, November. *Technical Noise Supplement ("TeNS").* Prepared by ICF International.

California Department of Transportation (Caltrans), Department of Transportation, Noise, Vibration, and Hazardous Waste Management Office. 2004, June. *Transportation- and Construction-Induced Vibration Guidance Manual.* Prepared by ICF International.

California Department of Transportation (Caltrans), Division of Environmental Analysis. 2002, February. *Transportation Related Earthborne Vibration (Caltrans Experiences)*. Technical Advisory, Vibration. TAV-02-01-R9601. Prepared by Rudy Hendricks.

California Supreme Court. *California Building Industry Association v. Bay Area Air Quality Management District* (2015) [Case No. S213478]

Federal Highway Administration (FHWA). 1978, December. *Federal Highway Traffic Noise Prediction Model.* U.S. Department of Transportation (DoT) Report No. FHWA-RD77-108.

Federal Highway Administration (FHWA). 2011, July. *Noise Compatible Planning, a Federal Approach – The Audible Landscape*. U.S. Department of Transportation (DoT), Federal Highway Administration (FRA), Office of Planning, Environment, & Realty. Accessed at: http://www.fhwa.dot.gov/environment/noise/noise_compatible_planning/federal_approach/audible_landscape/al04.cfm

Federal Transit Administration (FTA). 2006, May. *Transit Noise and Vibration Impact Assessment*. U.S. Department of Transportation (DoT). FTA-VA-90-1003-06.

Governor's Office of Planning and Research. 2003, October. *State of California General Plan Guidelines.*

Harris, Cyril M. *Handbook of Acoustical Measurements and Noise Control*, Third Edition. Acoustical Society of America. Woodbury, NY. 1998.

Society of Automotive Engineers, Inc. (SAE). 1971, October. *House Noise – Reduction Measurements for Use in Studies of Aircraft Flyover Noise*. AIR 1081.

Thalheimer, E., 2000, *Construction Noise Control Program and Mitigation Strategy at the Central Artery/Tunnel Project.* Institute of Noise Control Engineering.

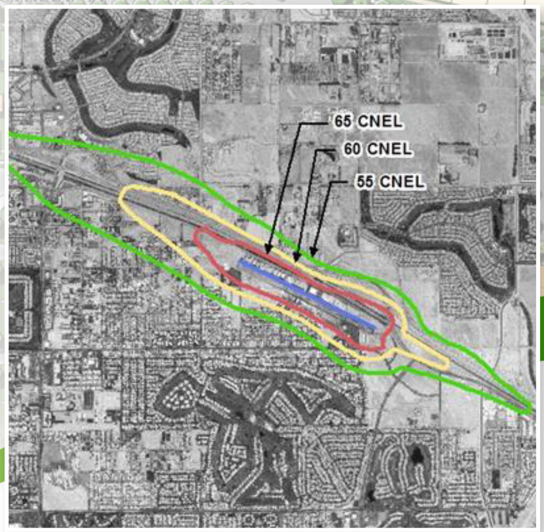
U.S. Department of Housing and Urban Development (HUD). 1985, March. *Noise Guidebook: A Reference Document for Implementing the Department of Housing and Urban Development's Noise Policy.*

U.S. Environmental Protection Agency (EPA). 1978, November. *Protective Noise Levels*. EPA 550/9-79-100. (Condensed version of 1971 and 1974 documents.)

1974, March. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. Washington, D.C.: U.S. EPA Office of Noise Abatement and Control

1971, December. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*. Prepared by Bolt Beranek and Newman (Cambridge, MA) for the U.S. EPA Office of Noise Abatement and Control. Washington, D.C.

Barry, T.M., and J. Regan. FHWA Traffic Noise Prediction Model. Report No. FHWA-RD-77-108. Washington, DC: Federal Highway Administration, December 1978.



Noise Element

This page intentionally left blank

TABLE OF CONTENTS
Chapter 7: Noise Element

LIST OF FIGURES

LIST OF TABLES

This page intentionally left blank.

Chapter 7 Noise Element

Definitions

★

The level of sound that impacts a property varies greatly during the day. As an example, the sound near an airport may be relatively quiet when no airplane is taking off or landing, but will be extremely loud as a plane takes off. In order to deal with these variations, several noise indices have been developed, which measure how loud each sound is, how long it lasts, and how often the sound occurs. The indices express all the sound occurring during the day as a single average level, which if it occurred all day would convey the same sound energy to the site.

Following is a list of commonly used terms and abbreviations that may be found within this element or when discussing the topic of noise. This is an abbreviated glossary to be reviewed prior to reading the element. It is important to become familiar with the definitions listed in order to better understand the importance of the Noise Element within the County of Riverside General Plan. Since the disbanding of the State of California Office of Noise Control in the mid-1990, the State of California Office of Planning and Research General Plan Guidelines can offer further information on other noise-related resources.

Ambient Noise: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL (Community Noise Equivalent Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m.

dB (Decibel): The unit of measure that denotes the ratio between two quantities that are proportional to power; the number of decibels corresponding to the ratio of the two amounts of power is based on a logarithmic scale.

dBA (A-weighted decibel): The A-weighted decibel scale discriminates upper and lower frequencies in a manner approximating the sensitivity of the human ear. The scale is based on a reference pressure level of 20 micropascals.

Intrusive Noise: That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency and time of occurrence, and tonal or informational content as well as the prevailing noise level.

L_{10}: The A-weighted sound level exceeded 10% of the sample time. Similarly, L_{50}, L_{90}, etc.

Sound refers to anything that is or may be perceived by the ear.

Noise is defined as "unwanted sound" because of its potential to disrupt sleep, rest, work, communication, and recreation, to interfere with speech communication, to produce physiological or psychological damage, and to damage hearing.

L_{eq} (Equivalent energy level): The average acoustic energy content of noise during the time it lasts. The L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure, no matter what time of day they occur. The County of Riverside uses a 10-minute L_{eq} measurement.

L_{dn} (Day-Night Average Level): The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of 10 decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m. Note: CNEL and Ldn represent daily levels of noise exposure averaged on an annual or daily basis, while Leq represents the equivalent energy noise exposure for a shorter time period, typically one hour.

Micropascal: The international unit for pressure, similar to pounds per square inch. 20 micropascals is the human hearing threshold. The scale ranges from zero for the average least perceptible sound to about 130 for the average pain level

Noise Contours: Lines drawn around a noise source indicating equal levels of noise exposure. CNEL and Ldn are the metrics used in this document to describe annoyance due to noise and to establish land use planning criteria for noise.

Introduction

Tinnitus: The perception of ringing, hissing, or other sound in the ears or head when no external sound is present. For some people, tinnitus is just a nuisance. For others, it is a life-altering condition. In the United States, an estimated 12 million people have tinnitus to a distressing degree.

Before the alarm clock sounds, the lawn mower next door begins to roar. Then, while listening to the morning news on the radio, an airplane flies overhead and deadens all sound in the neighborhood. Once outside, the neighbor's stereo can be heard a block away. And during the morning commute, car horns, rumbling mufflers, and whirring motorcycles serenade motorists on the highway. Even in the most rural areas of Riverside County, the eternal battle between the efficiency of technology, and the noise it can create cannot be avoided.

As modern transportation systems continue to develop and human dependence upon machines continues to increase, the general level of noise in our day to day living environment rises. In Riverside County, residential areas near airports, freeways, and railroads are being adversely affected by annoying or hazardous noise levels. Other activities such as construction, operation of household power tools and appliances, and industry, also contribute to increasing background noise.

Addressing Noise Issues

The Noise Element is a mandatory component of the General Plan pursuant to the California Planning and Zoning Law, Section 65302(f). The element must recognize the guidelines adopted by the Office of Planning and

Research pursuant to Section 46050.1 of the Health and Safety Code. It also can be utilized as a tool for compliance with the State of California's noise insulation standards.

The General Plan Noise Element provides a systematic approach to identifying and appraising noise problems in the community; quantifying existing and projected noise levels; addressing excessive noise exposure; and community planning for the regulation of noise. This element includes policies, standards, criteria, programs, diagrams, a reference to action items, and maps related to protecting public health and welfare from noise.

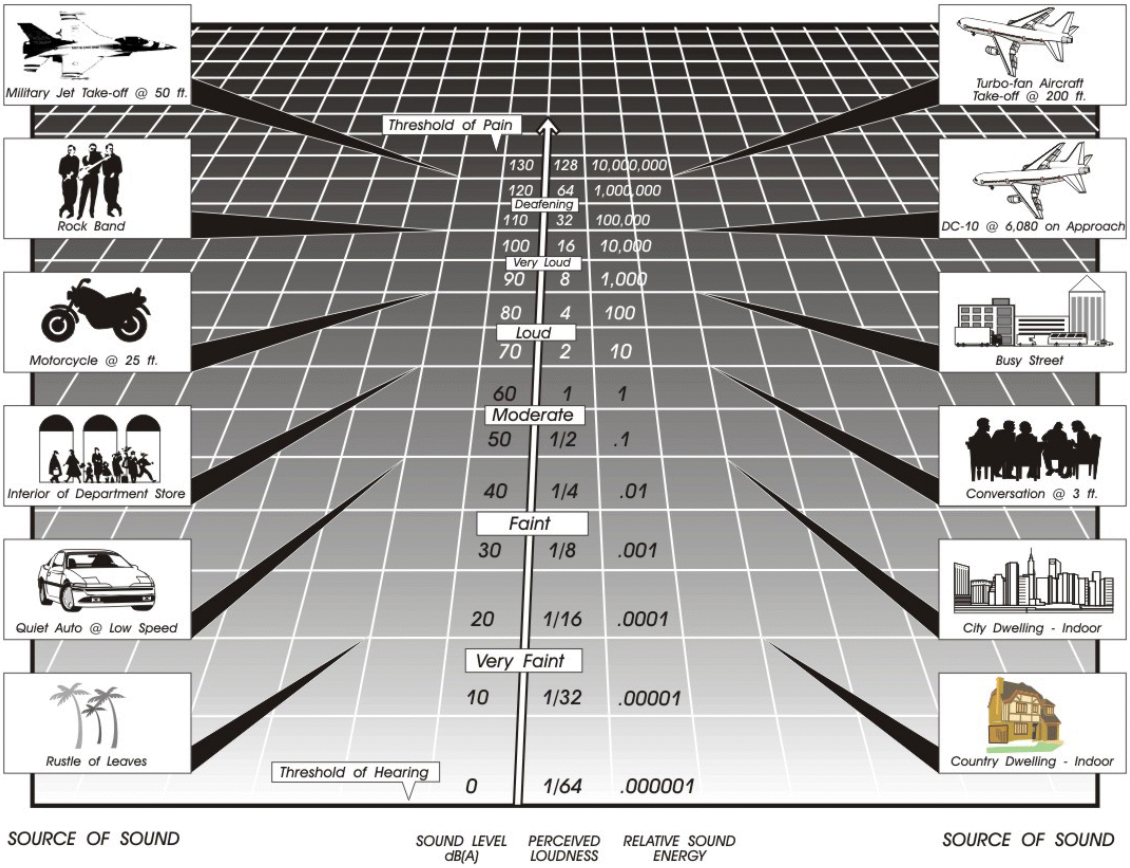
Setting

Riverside County is a continuously evolving group of communities that relies heavily upon the modern technological conveniences of American society to thrive and succeed as a pleasant and desirable place to live and work. Without such necessities as air-conditioning, heating, generators, and cars, living in an urban, suburban, rural, desert, or mountainous environment becomes difficult, if not impossible. Fortunately, these amenities are available to the residents of Riverside County and are used every day, often all day long. Unfortunately, these technological advances can come at a high price to residents' and visitors' ears.

The philosophical view commonly held by Riverside County staff and residents is that noise, which may be perceived by some to be annoying, may not be noticed at all by others. It is also important to note that people who move into an area where a noise source already exists (such as near an existing highway) are often more tolerant of that noise source than when a new noise generator locates itself in an established area that may be noise-sensitive (such as a stadium that is constructed near an established community).

Noise within Riverside County is generated by numerous sources found near places where people live and work. These sources are of particular concern when the noise they generate reaches levels above the prevailing background noise. There are many different types of noise, including mobile, stationary, and construction-related, that affect noise-sensitive receptors such as residences, schools, and hospitals. Figure N-1, Common Noise Sources and Noise Levels, illustrates some noise producers that can be found within Riverside County, as well as their corresponding noise measurement. The following sections contain policies that address the issues of noise producers and their effects on noise-sensitive land uses.

Figure N- 1 Common Noise Sources and Noise Levels



Noise Sensitive Land Uses

A series of land uses have been deemed sensitive by the State of California. These land uses require a serene environment as part of the overall facility or residential experience. Many of these facilities depend on low levels of sound to promote the wellbeing of the occupants. These uses include, but are not necessarily limited to; schools, hospitals, rest homes, long term care facilities, mental care facilities, residential uses, places of worship, libraries, and passive recreation areas. Activities conducted in proximity to these facilities must consider the noise output, and ensure that they don't create unacceptable noise levels that may unduly affect the noise-sensitive uses. The following policies address issues related to noise-sensitive land uses.

Noise Compatibility

The Noise Element of the General Plan is closely related to the Land Use Element because of the effects that noise has on sensitive land uses. Noise-producing land uses must be compatible with adjacent land uses in order for the Land Use Plan to be successful. Land uses that emit noise are measured in A-weighted decibels (dBA) or Community Noise Equivalent Level (CNEL). If existing land uses emit noise above a certain level, they are not compatible with one another, and therefore noise attenuation devices must be used to mitigate the noise to acceptable levels indoors and outdoors. In cases of new development, the placement of noise-sensitive land uses is integral to a successful community. Table N-1, Land Use Compatibility for Community Noise Exposure, reveals the noise acceptability levels for different land uses. Areas around airports may have different or more restrictive noise standards than those cited in Table N-1 (See Policy N 1.3 below).The following policies protect noise-sensitive land uses from noise emitted by outside sources, and prevent new projects from generating adverse noise levels on adjacent properties.

Policies:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used. (AI 107)

N 1.2 Guide noise-tolerant land uses into areas irrevocably committed to land uses that are noise-producing, such as transportation corridors or within the projected noise contours of any adjacent airports. (AI 107)

N 1.3 Consider the following uses noise-sensitive and discourage these uses in areas in excess of 65 CNEL:

- Schools.
- Hospitals.
- Rest Homes.
- Long Term Care Facilities.
- Mental Care Facilities.
- Residential Uses.
- Libraries.
- Passive Recreation Uses.
- Places of Worship.

According to the State of California Office of Planning and Research General Plan Guidelines, an acoustical study may be required in cases where these noise-sensitive land uses are located in an area of 60 CNEL or greater. Any land use that is exposed to levels higher than 65 CNEL will require noise attenuation measures.

Areas around airports may have different noise standards than those cited above. Each Area Plan affected by a public-use airport includes one or more Airport Influence Areas, one for each airport. The applicable noise compatibility criteria are fully set forth in Appendix L-1 and summarized in the Policy Area section of the affected Area Plan. (AI 105)

The General Plan policy and implementation item reference system:

LU 1.3: Identifies which element contains the Policy, in this case the Land Use Element, and the sequential number.

AI 1 and AI 4: Reference to the relevant Action Items contained in the Implementation Program found in Appendix K.

☞

Please contact the Office of Industrial Hygiene for more information on acoustical specialists

N 1.4 Determine if existing land uses will present noise compatibility issues with proposed projects by undertaking site surveys. (AI 106, 109)

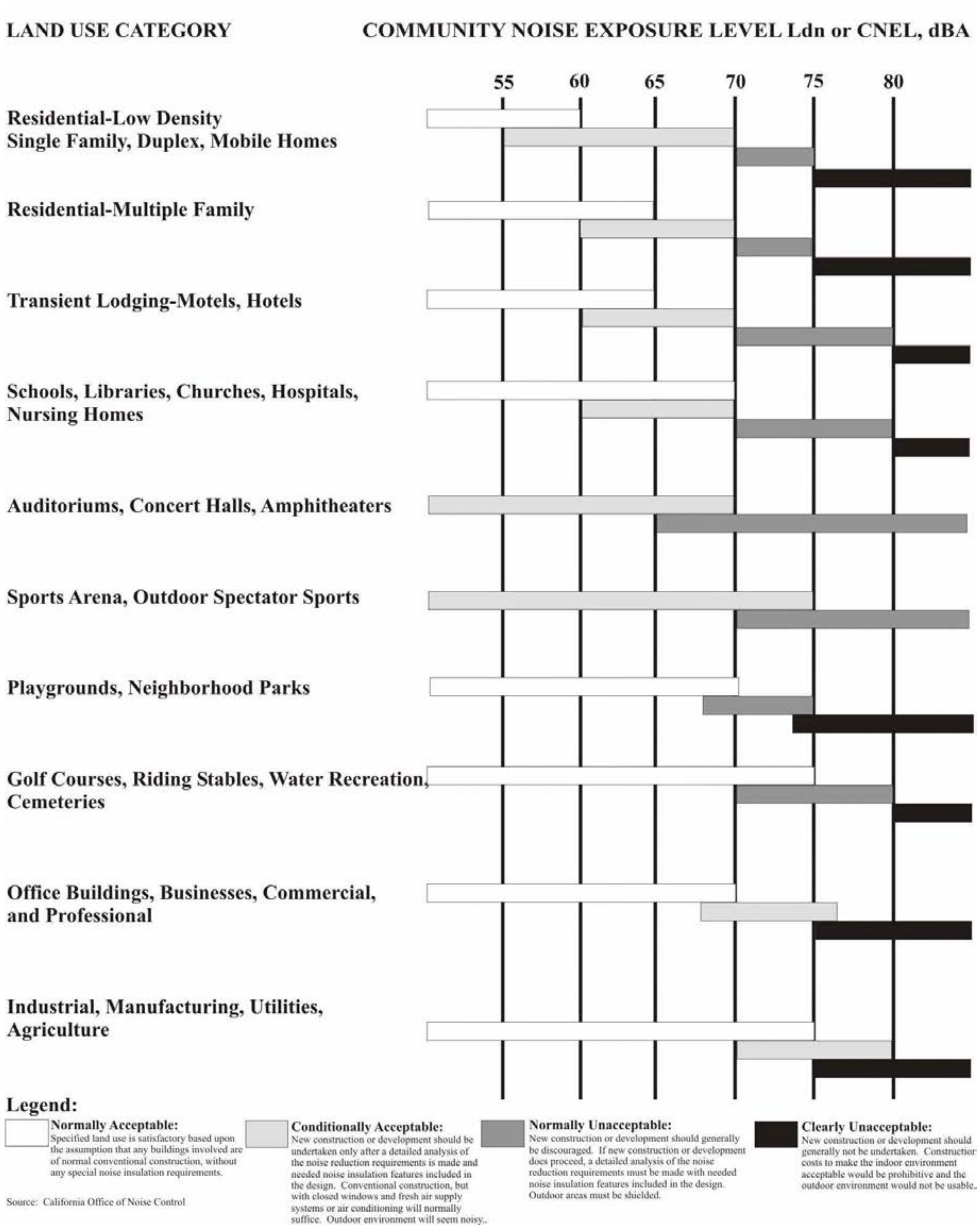
N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County. (AI 105, 106, 108)

N 1.6 Minimize noise spillover or encroachment from commercial and industrial land uses into adjoining residential neighborhoods or noise-sensitive uses. (AI 107)

N 1.7 Require proposed land uses, affected by unacceptably high noise levels, to have an acoustical specialist prepare a study of the noise problems and recommend structural and site design features that will adequately mitigate the noise problem. (AI 106, 107)

N 1.8 Limit the maximum permitted noise levels that cross property lines and impact adjacent land uses, except when dealing with noise emissions from wind turbines. Please see the Wind Energy Conversion Systems section for more information. (AI 108)

Table N-1
Land Use Compatibility for Community Noise Exposure



Noise Mitigation Strategies

Many land uses emit noise above state-mandated acceptable levels. The noise emitted from a land use must be mitigated to acceptable levels indoors and outdoors in order for other, more noise-sensitive land uses to locate in proximity to these noise producers. There are a number of ways to mitigate noise and the following policies suggest some possible solutions to noise problems.

Policies:

N 2.1 Create a County Noise Inventory to identify major noise generators and noise-sensitive land uses, and to establish appropriate noise mitigation strategies. (AI 105)

N 2.2 Require a qualified acoustical specialist to prepare acoustical studies for proposed noise-sensitive projects within noise impacted areas to mitigate existing noise. (AI 105, 107)

N 2.3 Mitigate exterior and interior noises to the levels listed in Table N-2 below to the extent feasible, for stationary sources: (AI 105)

Table N-2:
Stationary Source Land Use Noise Standards[1]

Land Use	Interior Standards	Exterior Standards
Residential		
10:00 p.m. to 7:00 a.m.	40 L_{eq} (10 minute)	45 L_{eq} (10 minute)
7:00 a.m. to 10:00 p.m.	55 L_{eq} (10 minute)	65 L_{eq} (10 minute)

1 These are only preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health.

Noise Producers

Location of Noise Producers

“ Good neighbors keep their noise to themselves. ”

The communities of Riverside County need a variety of land uses in order to thrive and succeed. These land uses may provide jobs, clean water, ensure safety, ship goods, and ease transportation woes. But they may also emit high levels of noise throughout the day. These noise-producing land uses can complement a community when the noise they emit is properly mitigated. The following policies suggest a series of surveys and analyses to correctly identify the proper noise mitigating procedures in order to promote the continued success of the communities of Riverside County.

Agriculture

One of the major economic thrusts of Riverside County is the agricultural industry. The Riverside County Right-to-Farm Ordinance conserves, protects, and encourages the development, improvement, and continued viability of agricultural land and industries for the long-term production of food and other agricultural products, and for the economic well-being of Riverside County's residents. The Right-to-Farm Ordinance also attempts to balance the rights of farmers to produce food and other agricultural products with the rights of non-farmers who own, occupy, or use land within or adjacent to agricultural areas. The Riverside County Right-to-Farm Ordinance also works to reduce the burden of Riverside County's agricultural resources by limiting the circumstances under which agricultural operations may be deemed a nuisance. Policies within this section address the potential noise issues that may be raised in regards to agricultural production.

Policies:

N 3.1 Protect Riverside County's agricultural resources from noise complaints that may result from routine farming practices, through the enforcement of the Riverside County Right-to-Farm Ordinance. (AI 105, 107)

N 3.2 Require acoustical studies and subsequent approval by the Planning Department and the Office of Industrial Hygiene, to help determine effective noise mitigation strategies in noise-producing areas. (AI 105)

N 3.3 Ensure compatibility between industrial development and adjacent land uses. To achieve compatibility, industrial development projects may be required to include noise mitigation measures to avoid or minimize project impacts on adjacent uses. (AI 107)

N 3.4 Identify point-source noise producers such as manufacturing plants, truck transfer stations, and commercial development by conducting a survey of individual sites. (AI 106)

N 3.5 Require that a noise analysis be conducted by an acoustical specialist for all proposed projects that are noise producers. Include recommendations for design mitigation if the project is to be located either within proximity of a noise-sensitive land use, or land designated for noise-sensitive land uses. (AI 109)

N 3.6 Discourage projects that are incapable of successfully mitigating excessive noise. (AI 107)

N 3.7 Encourage noise-tolerant land uses such as commercial or industrial, to locate in areas already committed to land uses that are noise-producing. (AI 107)

Stationary Noise

A stationary noise producer is any entity in a fixed location that emits noise. Stationary noise producers are common in many noise-sensitive areas. Motors, appliances, air conditioners, lawn and garden equipment, power tools, and generators are often found in residential neighborhoods, as well as on or near the properties of schools, hospitals, and parks. These structures are often a permanent fixture and are required for the particular land use. Industrial and manufacturing facilities are also stationary noise producers that may affect sensitive land uses. Furthermore, while noise generated by the use of motor vehicles over public roads is preempted from local regulation, the County of Riverside considers the use of these vehicles to be a stationary noise source when operated on private property such as at a truck terminal or warehousing facility. The emitted noise from the producer can be mitigated to acceptable levels either at the source or on the adjacent property through the use of proper planning, setbacks, blockwalls, acoustic-rated windows, dense landscaping, or by changing the location of the noise producer. The following policies identify mechanisms to measure and mitigate the noise emitted from stationary noise producers.

Community Noise Inventory

There are a series of noise producers within Riverside County that bear special recognition. These uses may be important parts of the economic health of Riverside County, but they still emit noise from time to time. Some of the special noise producers within Riverside County include, but are not limited to the Riverside Raceway, surface mining, truck transfer stations in the Mira Loma area, manufacturing facilities, and natural gas transmission pipelines.

Three high pressure natural gas transmission pipelines are located in the community of Cabazon (within the Pass Area Plan), and a series of valve stations are placed along the pipeline throughout the community. The pipelines supply a major portion of the non-transportation energy supply for Southern California. The depressurization of mainline valves at the valve stations for emergency or maintenance reasons can result in noise levels exceeding 140 dB L_{eq} at a distance of 50 feet from the source for more than an hour at a time. The pipelines are not located in heavily populated areas; however, should higher-intensity uses be approved in the area in the future, possible relocation of one or more pipelines or valves may be necessary.

Policies:

N 4.1 Prohibit facility-related noise received by any sensitive use from exceeding the following worst-case noise levels: (AI 105)

a. 45 dBA-10-minute L_{eq} between 10:00 p.m. and 7:00 a.m.

b. 65 dBA-10-minute L_{eq} between 7:00 a.m. and 10:00 p.m.

N 4.2 Develop measures to control non-transportation noise impacts. (AI 105)

N 4.3 Ensure any use determined to be a potential generator of significant stationary noise impacts be properly analyzed and ensure that the recommended mitigation measures are implemented. (AI 105, 106, 109)

N 4.4 Require that detailed and independent acoustical studies be conducted for any new or renovated land uses or structures determined to be potential major stationary noise sources. (AI 105)

N 4.5 Encourage major stationary noise-generating sources throughout the County of Riverside to install additional noise buffering or reduction mechanisms within their facilities to reduce noise generation levels to the lowest extent practicable prior to the renewal of conditional use permits or business licenses or prior to the approval and/or issuance of new conditional use permits for said facilities. (AI 105, 107)

N 4.6 Establish acceptable standards for residential noise sources such as, but not limited to, leaf blowers, mobile vendors, mobile stereos and stationary noise sources such as home appliances, air conditioners, and swimming pool equipment. (AI 105)

A **pure tone** is a single frequency tone with no harmonic content (e.g. hum).

N 4.7 Evaluate noise producers for the possibility of pure-tone producing noises. Mitigate any pure tones that may be emitted from a noise source. (AI 106, 107)

N 4.8 Require that the parking structures, terminals, and loading docks of commercial or industrial land uses be designed to minimize the potential noise impacts of vehicles on the site as well as on adjacent land uses. (AI 106, 107)

Wind Energy Conversion Systems (WECS)

Wind energy is a unique resource found only in a portion of Riverside County. Wind Energy Conversion Systems (WECS) are used to harness the energy found in strong gusts of wind. In order to fully capitalize on this special commodity, a large number of wind turbines have been placed in a portion of the Coachella Valley and San Gorgonio Pass within Riverside County. There are some residential areas spread throughout Riverside County that may also capitalize on wind-generated power. Though there is minimal residential development in the immediate areas where these windmills are located, the potential for noise and ground-borne vibration in neighboring developed areas may occur. The Wind Implementation Monitoring Program, designed and implemented by Riverside County, guides the policy direction for this area.

Policies:

N 5.1 Enforce the Wind Implementation Monitoring Program (WIMP).

N 5.2 Encourage the replacement of outdated technology with more efficient technology with less noise impacts. (AI 105)

Mobile Noise

Mobile noise sources may be one of the most annoying noise producers in a community because they are louder than background noises and more intense than many acceptable stationary noise sources. Though the noise emitted from mobile sources is temporary, it is often more disturbing because of its abruptness, especially single noise-producing events such as vehicle backfires. Common mobile noise sources include on-road vehicles, aircraft, and trains. The policies in this section identify common mobile noise sources, and suggest mitigation techniques to reduce the annoyance and burden of mobile noise sources on noise-sensitive receptors.

☜

Please see the **Circulation Element** for further policies regarding transportation and noise related issues.

Policies:

N 6.1 Consider noise reduction as a factor in the purchase of County maintenance equipment and their use by County contractors and permittees. (AI 108)

N 6.2 Investigate the feasibility of retrofitting current County-owned vehicles and mechanical equipment to comply with noise performance standards consistent with the best available noise reduction technology. (AI 108)

N 6.3 Require commercial or industrial truck delivery hours be limited when adjacent to noise-sensitive land uses unless there is no feasible alternative or there are overriding transportation benefits. (AI 105, 107)

N 6.4 Restrict the use of motorized trail bikes, mini-bikes, and other off-road vehicles in areas of the county except where designated for that purpose. Enforce strict operating hours for these vehicles in order to minimize noise impacts on sensitive land uses adjacent to public trails and parks. (AI 105, 108)

☞

The following airports are located within or have a direct effect on Riverside County. Please see Appendix L-1 for a map with each airport=s noise contours. Also see the area plans and airport land use plans for more specific airport-related policies:

- Banning Municipal Airport
- Bermuda Dunes Airport
- Blythe Airport
- Chino Airport
- Corona Municipal Airport
- Chiriaco Summit Airport
- Jacqueline Cochran Regional Airport
- Flabob Airport
- French Valley Airport
- Hemet-Ryan Airport
- March Joint Air Reserve Base/March Inland Port
- Palm Springs International Airport
- Perris Valley Airport
- Riverside Municipal Airport
- Skylark Airport

Transportation

The most common mobile noise sources in Riverside County are transportation-related. Motor vehicle noise is of concern because it is characterized by a high number of individual events, which often create a higher sustained noise level in proximity to areas sensitive to noise exposure. Rail and aircraft operations, though less frequent, may generate extremely high noise levels that can be disruptive to daily activities. Though mass transit has not yet been developed within Riverside County, it is important to consider the noise that may be generated from transit service.

Airports

With the dynamic growth in aviation, aircraft noise will remain a challenging environmental problem and one that will affect an increasing number of people as air traffic routes and procedures change in the future. Aircraft noise appears to produce the greatest community anti-noise response, although the duration of the noise from a single airplane is much less, for example, than that from a freight train. There is great economic benefit to gain from airports of any size, although living in proximity to an airport will necessarily result in exposure to aircraft noise.

There are fourteen public use or military airports that are located within or have a direct effect on Riverside County. The land under the flight paths of each airport was monitored to determine the amount of noise emitted by common aircraft taking-off and landing at any given airport. Noise contours were created based on the measurements from the monitoring program. The CNEL noise contour(s) for the following airports have been depicted in the applicable Area Plan's Airport Influence Area section:

- Banning Municipal Airport
- Bermuda Dunes Airport
- Blythe Airport
- Chino Airport

- Chiriaco Summit Airport
- Corona Municipal Airport
- Jacqueline Cochran Regional Airport
- Flabob Airport
- French Valley Airport
- Hemet-Ryan Airport
- March Joint Air Reserve Base
- Riverside Municipal Airport

Airport Land Use Compatibility Plans have been created for most airports within Riverside County, and they should be referenced for further information regarding airports. Helicopters and heliports are also potential sources of noise, but due to the relatively low frequency and short duration of their operation in most circumstances, these operations do not significantly affect average noise levels within Riverside County. The following general policies address the noise that comes from airports and the aircraft they service.

Policies:

N 7.1 New land use development within Airport Influence Areas shall comply with airport land use noise compatibility criteria contained in the corresponding airport land use compatibility plan for the area. Each Area Plan affected by a public-use airport includes one or more Airport Influence Areas, one for each airport. The applicable noise compatibility criteria are fully set forth in Appendix I-1and summarized in the Policy Area section of the affected Area Plan.

N 7.2 Adhere to applicable noise compatibility criteria when making decisions regarding land uses adjacent to airports. Refer to the Airports section of the Land Use Element (Page LU-32) and the Airport Influence Area sections of the corresponding Area Plans.

N 7.3 Prohibit new residential land uses, except construction of a single-family dwelling on a legal residential lot of record, within the current 60 dB CNEL contours of any currently operating public-use, or military airports. The applicable noise contours are as defined by the Riverside County Airport Land Use Commission and depicted in Appendix I-1, as well as in the applicable Area Plan's Airport Influence Area section.

N 7.4 Check each development proposal to determine if it is located within an airport noise impact area as depicted in the applicable Area Plan's Policy Area section regarding Airport Influence Areas. Development proposals within a noise impact area shall comply with applicable airport land use noise compatibility criteria.

Chocolate Mountain Aerial Gunnery Range

A portion of the Chocolate Mountain Aerial Gunnery Range (CMAGR) is located in Riverside County, between the Eastern Coachella Valley Area Plan and East County Desert Areas. The CMAGR has served as a military aerial bombing and gunnery training range since the 1940s. It is a centerpiece in a much larger training complex, known as the Bob Stump Training Range Complex, that incorporates adjacent and nearby special use airspaces and ranges located in southeast California and southwest Arizona. This complex supports full-spectrum combat operations so that Marines can realistically train as they will fight. The CMAGR's desert mountain terrain is ideal for air-to-ground attack and air-to-air combat training. Tactical military exercises involve live explosives and large force-on-force aviation training. Noise emitting from training exercises may extend past the CMAGR boundaries.

Policies:

N 8.1 Prohibit residential development, except construction of a single-family dwelling on a legal residential lot of record, within the current 60 dB CNEL contours of the Chocolate Mountain Aerial Gunnery Range.

Vehicular

☞

Please see the **Circulation Element** for more in-depth information regarding Level of Service Standards, Average Daily Trips, and other information related to vehicular circulation.

Roadway traffic is one of the most pervasive sources of noise within Riverside County. Traffic noise varies in how it affects land uses depending upon the type of roadway, and the distance of the land use from that roadway. Some variables that affect the amount of noise emitted from a road are speed of traffic, flow of traffic, and type of traffic (e.g. tractor trailers versus cars). Another variable affecting the overall measure of noise is a perceived increase in sensitivity to vehicular noise at night. Appendix I-1 contains tables and figures that illustrate existing and forecasted noise from roadways throughout Riverside County. The existing noise measurements were obtained by measuring noise at different points adjacent to the roadway. The future noise contours along freeways and major highways, also located in Appendix I-1, were created from the results of traffic modeling to project the noise of major roadways in the future. The following policies address the issues of roadway traffic noise, and suggest methods to reduce the noise impact of roads on adjacent and nearby land uses.

Policies:

N 9.1 Enforce all noise sections of the State Motor Vehicle Code.

N 9.2 Ensure the inclusion of noise mitigation measures in the design of new roadway projects in the county. (AI 105)

N 9.3 Require development that generates increased traffic and subsequent increases in the ambient noise level adjacent to noise-sensitive land uses to provide for appropriate mitigation measures. (AI 106)

N 9.4 Require that the loading and shipping facilities of commercial and industrial land uses, which abut residential parcels be located and designed to minimize the potential noise impacts upon residential parcels. (AI 105)

N 9.5 Employ noise mitigation practices when designing all future streets and highways, and when improvements occur along existing highway segments. These mitigation measures will emphasize the establishment of natural buffers or setbacks between the arterial roadways and adjoining noise-sensitive areas. (AI 105)

N 9.6 Require that all future exterior noise forecasts use Level of Service C, and be based on designed road capacity or 20-year projection of development (whichever is less) for future noise forecasts. (AI 106)

N 9.7 Require that field noise monitoring be performed prior to siting to any sensitive land uses along arterial roadways. Noise level measurements should be of at least 10 minutes in duration and should include simultaneous vehicle counts so that more accurate vehicle ratios may be used in modeling ambient noise levels. (AI 106)

> “*Calling noise a nuisance is like calling smog an inconvenience. Noise must be considered a hazard to the health of people everywhere.*”
>
> *-The Surgeon General*

Mass Transit

Currently, the County of Riverside does not participate in or provide any rail transit services though public transportation is becoming a more desirable option for many travelers and commuters in Riverside County. Transit can be an alternative to driving a car through congested Riverside County freeways. Currently, the noise generated by public transportation within Riverside County affects only a very small percentage of the total residential population. As years pass, and the need for public transportation increases, there will be a greater number of residents affected by the noise that buses, transit oases shuttles, light rail, and trains will produce. The following policies address the issues of noise related to public transit.

> ☜ Please see the **Circulation Element** for additional policies related to transit development and rail systems.

Policies:

N 10.1 Encourage local and regional public transit providers to ensure that the equipment they operate and purchase is state-of-the-art and does not generate excessive noise impacts on the community. (AI 108)

N 10.2 Encourage the use of quieter electric-powered vehicles. (AI 108)

N 10.3 Encourage the development and use of alternative transportation modes including bicycle paths and pedestrian walkways to minimize vehicular noise within sensitive receptor areas.

N 10.4 Actively participate in the development of noise abatement plans for freeways and rapid transit. (AI 108)

An at-grade railroad crossing is one where the street and the rail line form an intersection, and physically cross one-another.

Rail

The rail system within Riverside County criss-crosses its way through communities, industrial areas, rural areas, and urban centers. Trains carry passengers, freight, and cargo to local and regional destinations day and night. Rail transportation may become more popular in the future if a mass public transportation system is implemented within Riverside County. Currently, daily train traffic produces noise that may disrupt activities in proximity to railroad tracks. For instance, trains are required to sound their horns at all at-grade crossings, and they may also be required to slow their speed through residential areas. These types of noise disturbances can interfere with activities conducted on noise-sensitive land uses. Exhibits showing existing railroad noise contours can be found in Appendix I-1. These exhibits provide purely illustrative contours along rail lines throughout Riverside County. The following policies suggest actions that could minimize the impacts of train noise on noise-sensitive land uses.

Policies:

N 11.1 Check all proposed projects for possible location within railroad noise contours using typical noise contour diagrams. (AI 106, 109)

N 11.2 Minimize the noise effect of rail transit (freight and passenger) on residential uses and other sensitive land uses through the land use planning process. (AI 106, 109)

N 11.3 Locate light rail and fixed rail routes and design rail stations in areas that are accessible to both residential and commercial areas, but also minimize noise impacts on surrounding residential and sensitive land uses. (AI 106, 109)

N 11.4 Install noise mitigation features where rail operations impact existing adjacent residential or other noise-sensitive uses. (AI 108)

N 11.5 Restrict the development of new sensitive land uses to beyond the 65 decibel CNEL contour along railroad rights-of-way. (AI 106, 109)

Building and Design

One of the most effective means of reducing noise in a sensitive area is to construct and design buildings in such a way that the noise is deflected in such a way that it does not affect the occupants. If the building has already been constructed, then landscaping and design techniques can be used to tastefully absorb the noise emitted from mobile or stationary sources. These building and design techniques should serve two purposes; to mitigate noise to acceptable indoor and outdoor levels, and to enhance the community character rather than detract from its surroundings. The following policies have been included in the Noise Element to ensure that the character of each community within Riverside County is preserved while minimizing noise to acceptable levels.

Natural Barriers and Landscaping

Policies:

N 12.1 Utilize natural barriers such as hills, berms, boulders, and dense vegetation to assist in noise reduction. (AI 108)

N 12.2 Utilize dense landscaping to effectively reduce noise. However, when there is a long initial period where the immaturity of new landscaping makes this approach only marginally effective, utilize a large number of highly dense species planted in a fairly mature state, at close intervals, in conjunction with earthen berms, setbacks, or block walls. (AI 108)

Temporary Construction

Policies:

N 13.1 Minimize the impacts of construction noise on adjacent uses within acceptable practices. (AI 105, 108)

N 13.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas. (AI 105, 108)

N 13.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N 1.3) by requiring the developer to submit a construction-related noise mitigation plan to the County for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

a. Temporary noise attenuation fences;

b. Preferential location of equipment; and

c. Use of current noise suppression technology and equipment. (AI 107)

N 13.4 Require that all construction equipment utilizes noise reduction features (e.g. mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer. (AI 105, 108)

Building and Design Techniques

Policies:

N 14.1 Enforce the California Building Standards that sets standards for building construction to mitigate interior noise levels to the tolerable 45 CNEL limit. These standards are utilized in conjunction with the Uniform Building Code by the County's Building Department to ensure that noise protection is provided to the public. Some design features may include extra-dense insulation, double-paned windows, and dense construction materials.

N 14.2 Continue to develop effective strategies and mitigation measures for the abatement of noise hazards reflecting effective site design approaches and state-of-the-art building technologies. (AI 108)

N 14.3 Incorporate acoustic site planning into the design of new development, particularly large scale, mixed-use, or master-planned development, through measures which may include:

- Separation of noise-sensitive buildings from noise-generating sources.
- Use of natural topography and intervening structure to shield noise-sensitive land uses.
- Adequate sound proofing within the receiving structure. (AI 106)

★

Non-habitable areas within a home include:

- kitchens
- bathrooms
- hallways
- garages
- closets
- utility rooms
- laundry rooms

N 14.4 Consider and, when necessary, to lower noise to acceptable limits, require noise barriers and landscaped berms. (AI 108)

N 14.5 Consider the issue of adjacent residential land uses when designing and configuring all new, non-residential development. Design and configure on-site ingress and egress points that divert traffic away from nearby noise-sensitive land uses to the greatest degree practicable. (AI 106, 107)

N 14.6 Prevent the transmission of excessive and unacceptable noise levels between individual tenants and businesses in commercial structures and between individual dwelling units in multi-family residential structures. (AI 105, 108)

N 14.7 Assist the efforts of local homeowners living in high noise areas to noise attenuate their homes through funding assistance and retrofitting program development, as feasible. (AI 105, 108)

N 14.8 Review all development applications for consistency with the standards and policies of the Noise Element of the General Plan.

N 14.9 Mitigate 600 square feet of exterior space to 65 dB CNEL when new development is proposed on residential parcels of 1 acre or greater.

Mixed Use

Policies:

N 15.1 Minimize the potential adverse noise impacts associated with the development of mixed-use structures where residential units are located above or adjacent to commercial uses. (AI 106, 107, 108)

N 15.2 Require that commercial and residential mixed-use structures minimize the transfer or transmission of noise and vibration from the commercial land use to the residential land use. (AI 105)

N 15.3 Minimize the generation of excessive noise level impacts from entertainment and restaurant/bar establishments into adjacent residential or noise-sensitive uses. (AI 105, 107)

Vibration

Another community annoyance related to noise is vibration. As with noise, vibration can be described by both its amplitude and frequency. Amplitude may be characterized by displacement, velocity, and/or acceleration. Typically, particle velocity (measured in inches or millimeters per second) and/or acceleration (measured in gravities) are used to describe vibration.

Vibration can be felt outdoors, but the perceived intensity of vibration impacts are much greater indoors, due to the shaking of the structure. Some of the most common sources of vibration come from trains and/or transit vehicles, construction equipment, airplanes, and large vehicles. Several land uses are especially sensitive to vibration, and therefore have a lower vibration threshold. These uses include, but are not limited to, concert halls, hospitals, libraries, vibration-sensitive research operations, residential areas, schools, and offices.

Table N-3, Human Reaction to Typical Vibration Levels, presents the human reaction to various levels of peak particle velocity. Typical construction vibrations fall in the 10 to 30 Hz range and usually occur around 15 Hz. Traffic vibrations exhibit a similar range of frequencies. However, due to their suspension systems, city buses often generate frequencies around 30 Hz at high vehicle speeds. It is more uncommon, but possible, to measure traffic frequencies above 30 Hz.

Amplitude-the distance that a vibrating particle travels from a fixed point.

Frequency-the number of wave cycles that occur in 1 second.

Hertz (Hz)-the unit by which frequency is measured.

Displacement-a measure of the distance that a vibrated particle travels from its original position.

Velocity-the rate of speed at which particles move in inches per second or millimeters per second.

Acceleration-the rate of change in velocity with respect to time.

Table N-3:
Human Reaction to Typical Vibration Levels

Vibration Level Peak Particle Velocity (inches/second)	Human Reaction
0.0059-0.0188	Threshold of perception, possibility of intrusion
0.0787	Vibrations readily perceptible
0.0984	Continuous vibration begins to annoy people
0.1968	Vibrations annoying to people in buildings
0.3937-0.5905	Vibrations considered unpleasant when continuously subjected and unacceptable by some walking on bridges

Source: Caltrans, 1992

Policies:

N 16.1 Restrict the placement of sensitive land uses in proximity to vibration-producing land uses. (AI 105)

N 16.2 Consider the following land uses sensitive to vibration:

- Hospitals;
- Residential areas;
- Concert halls;
- Libraries;
- Sensitive research operations;
- Schools; and
- Offices

N 16.3 Prohibit exposure of residential dwellings to perceptible ground vibration from passing trains as perceived at the ground or second floor. Perceptible motion shall be presumed to be a motion velocity of 0.01 inches/second over a range of 1 to 100 Hz.

Noise Information Management

Current and projected noise data and maps for Riverside County require constant updating and review in order for the information to remain correct as well as accurate. Currently, there is no central noise information database available for Riverside County staff or residents to reference when noise inquiries arise. This information is necessary and should be easily accessible when reviewing potential development plans, building a new home, siting an industrial area, evaluating circulation routes, or conducting other advanced planning activities. The following policies guide the County of Riverside to create a database, or central location, where up-to-date information can be accessed by Riverside County Staff or residents.

Mapping

Policies:

☞

Please see **Table N-1** for more information in order to determine a noise threshold necessary for creating a noise database.

N 17.1 Identify, quantify, and map noise producers and provide noise contour diagrams as is practical. (AI 109)

N 17.2 Identify and map noise-sensitive land uses throughout the county. (AI 109)

N 17.3 Identify and map point-source noise producers such as surface mines, wind turbines, manufacturing plants, truck transfer stations, active recreational facilities, and amphitheaters. (AI 109)

Noise Data Management

Policies:

N 18.1 Maintain baseline information, on an ongoing basis, regarding ambient and stationary noise sources. (AI 105)

N 18.2 Monitor and update available data regarding the community's existing and projected ambient stationary noise levels.

N 18.3 Assure that areas subject to noise hazards are identified, quantified, and mapped in a form that is available to decision makers. (AI 109)

N 18.4 Develop and maintain a detailed, comprehensive noise data base. (AI 106)

N 18.5 Develop and update county noise inventories using the following steps.

a. Identify noise sources and noise-sensitive land uses

b. Continue to identify various agency responsibilities, review noise complaint files, and conduct noise surveys and monitoring, as needed.

N 18.6 Identify those areas of the county affected by high noise levels. (AI 106, 107, 109)

N 18.7 Evaluate current land uses to identify potential noise conflict areas. (AI 106, 107, 109)

N 18.8 Gather activity operations' data of noise sources; prepare analytical noise exposure models to develop existing and projected noise contours around major noise sources down to 50 CNEL. (AI 109)

N 18.9 Encourage greater involvement of other County departments in the identification, measurement, and reduction of noise hazards throughout the county, including: Building and Safety Department, Aviation Department, and the Department of Public Health-Office of Industrial Hygiene.

Public Noise Information

Policies:

N 19.1 Provide information to the public regarding the health effects of high noise levels and means of mitigating such levels. (AI 109)

N 19.2 Cooperate with industry to develop public information programs on noise abatement. (AI 108)

N 19.3 Condition that prospective purchasers or end users of property be notified of overflight, sight, and sound of routine aircraft operations by all effective means, including:

a. requiring new residential subdivisions that are located within the 60 CNEL contour or are subject to overflight, sight, and sound of aircraft from any airport, to have such information included in the State of California Final Subdivision Public Report.

b. requiring that Declaration and Notification of Aircraft Noise and Environmental Impacts be recorded and made available to prospective purchasers or end users of property located within the 60 CNEL noise contour for any airport or air station or is subject to routine aircraft overflight. (AI 109)

N 19.4 Promote increased awareness concerning the effects of noise and suggest methods by which the public can be of assistance in reducing noise.

N 19.5 Require new developments that have the potential to generate significant noise impacts to inform impacted users on the effects of these impacts during the environmental review process. (AI 106, 107)

Appendix

This page intentionally left blank.

Appendix H Traffic Impact Analysis

April 2017 | Technical Report

TRAFFIC IMPACT ANALYSIS

Temecula Valley Charter School

Prepared for:

Temecula Valley Charter School
Contact: Mark Horn, Board President
35755 Abelia Street
Winchester, California 92596
951.294.6780

Prepared by:

PlaceWorks
Contact: Fernando Sotelo, PE, PTP, Senior Associate
3 MacArthur Place, Suite 1100
Santa Ana, California 92707
714.966.9220
info@placeworks.com
www.placeworks.com

TVCS-02.0

PLACEWORKS

Table of Contents

Table of Contents

APPENDICES

Table of Contents

List of Figures

List of Tables

Table of Contents

This page intentionally left blank.

1. Executive Summary

This Traffic Impact Analysis (TIA) has been prepared to analyze the potential traffic impacts from construction and operation of the Temecula Valley Charter School ("proposed project"). Existing traffic conditions are used as the "baseline" for the analysis in this TIA and to evaluate the potential impacts of the proposed project. The overall purpose of this TIA is to inform decision makers and the general public whether the proposed project would result in any significant impacts.

The proposed project would be developed in the Southwest Area Plan in unincorporated Riverside County on two parcels on the west side of Winchester Road (State Route 79) between Keller Road and Pourroy Road. The school is scheduled to open in the fall of 2018 with a capacity of 600 students from grades K to 8. The project is expected to generate up to 1,488 vehicle trips on a typical weekday, with 540 trips during the AM peak hour and 102 trips during the PM peak hour.

1.1 IMPACTS TO THE CIRCULATION SYSTEM

Ten intersections have been included in this analysis:

1. Winchester Road at Keller Road
2. Winchester Road at Pourroy Road/Abelia Street
3. Winchester Road at Whisper Heights Parkway/Pourroy Road
4. Winchester Road at Jean Nicholas Road/Skyview Road
5. Winchester Road at Max Gillis Boulevard/Thompson Road
6. Winchester Road at Benton Road
7. Pat Road at Pourroy Road
8. Jean Nicholas Road at Elliot Road
9. Pourroy Road at Skyview Road
10. Pourroy Road at Thompson Road

All study area intersections currently operate at acceptable LOS during the peak hours for existing traffic conditions, except for Winchester Road at Max Gillis Boulevard/Thompson Road in the AM and PM peak hours, and Winchester Road at Benton Road in the PM peak hour.

The traffic conditions were also analyzed for Existing Plus Project, Existing Plus Ambient Growth (2018) Plus Project, Opening Year 2018 Without Project, and Opening Year 2018 With Project. An ambient growth rate of 2 percent per year and cumulative projects to be fully operational by 2018 were added to the background traffic conditions.

Significant impacts are determined by comparing with- and without-project scenarios for each traffic condition. As discussed in Section 2.2, potential traffic impacts would occur if, during the weekday peak hours:

1. Executive Summary

- At intersections currently operating at acceptable LOS (A to D), the addition of project trips would change the LOS to an unacceptable LOS E or F.

- At intersections currently operating at unacceptable LOS E or F, the project would increase the delay by more than 5 seconds.

According to these criteria, without mitigation, impacts would occur at the following locations:

Existing Plus Project Conditions

5. Winchester Road at Max Gillis Boulevard/Thompson Road (PM peak hour)

6. Winchester Road at Benton Road (PM peak hour)

2018 Opening Year Conditions

2. Winchester Road at Pourroy Road/Abelia Street (AM and PM peak hours)

5. Winchester Road at Max Gillis Boulevard/Thompson Road (AM peak hour)

6. Winchester Road at Benton Road (AM peak hour)

7. Pourroy Road at Pat Road (AM and PM peak hour)

9. Pourroy Road at Skyview Road (PM peak hour)

To address intersection operational deficiencies, the following mitigation measures would be necessary:

2. Winchester Road at Pourroy Road/Abelia Street
    - Construct a southbound through lane
    - Construct a northbound through lane
    - Construct a northbound left turn lane
    - Construct an eastbound right turn lane

5. Winchester Road at Max Gillis Boulevard/Thompson Road
    - Construct an eastbound right turn lane
    - Construct an westbound left turn lane
    - Construct a northbound left turn lane
    - Construct a southbound through lane

6. Winchester Road at Benton Road
    - Construct an southbound left turn lane
    - Construct an westbound right turn lane

1. Executive Summary

7. Pourroy Road at Pat Road
   - Install a traffic signal

9. Pourroy Road at Skyview Road
   - Install a traffic signal

Signal warrants calculations were performed under existing and 2018 scenarios to evaluate the potential need for the installation of a traffic signal at an unsignalized or stop-controlled intersection. The traffic analysis in this study uses Warrant 3 criteria, which are based on traffic volumes entering the intersections during the peak hour. Signal warrants are not met at any intersections that are currently unsignalized.

In Riverside County, transportation improvements are funded through direct project improvements and via contributions to development impact fee programs such as Transportation Uniform Mitigation Fee (TUMF), Development Impact Fees (DIF), and the Road and Bridge Benefit District (RBBD; the project site is in the Southwest RBBD). The County of Riverside normally requires payment of transportation improvement fees to mitigate local traffic impacts. All development projects are required to pay Transportation improvement fees unless they are exempt. Because Temecula Valley Charter School is a governmental entity operated by a non-profit, tax-exempt corporation, it is not subject to the DIF, TUMF, and RBBD fees. Copies of the charter school's Articles of Incorporation and tax exempt designation from the IRS were provided as attachments to previous response to comments memorandum (dated January 4, 2017) submitted to County staff. Based on the materials previously enclosed and preceding response, the charter school is exempt from all such fees.

Site Access and Internal Circulation

Site access would be via one driveway at the southeast corner of the site from Koon Street, a proposed new street that would run east-west along the southern site boundary. Koon Street would link to Pourroy Road and form a 4-leg intersection with Flossie Way. The intersection would be approximately 1,200 feet from Winchester Road. The segment of Pourroy Road north of Pat Road is currently unpaved (starting approximately 200 feet south of Fossie Way/Koon Street). The segment of Pourroy Road in the vicinity of the site is mostly flat and clear of visual obstructions for at least 200 feet north and south of Fossie Way/Koon Street.

The proposed internal circulation would consist of a flow-through drop-off loop that would be 30 feet wide and extend around the periphery of the parking lot. The total length of the loop would be approximately 1,400 feet. The parking lot would extend the length of the site boundary along Winchester Road and include 100 parking spaces. The student drop-off and pick-up area would be along the western side of the parking lot, adjacent to the school buildings. It would allow for a loading/unloading lane and at least one passing lane. Preliminary plans show one passing lane and one loading lane.

With approximately 700 feet from the beginning of the loading area to the driveway entrance plus approximately 800 feet of Koon Street, there would be approximately 1,500 feet of driveway length to queue cars during student drop-off and pick-up. Assuming an average length of 25 feet per vehicle, the internal

1. Executive Summary

driveways could accommodate up to 60 vehicles before the student loading area. In addition, there would be 100 parking spaces and additional space in the loading area.

It is anticipated that queues would be limited to Koon Street, with some queueing on Pourroy Road as vehicles slow down to turn into Koon Street. The highest turn-movement volumes at the access driveway would occur during the AM peak hour with student drop-off. The typical morning peak drop-off and afternoon pick-up activity lasts about 20 minutes, and any possible queue would dissipate immediately afterward.

Recommendations

The following recommendations have been prepared to ensure that adequate site access is provided.

- Construct Koon Street at its ultimate width as an industrial collector road per County of Riverside design standards with a right-of-way of 78 feet between the project's western boundary and the project's access driveway. A sidewalk shall be provided on the northern side of the road along the school property with an adequate connection to allow pedestrian connections to the school buildings without walking on driveways.

- Construct and pave a section of approximately 385 feet in length of Pourroy Road as a 2-lane undivided roadway from Flossie Way to the existing paved section of Pourroy Road. This roadway improvement is expected to be implemented as a part of the proposed development just south of the project site, which is currently in review with County staff. However, it is acknowledged that a condition of approval will be added to the proposed project to require that this section of Pourroy Road is paved prior to the commencement of school operations.

- The intersection of Koon Street with Pourroy Road shall form a 4-leg intersection with Flossie Way.

- Parking and student loading/unloading shall be prohibited on Koon Street to reduce friction and maneuvers on Koon Street, especially during student drop-off and pick-up times.

- Prior to the opening of the project, the school shall work with the County to identify on-site traffic signing and striping to be implemented in conjunction with detailed construction plans for the project. These shall be in conformance with design standards from the California Manual of Uniform Traffic Control Devices for Streets and Highways (CA MUTCD) and Riverside County standards.

- The school and Riverside County should periodically review traffic operations in the vicinity of the project once the project is constructed to ensure that traffic operations are satisfactory. The charter school shall work with the County of Riverside and implement operational mitigation measures such as additional time restrictions, markings, signage, modifications to loading procedures and education for parents and students to improve traffic follow, if necessary.

2. Introduction

2.1 PROJECT OVERVIEW

The proposed project would be in the Southwest Area Plan in unincorporated Riverside County on two parcels on the west side of Winchester Road (State Route 79) between Keller Road and Pourroy Road. Figure 1 shows the local vicinity, and Figure 2 shows the aerial photograph of the project site. The 14.6-acre project site is surrounded by rural residential uses to the west and north; a single-family home on one of the rural residential properties abuts the west part of the northern site boundary. The project site is surrounded by vacant land to the south and by vacant land and agricultural uses to the east across SR-79. The northwestern part of the site, a hill topped by a vacant single-family residence, would be left as is. The school is scheduled to open in the fall of 2018 with a capacity of 600 students from grades K to 8. Figure 3 shows the project site plan. The proposed project would construct several one-story school buildings totaling about 55,000 square feet of building area. Facilities would include 31 classrooms, a multipurpose room, administrative space, and a library/media center. The school campus would also have four volleyball courts, a softball field, and a soccer field.

2.2 METHODOLOGY

The Riverside County Traffic Impact Analysis Preparation Guide sets forth guidelines for analyzing traffic impacts from projects on the roadway network and thresholds of significance. The methodology used for the preparation of this traffic impact study is consistent with these guidelines, as determined in consultation with the Riverside County Transportation Department. The scoping agreement with County staff comments is in Appendix A.

Definition of Level of Service

Roadway capacity is generally limited by the ability to move vehicles through intersections. A level of service (LOS) is a standard performance measurement to describe the operating characteristics of a street system in terms of the level of congestion or delay experienced by motorists. Service levels range from A through F, which relate to traffic conditions from best (uncongested, free-flowing conditions) to worst (total breakdown with stop-and-go operation).

Intersection LOS

The methodology used to assess the operation of a signalized intersection is based on the Highway Capacity Manual (HCM). The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions. The peak hours selected for analysis are the highest volumes that occur in four consecutive 15-minute periods from 7 to 9 AM and from 4 to 6 PM on weekdays. The HCM 2010 signalized intersection methodology presents LOS in terms of control delay (in seconds per vehicle). Per the HCM methodology, overall average intersection delay at signalized intersections was calculated, and the worst-case approach delay

3. Existing Conditions

was calculated at unsignalized intersections. The level of service corresponds to the delay calculated. Table 1, *Intersection Level of Service Descriptions,* describes the level of service concept and the operating conditions expected under each level of service for signalized and unsignalized intersections.

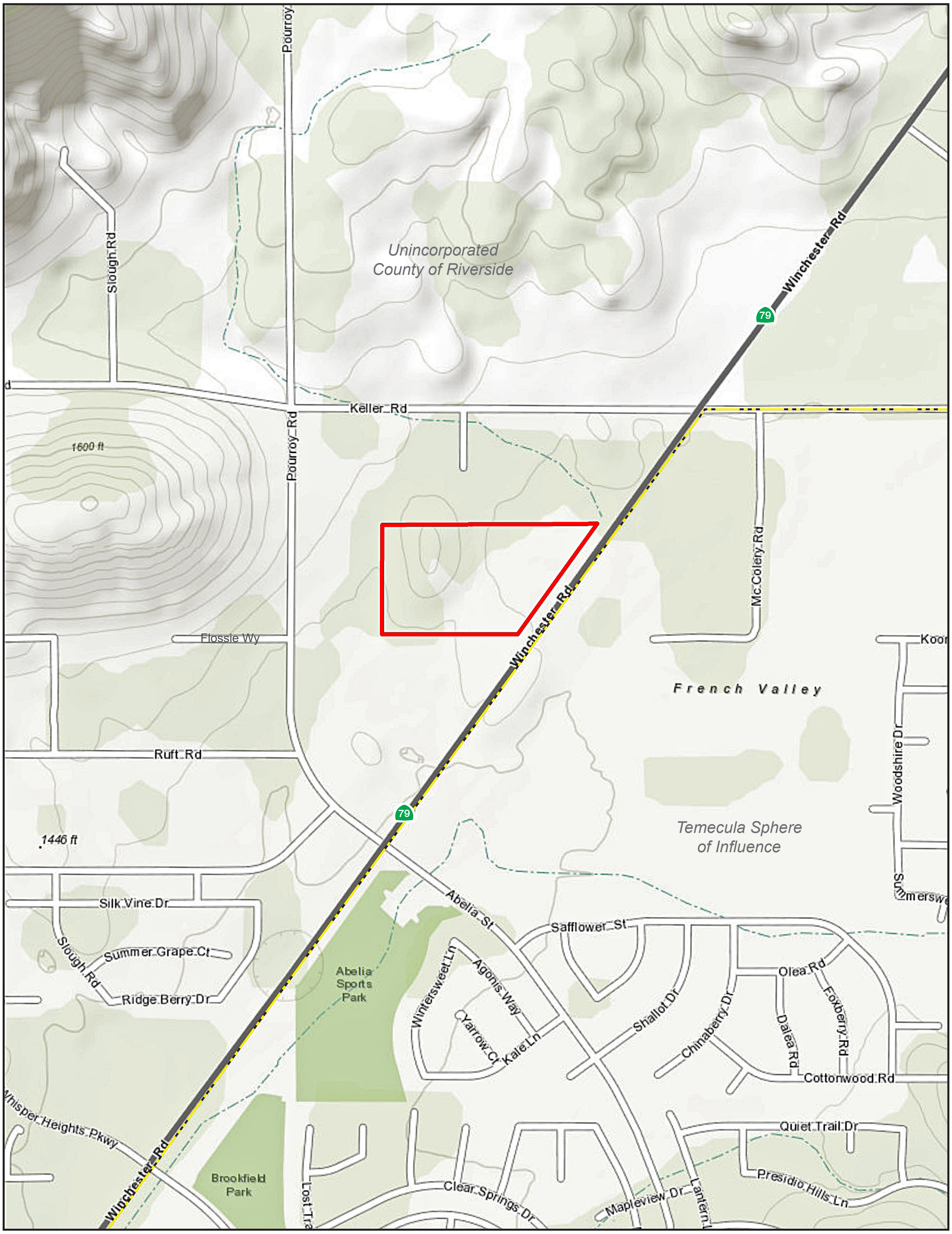
Table 1 Intersection Level of Service Descriptions

LOS	Description	Average Delay Per Vehicle (seconds)	
		Signalized	Unsignalized
A	Level of Service A occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	0 to 10.00	0 to 10.00
B	Level of Service B generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level of Service A, causing higher levels of average total delay.	10.01 to 20.00	10.01 to 15.00
C	Level of Service C generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	20.01 to 35.00	15.01 to 25.00
D	Level of Service D generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.01 to 55.00	25.01 to 35.00
E	Level of Service E is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences.	55.01 to 80.00	35.01 to 50.00
F	Level of Service F is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume to capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	80.01 and up	50.01 and up

Source: Highway Capacity Manual, Transportation Research Board, 2000.

The software PTV Vistro 4 was used to determine the LOS at the study area intersections.

Figure 1 - Local Vicinity



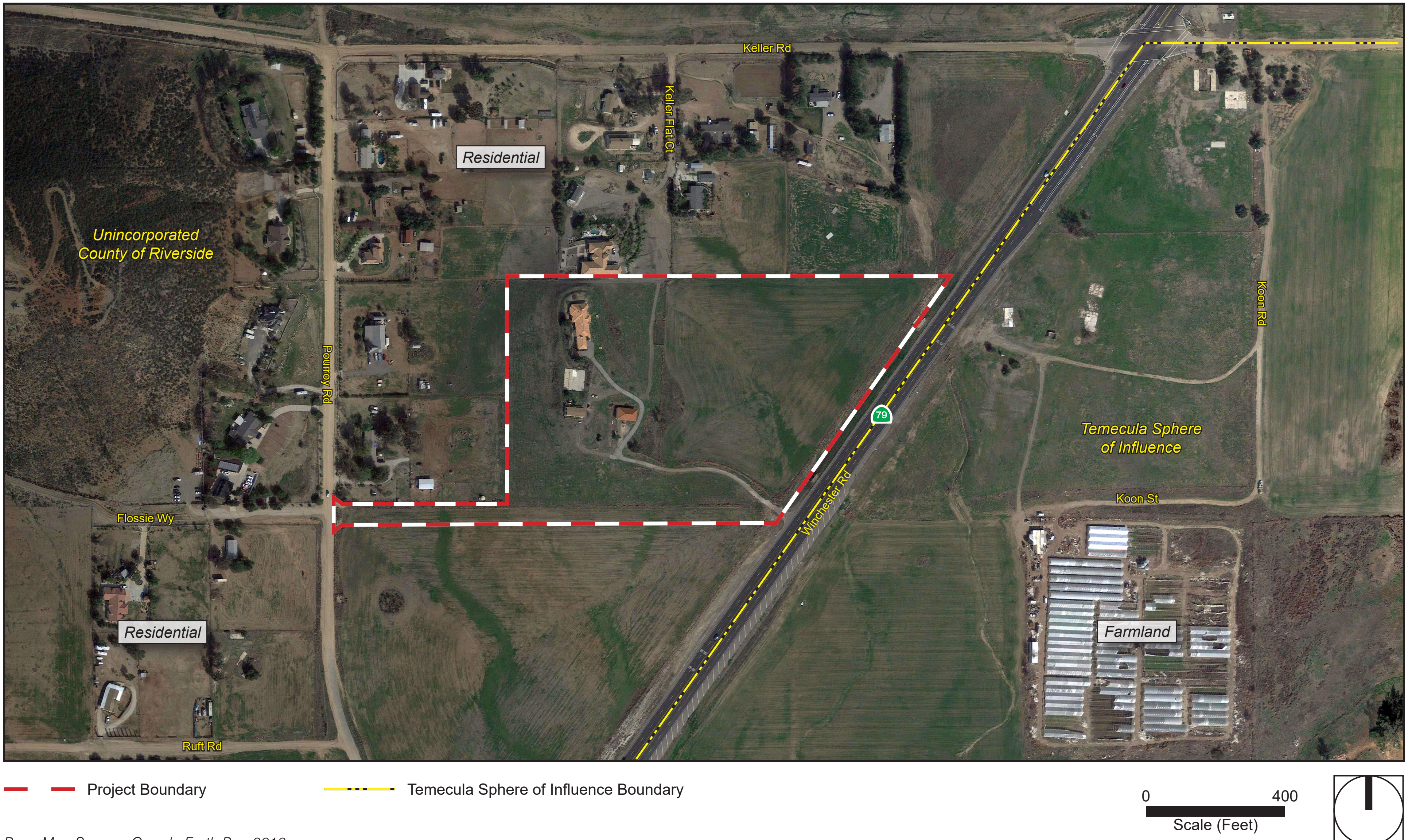
Project Boundary
Temecula Sphere of Influence Boundary
0 1,000
Scale (Feet)

Base Map Source: ESRI, USGS, NOAA, 2016

3. Existing Conditions

This page intentionally left blank.

Figure 2 - Aerial Photograph

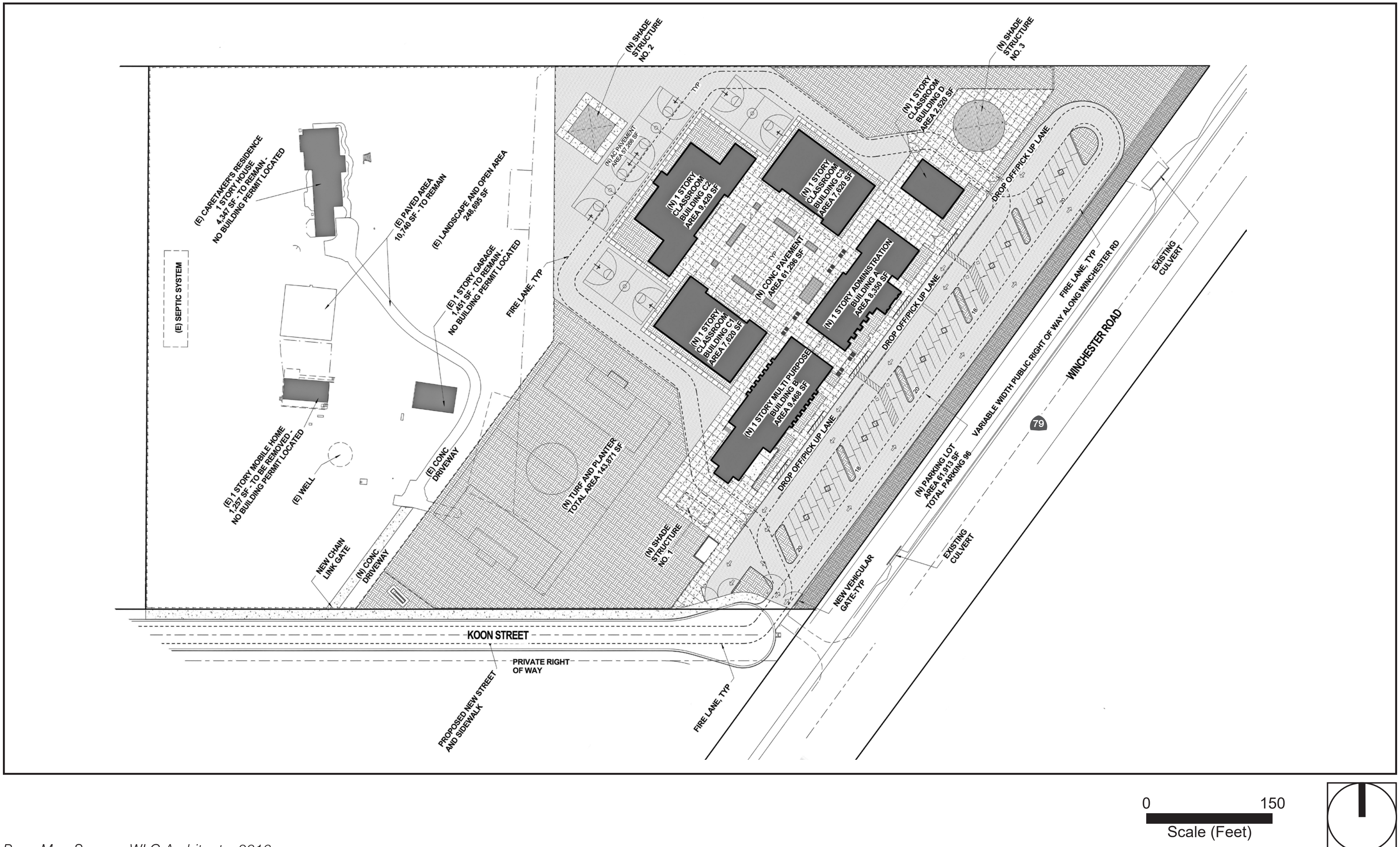


Base Map Source: Google Earth Pro, 2016

3. Existing Conditions

This page intentionally left blank.

Figure 3 - Site Plan



Base Map Source: WLC Architects, 2016

3. Existing Conditions

This page intentionally left blank.

3. Existing Conditions

Acceptable LOS and Thresholds of Significance

The project site is in the Southwest Area Plan. Policy C 2.1 of the County of Riverside General Plan Circulation Element (December 8, 2015) has established LOS "D" as the minimum level of service for its intersections in certain community development areas including the Southwest Area. Based on Route Concept Report Fact Sheet for SR- 79, in accordance with Riverside County's Congestion Management Plan (CMP), LOS "E" is considered the limit of acceptable traffic operations along SR-79 through the year 2020 (Caltrans 1999; RCTC 2011).

Potential traffic impacts would occur if, during the weekday peak hours:

- At intersections currently operating at acceptable LOS, the addition of project trips would change the LOS to an unacceptable LOS.

- At intersections currently operating at unacceptable LOS, the project would increase the delay by more than 5 seconds.

Notwithstanding the forgoing minimum LOS targets, the Board of Supervisors may, on occasion by virtue of their discretionary powers, approve a project that fails to meet these LOS targets in order to balance congestion management considerations in relation to benefits, environmental impacts and costs, provided an Environmental Impact Report, or equivalent, has been completed to fully evaluate the impacts of such approval. Any such approval must incorporate all feasible mitigation measures, make specific findings to support the decision, and adopt a statement of overriding considerations.

According to Exhibit A of the Riverside County Transportation Department Traffic Impact Analysis Preparation Guide, preschools, elementary schools, and middle schools are "generally exempt from Traffic Analysis requirements per Board of Supervisor's action November 5, 1996 (item No. 3.27)" (Riverside County 2008). However, the County reserves the right to require a traffic impact analysis for any development regardless of size or type depending on conditions, such as the need for a focused study for access/operational issues or the presence of a nearby substandard intersection or street.

3. Existing Conditions

This page intentionally left blank.

3. Existing Conditions

3.1 STUDY AREA ROADWAY NETWORK

General Plan Circulation Network

The study-area roadways discussed below are in the general plan circulation elements for the County of Riverside and the City of Murrieta. Figure 4 shows the County of Riverside circulation map and its roadway functional classifications. Figure 5 shows the circulation network in the study area and the intersection analyses locations.

Surrounding Street System

The study area was determined based on the anticipated attendance area, a review of the circulation network, the number of trips generated by the project, and consultation with County transportation staff. The study network includes Winchester Road (State Route 79), Keller Road, Pourroy Road/Abelia Street, Whisper Heights Parkway/Pourroy Road, Jean Nicholas Road/Skyview Road, Max Gillis Road/Thompson Road, Benton Road, Pat Road, and Elliot Road.

- **Winchester Road (State Route 79):** This north-south roadway currently is four lanes in the study area and is classified as an Expressway. The posted speed limit varies from 55 to 65 miles per hour in the study area.

- **Keller Road:** This east-west roadway is currently unpaved in the study area and is classified as a Secondary Roadway.

- **Pourroy Road/Abelia Street:** This roadway is Pourroy Road to the west of SR-79 and Abelia Street to the east of SR-79. This roadway is classified as a Secondary Roadway and is currently two lanes for Pourroy Road and four lanes for Abelia Street. The posted speed limit on Abelia Street is 45 mph.

- **Whisper Heights Parkway/Pourroy Road:** This roadway is Whisper Heights Parkway to the west of SR-79 and Pourroy Road to the east of SR-79. Pourroy Road is classified as a Secondary Roadway. Whisper Heights Parkway is currently two lanes and Pourroy Road is currently four lanes in the study area. The posted speed limit on Whisper Heights Parkway is 25 mph.

- **Jean Nicholas Road/Skyview Road:** This roadway is Jean Nicholas Road to the west of SR-79 and Skyview Road to the east of SR-79. It is classified as a Secondary Roadway. Jean Nicholas Road currently has two eastbound lanes and one westbound lane while Skyview Road currently has four lanes.

- **Max Gillis Boulevard/Thompson Road:** This Roadway is Max Gillis Boulevard to the west of SR-79 and Thompson Road to the east of SR-79. Max Gillis Boulevard and Thompson Road currently have four lanes. Max Gillis Boulevard is classified as a Major Roadway and Thompson Road is classified as a Secondary Roadway. Max Gillis Boulevard and Thompson Road have a posted speed limit of 45 mph.

3. Existing Conditions

- **Benton Road:** This east-west roadway currently is two lanes in the project area and is classified as an Urban Arterial Roadway.
- **Pat Road:** This roadway is a two-lane local street.
- **Elliot Road:** This north-south roadway is a two-lane local street.

Study Area Intersections

The study area was defined according to the Riverside County Traffic Impact Analysis Preparation Guide. The guidelines require that intersections at streets with a minimum classification of collector or higher be studied where the project adds 50 or more peak hour trips. Based on the calculated project trip generation and distribution, the following intersections were analyzed:

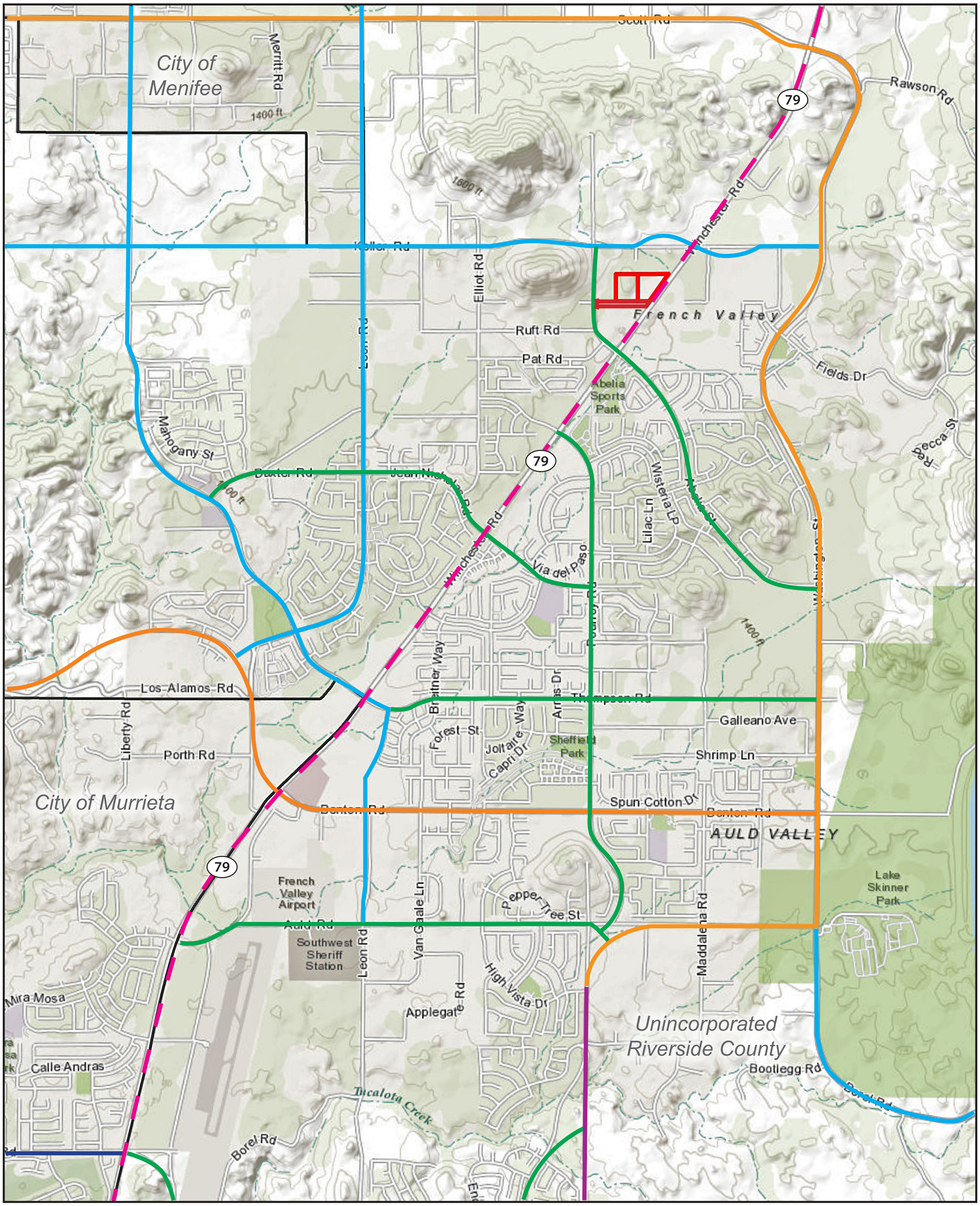
1. Winchester Road at Keller Road
2. Winchester Road at Pourroy Road/Abelia Street
3. Winchester Road at Whisper Heights Parkway/Pourroy Road
4. Winchester Road at Jean Nicholas Road/Skyview Road
5. Winchester Road at Max Gillis Boulevard/Thompson Road
6. Winchester Road at Benton Road
7. Pat Road at Pourroy Road
8. Jean Nicholas Road at Elliot Road
9. Pourroy Road at Skyview Road
10. Pourroy Road at Thompson Road

Intersections 1, 2, 3, 4, 5, and 6 are under the jurisdiction of Caltrans, and intersections 7, 8, 9, and 10 are under the jurisdiction of the County of Riverside.

Existing Travel Lanes and Intersection Controls

Figure 6 identifies the number of through lanes for existing roadways and the existing intersection controls and lane geometries.

Figure 4 - County of Riverside Functional Classifications



Project Site
City Boundary
Arterial
Collector
Expressway
Major
Secondary
Urban Arterial

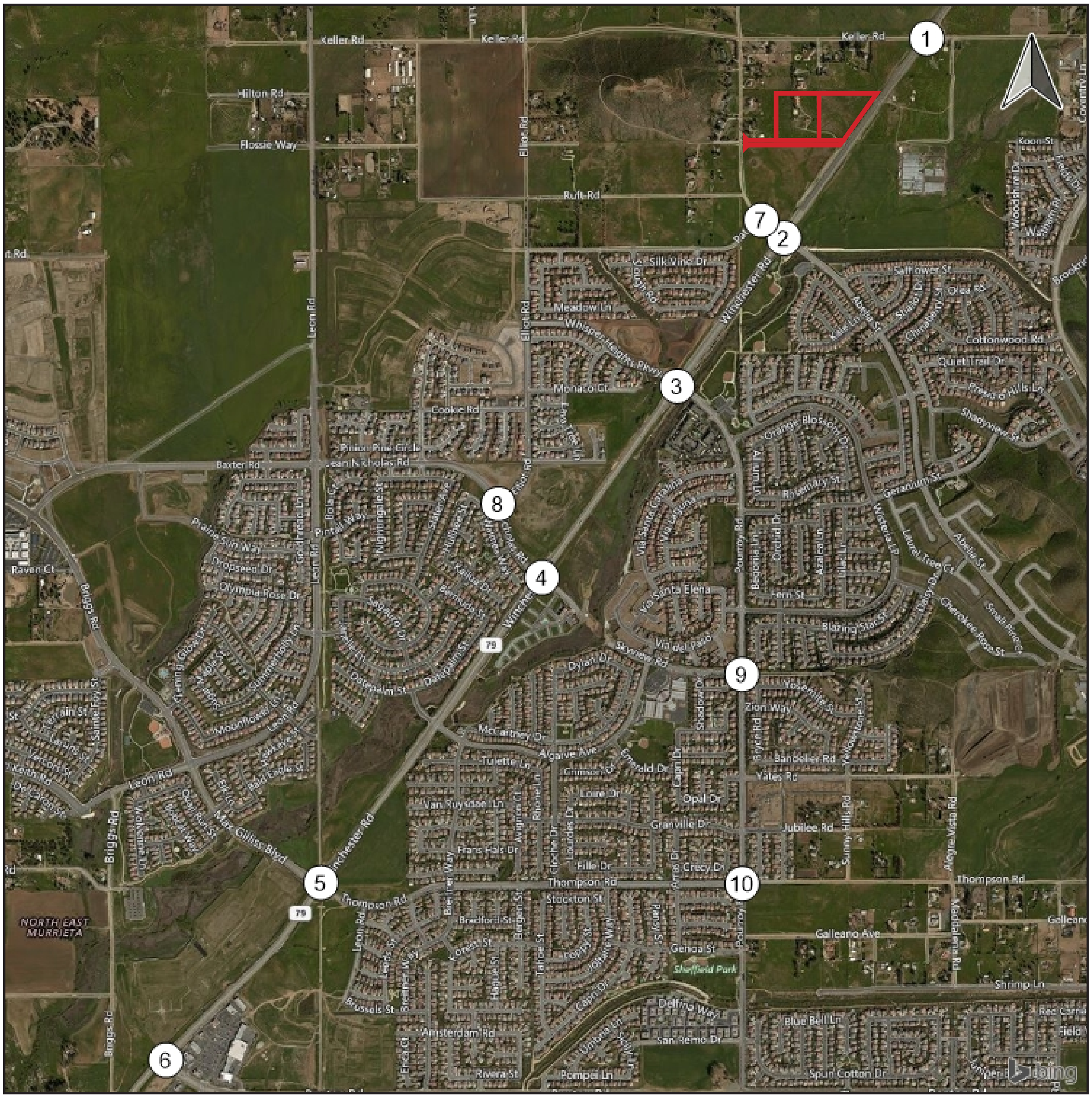
0 3,500
Scale (Feet)

Base Map Source: ESRI, USGS, NOAA, HERE, 2016

3. Existing Conditions

This page intentionally left blank.

Figure 5 - Study Area Network and Intersections



Project Site

1 Intersection Location Number

0 0.5
Scale (Miles)

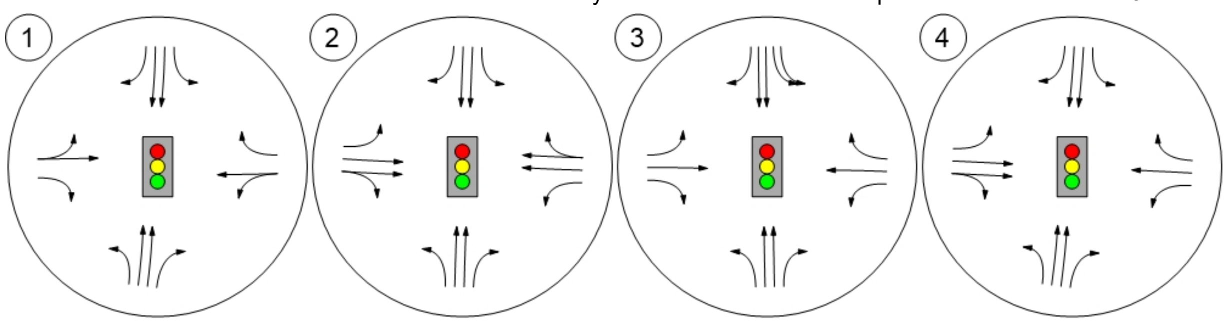
Base Map Source: Vistro, 2016

3. Existing Conditions

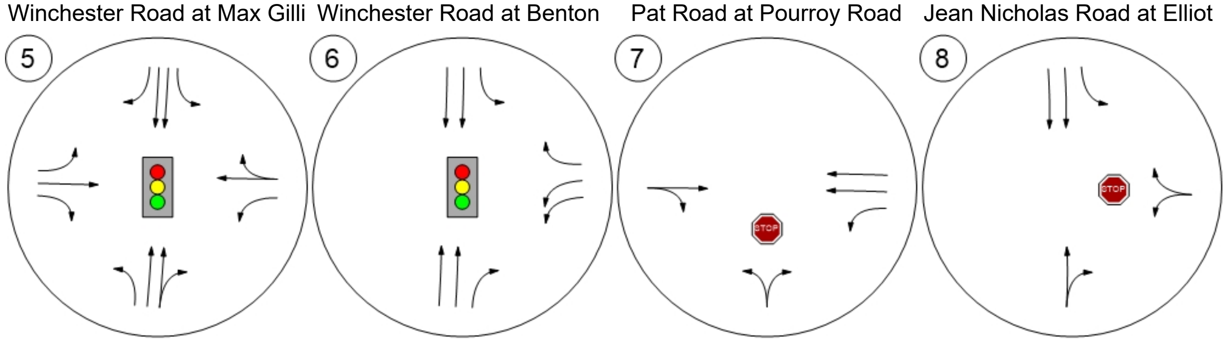
This page intentionally left blank.

Figure 6a - Existing Intersections and Roadway Lane Configurations (1-8)

Winchester Road at Keller Ro Winchester Road at Pourroy Winchester Road at Whisper Winchester Road at Jean Nic



Winchester Road at Max Gilli Winchester Road at Benton Pat Road at Pourroy Road Jean Nicholas Road at Elliot



Project Site

1 Intersection Location Number

0 0.5
Scale (Miles)

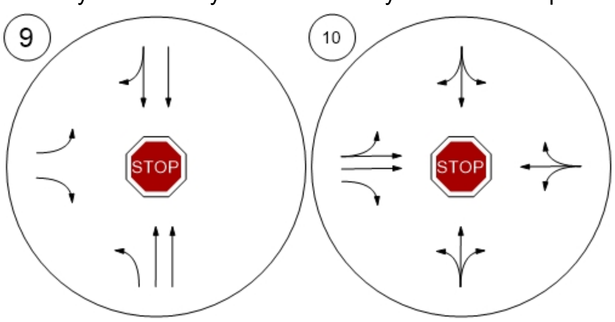
Base Map Source: Vistro, 2016

3. Existing Conditions

This page intentionally left blank.

Figure 6b - Existing Intersections and Roadway Lane Configurations (9-10)

Pourroy Road at Skyview Ro Pourroy Road at Thompson



9

0 1,000
Scale (Feet)

Base Map Source: Vistro, 2016

3. Existing Conditions

This page intentionally left blank.

3.2 EXISTING INTERSECTIONS OPERATIONS

Existing Traffic Volumes

Weekday AM and PM peak hour turn movement volumes were collected at the study-area intersections on Wednesday, September 14, 2016. The existing AM and PM peak hour count worksheets and figures showing turn-movement volumes are provided in Appendix B.

Existing Conditions Intersection Operations Analysis

The intersection operations analysis results are summarized in Table 2, *Existing Peak Hour Intersection Levels of Service*. All study area intersections currently operate at acceptable LOS during the peak hours for Existing traffic conditions, except for Winchester Road at Max Gillis Boulevard/Thompson Road in the AM and PM peak hours and Winchester Road at Benton Road in the PM peak hour. LOS worksheets for existing conditions are provided in Appendix C.

Table 2 Existing Peak Hour Intersection Levels of Service

Intersection	Traffic Control	Jurisdiction	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. Winchester Road at Keller Road	Signalized	Caltrans	2.8	A	5.5	A
2. Winchester Road at Pourroy Road/Abelia Street	Signalized	Caltrans	17.2	B	12.5	B
3. Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	Caltrans	15.2	B	15.6	B
4. Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	Caltrans	15.7	B	13.0	B
5. Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	Caltrans	**180.4**	**F**	**144.6**	**F**
6. Winchester Road at Benton Road	Signalized	Caltrans	21.0	C	**86.8**	**F**
7. Pourroy Road at Pat Road	Unsignalized	Riverside	10.7	B	9.5	A
8. Elliot Road at Jean Nicholas Road	Unsignalized	Riverside	19.0	C	13.2	B
9. Pourroy Road at Skyview Road	Unsignalized	Riverside	11.2	B	10.0	A
10. Pourroy Road at Thompson Road	Unsignalized	Riverside	13.9	B	16.1	C

Notes: LOS calculation worksheets included in Appendix C.
Intersections with unacceptable LOS are shown in **bold.**

3.3 TRANSIT SERVICE AND NON-MOTORIZED CIRCULATION

Riverside Transit Agency (RTA) provides regular transit bus service via Route 79 in the vicinity of the study area. Route 79 extends north-south between Temecula and Hemet at a frequency of about one hour 15 minutes (RTA 2016). The nearest bus stops are on Winchester Road just north of the intersection with Whisper Heights Parkway/Pourroy Road and on Pourroy Road just east of the intersection with Winchester Road. There are no paved sidewalks on Keller Road or the section of Winchester Road along the project site frontage.

3. Existing Conditions

This page intentionally left blank.

4. Project Traffic

4.1 TRIP GENERATION

The project would have a capacity of 600 students from grades K to 8. The trip generation was calculated based on rates in the Institute of Transportation Engineers' (ITE) manual, *Trip Generation* (9th edition), for Land Use 534, Private School (K-8) and supplemented by rates from Land Use 536, Private School (K-12). Table 3, *Project Trip Generation,* shows the trip generation rates and project trip generation for the daily, AM peak hour, and PM peak hour. The project is expected to generate up to1,488 daily trips; 540 trips (297 inbound and 243 outbound) during the AM peak hour; and 102 trips (44 inbound and 58 outbound) during the PM peak hour.

The general approach for conducting traffic impact analyses is to evaluate weekday peak hour traffic during the commute peak traffic conditions, which generally occur from 7 to 9 AM and 4 to 6 PM. The performance of the project access during school drop-off and pick-up times is evaluated in detail in Section 8 of this report. Temecula Valley Charter School is proposing to relocate an existing charter school campus from 35755 Abelia Street in French Valley (about 1.4 miles southeast of the proposed project site) to the proposed campus. The existing campus had 516 students in the 2015-16 school year (CDE 2016). Because the charter school would relocate to the proposed school site, trips generated by about 85 percent of the proposed 600-student capacity would be already-existing trips on roadways in and near French Valley and would not be new trips added to area roadways. Therefore, this analysis overestimates project trip generation.

Table 3 Project Trip Generation

		Trip Generation						
			AM Peak Hour[1]			PM Peak Hour[2]		
Land Use	**Unit**	**Daily[2]**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Private School (K-8)	Students	2.48	0.50	0.41	0.90	0.07	0.10	0.17
Project Trip Generation	600	1,488	297	243	540	44	58	102

1 Used the trip generation rates of ITE Code 534 Private School (K-8) from the ITE Trip Generation Manual 9th Edition.
2 Used the trip generation rates of ITE Code 536 Private School (K-12) from the ITE Trip Generation Manual 9th Edition.

4.2 TRIP DISTRIBUTION

The traffic that would be generated by the school was geographically distributed onto the street network by evaluating the layout of the study area roadway network and a review of land uses designated as residential in the area. Figure 7, *Project Trip Distribution,* presents the anticipated trip distribution for the school.

4.3 MODAL SPLIT AND TRIP ASSIGNMENT

The trip distribution percentages are applied to the project trip generation to determine the traffic volumes forecast to be added at each intersection (i.e., trip assignment).

4.4 EXISTING PLUS PROJECT TRAFFIC CONDITIONS

To assess Existing Plus Project traffic conditions, existing traffic is combined with project traffic. The calculated intersection operations for Existing Plus Project traffic conditions are shown in Table 4, *Intersection Delay and LOS, Existing Plus Project Conditions*. Figures that show the Existing Plus Project AM and PM peak hour intersection volumes are provided in Appendix D.

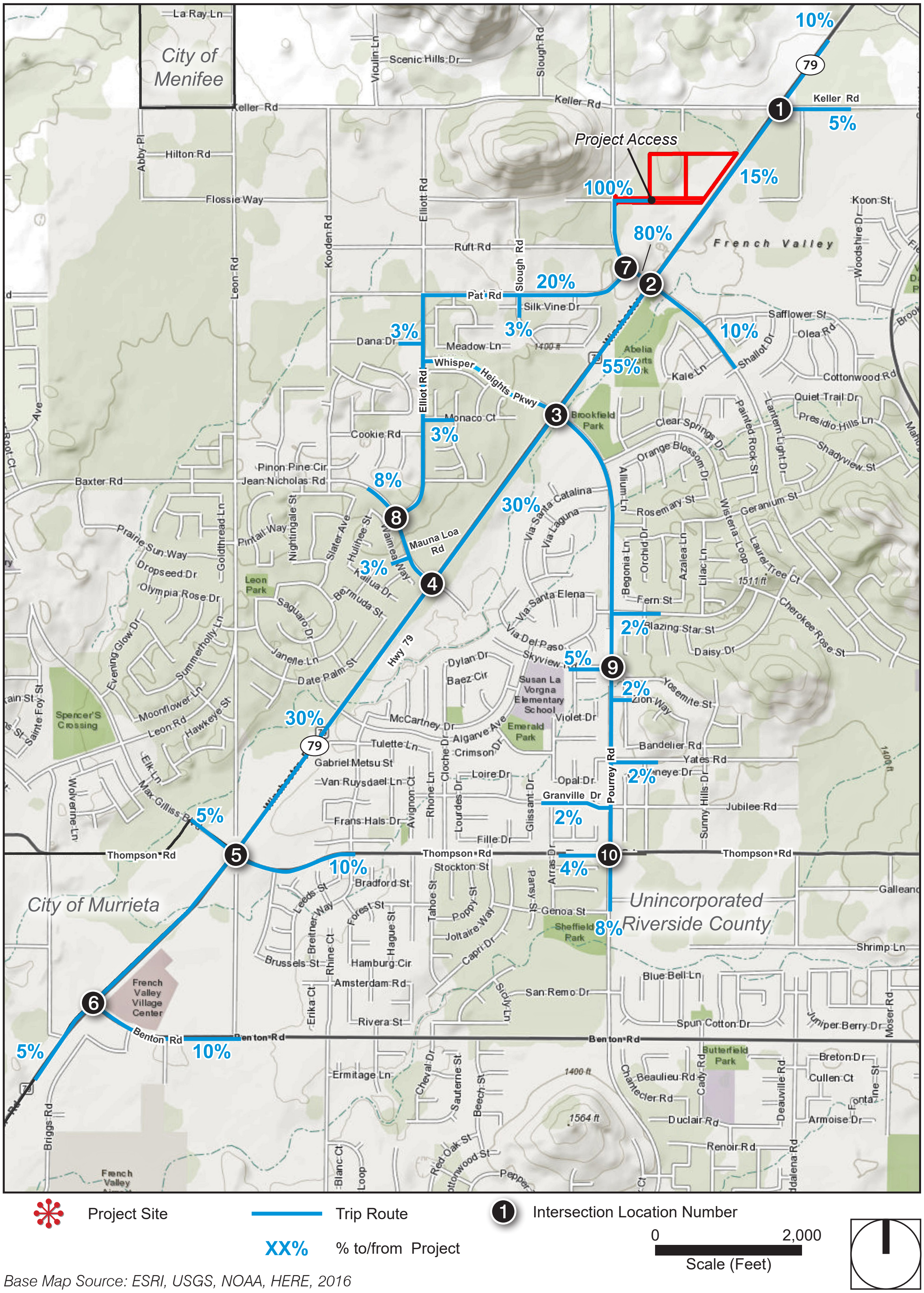
Table 4 Intersection Delay and LOS, Existing Plus Project Conditions

Intersection	Traffic Control	Jurisdiction	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. Winchester Road at Keller Road	Signalized	Caltrans	4.2	A	7.4	A
2. Winchester Road at Pourroy Road/Abelia Street	Signalized	Caltrans	33.3	C	14.7	B
3. Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	Caltrans	18.0	B	16.9	B
4. Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	Caltrans	16.1	B	14.4	B
5. Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	Caltrans	**180.4**	**F**	**165.2**	**F**
6. Winchester Road at Benton Road	Signalized	Caltrans	24.6	C	**87.0**	**F**
7. Pourroy Road at Pat Road	Unsignalized	Riverside	23.8	C	10.3	B
8. Elliot Road at Jean Nicholas Road	Unsignalized	Riverside	22.4	C	14.5	B
9. Pourroy Road at Skyview Road	Unsignalized	Riverside	12.7	B	11.2	B
10. Pourroy Road at Thompson Road	Unsignalized	Riverside	15.5	C	17.3	C

Notes: LOS calculation worksheets included in Appendix D.
Intersections with unacceptable LOS are shown in **bold.**

Under Existing Plus Project conditions, the intersections of Winchester Road at Max Gillis Boulevard/Thompson Road would operate at LOS F in the AM and PM peak hour, and Winchester Road at Benton Road would operate at LOS F in the PM peak hour. The remaining study intersections would operate at acceptable LOS. It shall be noted that at some intersections such as Winchester Road at Pourroy Road/Abelia Street, and Pourroy Road at Pat Road, the project would cause increases in delay, but would not result in unacceptable operations and would not result in a significant impact as defined in Section 2.2.

Figure 7 - Project Trip Distribution



Base Map Source: ESRI, USGS, NOAA, HERE, 2016

4. Project Traffic

This page intentionally left blank.

5. Future Traffic Conditions

Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. The ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Traffic forecasts for 2018 conditions are based on two years of ambient growth at 2 percent per year. The total ambient growth is the compounded growth of 2 percent per year over two years, which results in a total growth of 4 percent.

Cumulative projects are closely related past, present, and reasonably foreseeable probable future projects. A total of 18 projects in the County of Riverside and City of Murrieta were screened. Based on a review of their circulation systems, trip generations, locations, and land use types, the four cumulative projects shown on Figure 8, *Cumulative Developments Location Map*, would have the potential for directly adding measurable traffic to the area street system. The cumulative development projects assumed in this traffic analysis are estimated to generate 40,633 trip-ends per day during a typical weekday, with approximately 1,488 vehicle trips during the AM peak hour and 3,357 vehicle trips during the PM peak hour. Appendix E includes the trip generation calculations for the cumulative projects and intersection turn movement volumes related to the development of cumulative projects.

The following describes the future scenarios evaluated and identifies the intersections that are forecast to operate at unacceptable LOS for each scenario.

5.1 EXISTING PLUS AMBIENT PLUS PROJECT TRAFFIC CONDITIONS

At the request of the County of Riverside, a scenario for existing + ambient growth + project (EAP) was evaluated, corresponding to a scenario for project opening year 2018 with the project but without the development of cumulative projects. The intersection operations for the EAP traffic conditions have been calculated and are given in Table 5, *Intersection Delay and LOS, EAP Conditions*. AM and PM peak hour intersection volumes and LOS worksheets are provided in Appendix F.

5. Future Traffic Conditions

Table 5 Intersection Delay and LOS, EAP Conditions

Intersection	Traffic Control	Jurisdiction	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. Winchester Road at Keller Road	Signalized	Caltrans	4.3	A	8.9	A
2. Winchester Road at Pourroy Road/Abelia Street	Signalized	Caltrans	38.0	D	15.2	B
3. Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	Caltrans	18.7	B	17.8	B
4. Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	Caltrans	17.2	B	14.9	B
5. Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	Caltrans	**196.6**	**F**	**184.7**	**F**
6. Winchester Road at Benton Road	Signalized	Caltrans	27.6	C	**98.3**	**F**
7. Pourroy Road at Pat Road	Unsignalized	Riverside	24.3	C	10.3	B
8. Elliot Road at Jean Nicholas Road	Unsignalized	Riverside	24.0	C	14.9	B
9. Pourroy Road at Skyview Road	Unsignalized	Riverside	13.1	B	11.4	B
10. Pourroy Road at Thompson Road	Unsignalized	Riverside	16.5	C	18.8	C

Notes: LOS calculation worksheets included in Appendix F.
Intersections with unacceptable LOS are shown in **bold.**

Under EAP conditions, Winchester Road at Max Gillis Boulevard/Thompson Road would operate at unacceptable LOS F in the AM and PM peak hour, and Winchester Road at Benton Road would operate at unacceptable LOS F in the PM peak hour. The remaining study intersections would operate at acceptable LOS.

5.2 2018 WITHOUT PROJECT TRAFFIC CONDITIONS

To assess 2018 No Project traffic conditions, existing traffic is combined with the anticipated ambient growth and cumulative projects (existing + ambient growth + cumulative projects). The calculated intersection operations for the 2018 No Project traffic conditions are in Table 6, *Intersection Delay and LOS, 2018 No Project Conditions*. AM and PM peak hour intersection volumes and LOS worksheets are provided in Appendix G.

Table 6 Intersection Delay and LOS, 2018 No Project Conditions

Intersection	Traffic Control	Jurisdiction	AM Peak Hour		PM Peak Hour	
			Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS
1. Winchester Road at Keller Road	Signalized	Caltrans	20.5	C	**219.2**	**F**
2. Winchester Road at Pourroy Road/Abelia Street	Signalized	Caltrans	71.5	E	**208.1**	**F**
3. Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	Caltrans	32.3	C	**152.0**	**F**
4. Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	Caltrans	19.6	B	39.6	D
5. Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	Caltrans	**214.6**	**F**	**258.7**	**F**
6. Winchester Road at Benton Road	Signalized	Caltrans	40.5	D	**175.4**	**F**
7. Pourroy Road at Pat Road	Unsignalized	Riverside	27.7	D	**61.5**	**F**
8. Elliot Road at Jean Nicholas Road	Unsignalized	Riverside	25.4	D	24.4	C
9. Pourroy Road at Skyview Road	Unsignalized	Riverside	17.0	C	**63.3**	**F**
10. Pourroy Road at Thompson Road	Unsignalized	Riverside	22.9	C	**81.5**	**F**

Notes: LOS calculation worksheets included in Appendix G.
Intersections with unacceptable LOS are shown in **bold.**

Under 2018 No Project conditions, the following intersections would operate at unacceptable LOS:

- Winchester Road at Keller Road (PM peak hour)
- Winchester Road at Pourroy Road/Abelia Street (PM peak hour)
- Winchester Road at Whisper Heights Parkway/Pourroy Road (PM peak hour)
- Winchester Road at Max Gillis Boulevard/Thompson Road (AM and PM peak hours)
- Winchester Road at Benton Road (PM peak hour)
- Pourroy Road at Pat Road (PM peak hour)
- Pourroy Road at Skyview Road (PM peak hour)
- Pourroy Road at Thompson Road (PM peak hour)

5.3 2018 CUMULATIVE PLUS PROJECT TRAFFIC CONDITIONS

To assess future cumulative traffic conditions, traffic generated by cumulative projects is added to the 2018 EAP conditions discussed above. The calculated intersection operations for the 2018 Cumulative Plus Project traffic conditions are listed in Table 7, *Intersection Delay and LOS, 2018 Cumulative Plus Project*. The 2018 with project AM and PM peak hour intersection volumes and LOS worksheets are provided in Appendix H.

5. Future Traffic Conditions

Table 7 Intersection Delay and LOS, 2018 Cumulative Plus Project

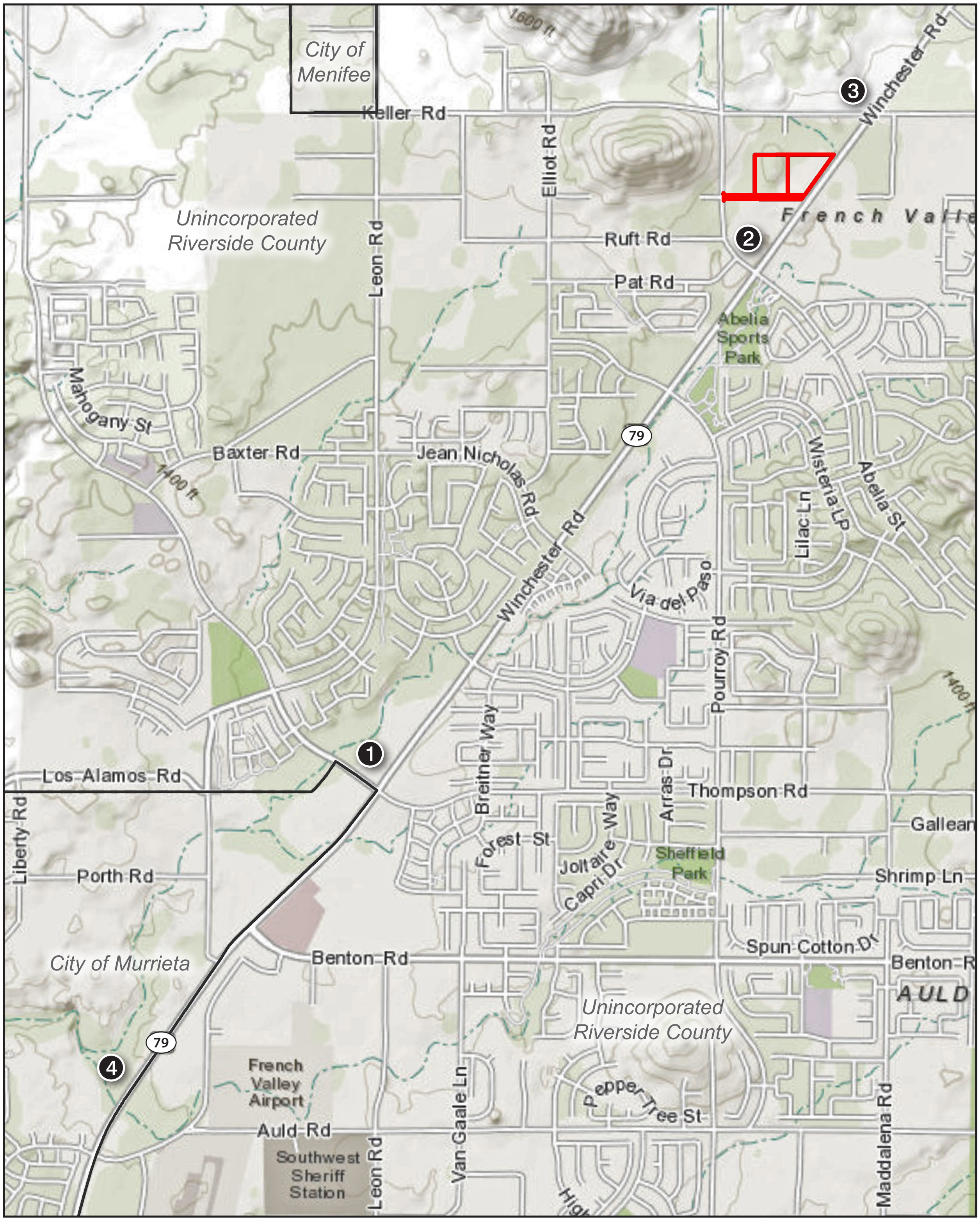
Intersection	Traffic Control	Jurisdiction	AM Peak Hour Average Delay (sec/veh)	AM Peak Hour LOS	PM Peak Hour Average Delay (sec/veh)	PM Peak Hour LOS
1. Winchester Road at Keller Road	Signalized	Caltrans	15.9	B	**221.5**	**F**
2. Winchester Road at Pourroy Road/Abelia Street	Signalized	Caltrans	**132.5**	**F**	**236.2**	**F**
3. Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	Caltrans	49.5	D	**143.1**	**F**
4. Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	Caltrans	21.0	C	43.0	D
5. Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	Caltrans	**218.7**	**F**	**261.2**	**F**
6. Winchester Road at Benton Road	Signalized	Caltrans	47.3	D	**176.8**	**F**
7. Pourroy Road at Pat Road	Unsignalized	Riverside	**357.4**	**F**	**86.7**	**F**
8. Elliot Road at Jean Nicholas Road	Unsignalized	Riverside	31.9	D	25.4	D
9. Pourroy Road at Skyview Road	Unsignalized	Riverside	21.6	C	**68.5**	**F**
10. Pourroy Road at Thompson Road	Unsignalized	Riverside	28.9	D	**85.1**	**F**

Notes: LOS calculation worksheets included in Appendix H.
Intersections with unacceptable LOS are shown in **bold.**

Under 2018 Cumulative Plus Project conditions, the following intersections would operate at unacceptable LOS:

- Winchester Road at Keller Road (PM peak hour)
- Winchester Road at Pourroy Road/Abelia Street (AM and PM peak hours)
- Winchester Road at Whisper Heights Parkway/Pourroy Road (PM peak hour)
- Winchester Road at Max Gillis Boulevard/Thompson Road (AM and PM peak hours)
- Winchester Road at Benton Road (PM peak hour)
- Pourroy Road at Pat Road (AM and PM peak hour)
- Pourroy Road at Skyview Road (PM peak hour)
- Pourroy Road at Thompson Road (PM peak hour)

Figure 8 - Cumulative Developments Location Map



Project Site	1 Self Storage Facility/Retail Building/Car Wash	4 Adobe Springs
City Boundary	2 160,680 SF Mix of Commercial, Restaurant, Financial	
	3 SP Commercial Office, Retail Mixed Use, Residential	

0 2,000
Scale (Feet)

Base Map Source: ESRI, USGS, NOAA, HERE, 2016

5. Future Traffic Conditions

This page intentionally left blank.

6. Impacts

Significant impacts are determined by comparing with- and without-project scenarios for each traffic condition. As discussed in Section 2.2, potential traffic impacts would occur if, during the weekday peak hours:

- At intersections currently operating at acceptable LOS (A to D), the addition of project trips would change the LOS to an unacceptable LOS E or F.
- At intersections currently operating at unacceptable LOS E or F, the project would increase the delay by more than 5 seconds.

According to these criteria, without roadway improvements, impacts would occur at the following locations:

6.1 EXISTING PLUS PROJECT CONDITIONS

5. Winchester Road at Max Gillis Boulevard/Thompson Road (PM peak hour)
6. Winchester Road at Benton Road (PM peak hour)

6.2 2018 CUMULATIVE PLUS PROJECT CONDITIONS

2. Winchester Road at Pourroy Road/Abelia Street (AM and PM peak hours)
5. Winchester Road at Max Gillis Boulevard/Thompson Road (AM peak hour)
6. Winchester Road at Benton Road (AM peak hour)
7. Pourroy Road at Pat Road (AM and PM peak hour)
9. Pourroy Road at Skyview Road (PM peak hour)

To address intersection operational deficiencies the following roadway improvements would be necessary:

2. Winchester Road at Pourroy Road/Abelia Street
   - Construct a southbound through lane
   - Construct a northbound through lane
   - Construct a northbound left turn lane
   - Construct an eastbound right turn lane

6. Impacts

5. Winchester Road at Max Gillis Boulevard/Thompson Road
   - Construct an eastbound right turn lane
   - Construct a westbound left turn lane
   - Construct a northbound left turn lane
   - Construct a southbound through lane
6. Winchester Road at Benton Road
   - Construct a southbound left turn lane
   - Construct a westbound right turn lane
7. Pourroy Road at Pat Road
   - Install a traffic signal
9. Pourroy Road at Skyview Road
   - Install a traffic signal

None of the intersections above were identified in the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF) program, the Riverside County Development Impact Fee (DIF) program, or the Road and Bridge Benefit Districts (RBBD). The TUMF, DIF, and RBBD programs are discussed below.

6.2.1 Applicable Funding Mechanisms

In Riverside County, transportation improvements are funded through direct project improvements and via contributions to development impact fee programs such as TUMF, DIF and the RBBD.

TUMF

The Board of Supervisors of the County of Riverside and the Western Riverside Council of Governments (WRCOG) enacted TUMF to fund the mitigation of cumulative regional transportation impacts resulting from future development. TUMF fees fund capital improvement projects necessary to meet the increased travel demand to the transportation system. The fee calculations are based on the proportional allocation of the costs of proposed transportation improvements based on the cumulative transportation system impacts of different types of new development. Fees are directly related to the forecast rate of growth and trip generation from new development. TUMF fees are generally imposed on new residential, industrial, and commercial development. For certain residential and non-residential land-use types, new development is exempt from the TUMF. The TUMF program exempts public schools from TUMF fees.

According to Exhibit F, "TUMF Program Exemptions" of the TUMF administrative plan (WRCOG 2016), any nonprofit corporation or nonprofit organization offering and conducting full-time day school at the elementary, middle school, or high school level for students between the ages of five and eighteen years is exempt from TUMF fees. "Non-profit Organization" means an organization operated exclusively for exempt purposes per section 501(c)(3) of the Internal Revenue Code, and none of its earnings may inure to any private shareholder or individual. In addition, it may not be an action organization—i.e., it may not attempt to influence legislation as a substantial port of its activities and it may not participate in any campaign activity for or against political candidates.

DIF

The Development Impact Fee program covers all portions of unincorporated Riverside County. It provides funds for a variety of public facilities that are both transportation and non-transportation related, including various roads, bridges and traffic signals. The Development Impact Fee program established separate rates for each Area Plan described in the Riverside County General Plan. The Development Impact Fee program is administered by the Riverside County Executive Office and was adopted through Ordinance No. 659. Transportation fees are set in two different components: (1) roads, bridges and major improvements, and (2) signals.

Four categories of fees are defined: single family residential, multi-family residential, commercial, and industrial. The DIF does not include fees for schools.

RBBD

The Road and Bridge Benefit Districts were established through Ordinance 460 to defray the cost of road and bridge improvements. There are currently four Road and Bridge Benefit Districts in Riverside County administered by the Transportation Department: Southwest, Mira Loma, Menifee Valley, and Scott Road. The project site is in the Southwest area. The Southwest Road and Bridge Benefit District was formed to fund specific, regional road and bridge improvements determined to provide a benefit to the developing properties in portions of the southwest areas of Riverside County. Four categories of fees are defined: residential, commercial, office commercial, and industrial. The RBBD does not include fees for schools.

Project Traffic Impacts

The following summarizes the contribution of the project to the new trips at intersections where impacts would occur. The contributions are shown for the AM peak hour because it is the period that generates the highest number of trips for schools The proposed campus would replace an existing campus about 1.4 miles southeast of the project site. However it is common practice not to take credit for existing uses being relocated because it not known at this point if the existing school site will be redeveloped. For the purpose of this analysis it was conservatively assumed that all project trips would be "new". Therefore, a percentage of the trips generated by the proposed campus in reality would be trips relocated from the existing campus and not new trips on the area roadway network. The project percentage trips shown below therefore are likely overstated.

- Winchester Road at Pourroy Road/Abelia Street: 27 percent
- Winchester Road at Max Gillis Boulevard/Thompson Road: 23 percent
- Winchester Road at Benton Road: 22 percent
- Pourroy Road at Pat Road: 43 percent
- Pourroy Road at Skyview Road: 29 percent

The fair share calculations are included in Appendix I.

6. Impacts

The County of Riverside normally requires payment of transportation improvement fees to mitigate local traffic impacts. However, according to Exhibit A of the Riverside County Transportation Department Traffic Impact Analysis Preparation Guide, preschools, elementary schools, and middle schools are "generally exempt from Traffic Analysis requirements per Board of Supervisor's action November 5, 1996 (item No. 3.27)" (Riverside County 2008). The County reserves the right to require a traffic impact analysis for any development regardless of size or type depending on conditions such as the need for a focused study for access/operational issues or the presence of a nearby substandard intersection or street. In addition, the TUMF program recognizes that schools accommodate residential growth and don't generate trips in the absence of such growth, and therefore exempts schools from TUMF fees. Impacts would be less than significant and no mitigation is required.

Because Temecula Valley Charter School is a governmental entity operated by a non-profit, tax-exempt corporation, it is not subject to the DIF, TUMF, and RBBD fees. Copies of the charter school's Articles of Incorporation and tax exempt designation from the IRS were provided as attachments to previous response to comments memorandum (dated January 4, 2017) submitted to County staff. Based on the materials previously enclosed and preceding response, the charter school is exempt from all such fees.

7. Signal Warrants

Signal warrants are a set of criteria used to evaluate the potential need for a traffic signal under existing and 2018 scenarios at an unsignalized or stop-controlled intersection. The methodology for the signal warrant analysis is included in the 2014 California Manual on Uniform Traffic Control Devices. The manual states that if one or more of the criteria for signal warrants is met, an engineering study is required to evaluate other factors to determine if an intersection must be signalized. The traffic analysis in this study uses Warrant 3 criteria, which are based on traffic volumes entering the intersection during the peak hour. The signal warrant calculations are included in Appendix J. Signal warrants would not be met at any intersection that are currently unsignalized.

7. Signal Warrants

This page intentionally left blank.

8. Site Access, Internal Circulation, and Recommendations

The following discusses project site access features, including drop-off/pick-up, queues, and recommendations to provide adequate site access.

8.1 SITE ACCESS AND INTERNAL CIRCULATION

Site access would be via two driveways at the southeast corner of the site from Koon Street (at the terminus of the cul-de-sac), a proposed new street that would run east-west along the southern site boundary. Koon Street would link to Pourroy Road and form a four-leg intersection with Flossie Way. The intersection would be approximately 1,200 feet from Winchester Road. The segment of Pourroy Road north of Pat Road is currently unpaved (starting approximately 200 feet south of Fossie Way/Koon Street). The segment of Pourroy Road in the vicinity of the site is mostly flat and clear of visual obstructions for at least 200 feet north and south of Fossie Way/Koon Street. A concrete driveway would be constructed east of Koon Street to provide vehicular and pedestrian access to the two single-family homes north of the school site. The driveway apron would be approximately 20 north of the school boundary.

The proposed internal circulation would consist of a flow-through drop-off loop that would be 30 feet wide and extend around the periphery of the parking lot. The total length of the loop would be approximately 1,400 feet. The parking lot would include 100 parking spaces, extending the length of the site boundary along Winchester Road. The student drop-off and pick-up area would be along the western side of the parking lot adjacent to the school buildings. It would allow for a loading/unloading lane and at least one passing lane. Preliminary plans show one passing lane and one loading lane.

With approximately 700 feet from the beginning of the loading area to the driveway entrance plus approximately 800 feet of Koon Street, there would be approximately 1,500 feet of driveway length to queue cars during student drop-off and pick-up. Assuming an average length of 25 feet per vehicle, the internal driveways could accommodate up to 60 vehicles before the student loading area. In addition, there would be 100 parking spaces and additional space in the loading area. It is anticipated that queues would be limited to Koon Street, with some queueing on Pourroy Road as vehicles slow down to turn into Koon Street. The highest turn-movement volumes at the access driveway would occur during the AM peak hour with student drop-off. The typical morning peak drop-off and afternoon pick-up activity lasts about 20 minutes, and any possible queue would dissipate immediately afterward.

Project development would also include paving 385 feet of Pourroy Road extending south from the intersection of Flossie Way to a currently paved portion of Pourroy Road. The areas of Flossie Way and Pourroy Road that would be developed would total about 0.65 acres.

8.2 RECOMMENDATIONS

The following recommendations have been prepared to ensure that adequate site access is provided. Figure 9 presents the project's site access and recommendations.

- Construct Koon Street at its ultimate width as an industrial collector road per County of Riverside design standards with a right-of-way of 78 feet between the project's western boundary and the project's access driveway. A sidewalk shall be provided on the northern side of the road along the school property with an adequate connection to allow pedestrian connections to the school buildings without walking on driveways.

- Construct and pave a section of approximately 385 feet in length of Pourroy Road as a 2-lane undivided roadway from Flossie Way to the existing paved section of Pourroy Road. This roadway improvement is expected to be implemented as a part of the proposed development just south of the project site, which is currently in review with County staff. However, it is acknowledged that a condition of approval will be added to the proposed project to require that this section of Pourroy Road is paved prior to the commencement of school operations.

- The intersection of Koon Street with Pourroy Road shall form a 4-leg intersection with Flossie Way.

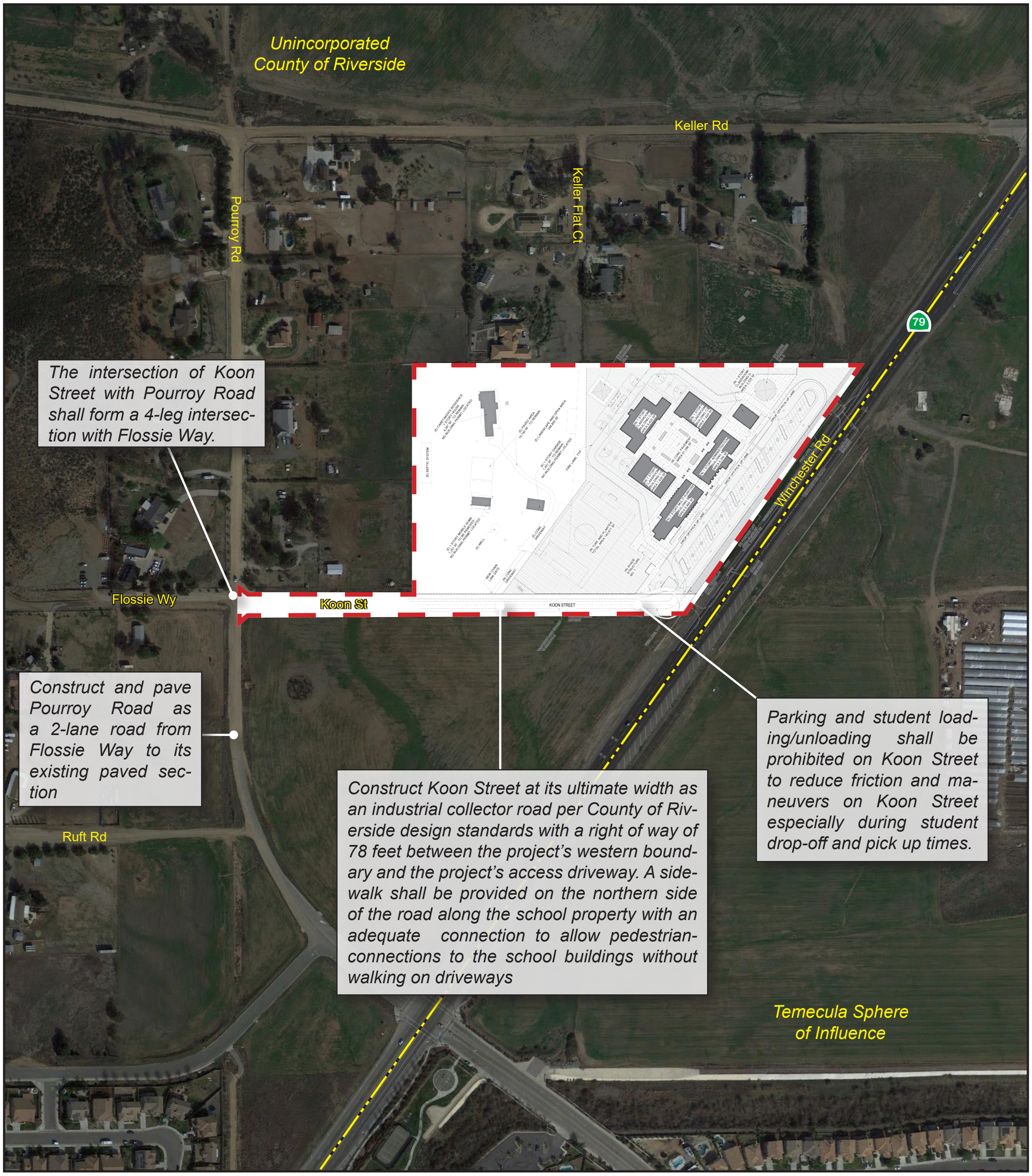
- Parking and student loading/unloading shall be prohibited on Koon Street to reduce friction and maneuvers on Koon Street, especially during student drop-off and pick-up times.

- Prior to the opening of the project, the school shall work with the Riverside County to identify on-site traffic signing and striping to be implemented in conjunction with detailed construction plans for the project. These shall be in conformance with design standards from the California Manual of Uniform Traffic Control Devices for Streets and Highways (CA MUTCD) and Riverside County standards.

- The school and the Riverside County should periodically review traffic operations in the vicinity of the project once the project is constructed to ensure that traffic operations are satisfactory.

- The charter school shall work with the County of Riverside and implement operational mitigation measures such as additional time restrictions, markings, signage, modifications to loading procedures and education for parents and students to improve traffic follow, if necessary.

Figure 9 - Project Site Access Recommendations



Prior to the opening of the project, the school shall work with the Riverside County to identify on-site traffic signing and striping to be implemented in conjunction with detailed construction plans for the project. These shall be in conformance with design standards from the California Manual of Uniform Traffic Control Devices for Streets and Highways (CA MUTCD) and Riverside County standards.

The school and the Riverside County should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that traffic operations are satisfactory.

Project Site

0 500
Scale (Feet)

Source: Google Earth Pro, 2016; Site Plan: WLC Architects, 2016

8. Site Access, Internal Circulation, and Recommendations

This page intentionally left blank.

9. Congestion Management Plan Conformance

The Congestion Management Program (CMP) in effect in Riverside County was approved by the Riverside County Transportation Commission (RCTC) in 2011. All freeways and selected arterial roadways in the county are designated elements of the CMP system of highways and roadways. SR-79 is part of the CMP roadway system. According to the RTCT CMP plan, when a deficiency is identified, a deficiency plan must be prepared by the local agency (in this case Caltrans). Other agencies identified as contributors to the deficiency, which include the County of Riverside, are also required to coordinate with the development of the plan. The plan must contain mitigation measures, including consideration of Transportation Demand Management strategies and transit alternatives, and a schedule for mitigating deficiency.

Western Riverside County local agencies and the County of Riverside have adopted TUMF programs. If, during the annual LOS monitoring process, an intersection within the TUMF area falls below LOS E, an evaluation of planned improvements necessary to mitigate the deficiency would be mitigated through implementation of TUMF projects.

The project would generate 540 AM peak hour trips and 102 PM peak hour trips. The trip distribution map shows that up to 55 percent of these trips would travel on segments of SR-79. Therefore, up to 297 trips would be added to segments of SR-79. The project would contribute to trips that would cause intersections along SR-79 to operate at unacceptable LOS. These deficiencies would occur without or with the project. The project would cause a cumulative impact at three study intersections along SR-79 at its intersections with Pourroy Road/Abelia Street, Max Gillis Boulevard/Thompson Road, and Benton Road.

9. Congestion Management Plan Conformance

This page intentionally left blank.

10. References

American Association of State Highway and Transportation Officials. 2001. Geometric Design of Highways and Streets.

California Department of Education (CDE). 2016, December 21. Dataquest. http://dq.cde.ca.gov/dataquest/.

California Department of Transportation (Caltrans). 1999, November. State Route 79. Route Concept Fact Sheet. http://sr79project.info/uploads/media_items/route-concept-report-november-1999.original.pdf.

———. 2012, May 7. State Highway Design Manual.

Caltrans Data Branch. 2014. All Traffic Volumes on CSHS. Accessed December 16, 2016. http://www.dot.ca.gov/trafficops/census/2014all/Route71-80.html.

Institute of Transportation Engineers (ITE). 2012. *Trip Generation*. 9th edition.

Riverside, County of. Map My County: Circulation Element Map. http://mmc.rivcoit.org/MMC_Public/Viewer.html?Viewer=MMC_Public.

Riverside County Planning Department.

_______2003. Riverside County General Plan. http://planning.rctlma.org/ZoningInformation/GeneralPlan.aspx.

_______2015. Riverside County General Plan Circulation Element

http://planning.rctlma.org/Portals/0/genplan/general_plan_2016/elements/Ch04_Circulation_120815.pdf?ver=2016-04-01-100756-397.

Riverside County Transportation Commission (RCTC). 2011, December 14. 2011 Riverside County Congestion Management Program. http://rctc.org/uploads/media_items/congestionmanagementprogram.original.pdf.

Riverside County Transportation Department. 2008. Traffic Impact Analysis Preparation Guide. http://www.cityofhemet.org/DocumentCenter/Home/View/784.

———. Riverside County Transportation Department Funding Programs. Last Accessed December 16, 2016. http://rctlma.org/trans/Land-Development/Funding-Programs.

10. References

Riverside Transit Agency (RTA). 2016, September 11. Route 79. http://www.riversidetransit.com/images/stories/DOWNLOADS/ROUTES/079.pdf.

Transportation Research Board. 2000. Highway Capacity Manual.

Western Riverside Council of Governments (WRCOG). 2016, June 24. Transportation Uniform Mitigation Fee Administrative Plan.

Appendix A. Memorandum of Understanding with Riverside County Transportation Department

Exhibit B

SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the Riverside County Transportation Department requirements for traffic impact analysis of the following project. The analysis must follow the Riverside County Transportation Department Traffic Study Guidelines dated February 2005.

Case No. __________
Related Cases -
SP No. __________
EIR No. __________
GPA No. __________
CZ No. __________
Project Name: Temecula Valley Charter School
Project Address: Two parcels on the west side of State Route 79 between Keller Road and Pourroy Road
Project Description: Construct a public charter school for 600 students in grades K-8.

	Consultant	Developer
Name:	PlaceWorks	Temecula Valley Charter School
Address:	3 MacArthur Place, Suite 1100	35755 Abelia Street
	Santa Ana, CA 92707	Winchester, CA 92596
Telephone:	(714) 966 - 9220	(951) 294-6780
Fax:	(714) 966 - 9221	

A. Trip Generation Source: ITE 9th Edition ITE Code 534 Private School (K-8)

Current GP Land Use	Rural Residential	Proposed Land Use	Schools are permitted by Riverside County in any zone
Current Zoning	Rural Residential	Proposed Zoning	with a Public Use Permit

	Current Trip Generation In	Out	Total	Proposed Trip Generation In	Out	Total
AM Trips				297	243	540
PM Trips						

Internal Trip Allowance ☐ Yes ☒ No (______ % Trip Discount)
Pass-By Trip Allowance ☐ Yes ☒ No (______ % Trip Discount)

A passby trip discount of 25% is allowed for appropriate land uses. The passby trips at adjacent study area intersections and project driveways shall be indicated on a report figure.

B. Trip Geographic Distribution: N __ % S __ % E __ % W __ %
(attach exhibit for detailed assignment) See attached exhibit.

C. Background Traffic

Project Build-out Year: 2018
Annual Ambient Growth Rate: 2 %
Phase Year(s) N/A
Other area projects to be analyzed: Consulting with the County of Riverside and City of Murrieta.

Model/Forecast methodology Traffic from 2% annual ambient growth plus cumulative projects.

Exhibit B – Scoping Agreement – Page 2

D. Study intersections: *(NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)*

1. SR-79 and Keller Road
2. SR-79 and Abelia Street
3. SR-79 and Whisper Heights/Pourroy Road
4. SR-79 and Jean Nicholas Road
5. SR-79 and Thompson Road
6. SR-79 and Benton Road
7. Pourroy Road and Pat Road
8. Elliott Road at Jean Nicholas Road
9. Pourroy Road and Skyview Road
10. Pourroy Road and Thompson Road

E. Study Roadway Segments: *(NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)*

1. __________
2. __________
3. __________
4. __________
5. __________
6. __________
7. __________
8. __________
9. __________
10. __________

E. Other Jurisdictional Impacts

Is this project within a City's Sphere of Influence or one-mile radius of City boundaries? ☒ Yes ☐ No

If so, name of City Jurisdiction: City of Murrieta

F. Site Plan (please attach reduced copy)

G. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by Transportation Department)
(NOTE: If the traffic study states that "a traffic signal is warranted" (or "a traffic signal appears to be warranted," or similar statement) at an existing unsignalized intersection under existing conditions, 8-hour approach traffic volume information must be submitted in addition to the peak hourly turning movement counts for that intersection.)

Emergency access? For p.m. peak hr. analysis conduct count from 2:00 p.m – 6:00 p.m.

H. Existing Conditions

Traffic count data must be new or recent. Provide traffic count dates if using other than new counts.
Date of counts Conduct count after Harvest Hill Steam Acadamy is in session.

***NOTE* Traffic Study Submittal Form and appropriate fee must be submitted with, or prior to submittal of this form. Transportation Department staff will not process the Scoping Agreement prior to receipt of the fee.**

Recommended by:

__________ __________
Consultant's Representative — Date

Scoping Agreement Submitted on __________

Revised on __________

Approved Scoping Agreement:

__________ __________
Riverside County Transportation Department — Date

1. The analysis scenario to be:
    a. Existing
    b. Existing + School
    c. Existing + Ambiance + School
    d. Existing + Ambiance + School + Cumulative

2. Confirm trip distribution does not need to conform to School District Boundaries.

Figure 1 - Project Trip Distribution

Base Map Source: ESRI, USGS, NOAA, HERE, 2016

PlaceWorks

Active Cases as of 8/31/2016

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
CUP03078R3	DRT	20150512	0	0
EXTEND LIFE OF PRIVATE AIRSTRIP - CUP03078				
CUP03556	DRT	20070620	0	20000000
15 BLDGS FOR STORAGE OF BOATS/RV/HOUSEHOLD GOODS A				
CUP03593	DRT	20080507	0	20000000
SELF STORAGE FACILITY/RETAIL BUILDING / CAR WASH /				
CUP03744	DRT	20160414	0	0
INDUSTRIAL BLDG W/BREWERY, WINE PRODUCTION/STORAGE				
PM29509	DRT	20001227	0	20000000
SUBDIVIDE 37.12 AC INTO 27 COMMERCIAL/IND PARCELS				
PM32317	APPLIED	20040805	0	0
SUB-DIV 135.50 AC INTO 5 LEGAL PARCELS FOR TR32318				
PM33691R1	BOS	20120814	0	20000000
RECONDITION TRANSPORTATION CONDITIONS				
PM33750	DRT	20050720	0	20000000
SCHED E DIVISION OF 28.19 AC. INTO 3 PARCELS 1 OPE				
PM37082	DRT	20160331	0	0
SCH E MAP/SUBDIVIDE 7 LOT INTO 2 PARCELS				
PM37190	APPLIED	20160819	0	0
SCHEDULE "E" PARCEL MAP - 6 LOTS				
PP20682	DRT	20050721	0	20000000
MIXED USE/MINIMART GAS STATION CARWASH/STORAGE				
PP21022	DRT	20051028	0	20000000
PRIVATE TRADE SCHOOL				
PP22974	DRT	20070801	0	20000000
INITIAL STUDY FOR THE PROPOSED PROJECT THAT INVOLV				
PP23001	APPLIED	20070810	0	0
PP23146	DRT	20071030	0	20000000
OFFICE/INDUSTRIAL/COMMERCIAL RETAIL CENTER				
PP25340	DRT	20130404	0	0
70 FT MONOPINE AND UNMANNED WIRELESS FACILITY				
PP25693	DRT	20141021	0	0
VERIZON-80FT LIGHT STD/12 ANTENNAS/9 FT BLOCK WALL				
PP25793	DRT	20150403	0	0
DENNY'S RESTAURANT-4320SF/EL POLLO RESTRNT-2975SF				
PP25998	DRT	20160328	0	0
156,499 SF MULTI-BLDG. SELF STORAGE/RV STORAGE FAC				
PP26047	DRT	20160616	0	0
1 STORY OFFICE BUILDING				
PP26084	APPLIED	20160819	0	0
CONSTRUCT A 351,060 SQ. FT. WALMART SHOPPING				
PUP00907	DRT	20101104	0	20000000
CHARTER SCHOOL FOR GRADES K-12				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
SP00106A17	DRT	20060522	0	20000000
AMEND ZONES WITHIN SP				
SP00106AF	DRT	20050728	0	20000000
TO CHANGE INDUSTRIAL LAND USE TO 7.02 AC OF MEDIUM				
SP00106AG	DRT	20051012	0	20000000
SC FOR SP106-13.2 AC LDR-MDR 11.09 AC MDR-RR				
SP00106AI	DRT	20080609	0	20000000
AMENDMNT 18 TO CHNG TO RETAIL/OFFICE/FLEX INDUSTRL				
SP00284A3	DRT	20071030	0	20000000
GENERAL COMMERCIAL LANDUSE IN PLANNING AREA 1&2				
SP00286A6	BOS	20140325	0	20000000
SPA TO AMEND WINCHESTER 1800 TO 105.5 AC OF SITE.				
SP00293A6	APPLIED	20151223	0	0
NEW PLANNING AREAS FOR GPA01162				
SP00312A2	DRT	20160128	0	0
INCREASE DENSITY/EXTEND BOUNDARY OF SP 312				
TR30430	WITHDRWN	20030305	0	20000000
SUBDIVIDE 40.12 INTO 122 7200 SINGLE FAMILY RESIDE				
TR32318	DRT	20040610	0	20000000
SCHEDULE A-DIVIDE 135.5 ACRES INTO 396 SF LOTS W/				
TR32323	DRT	20051012	0	20000000
SUBDIV 20 AC INTO 38 SFR - SCHEDULE A / SP106AG				
TR34150	DRT	20051019	0	20000000
Schedule A subdivision of 38.9 acres into 82 singl				
TR34150	DRT	20051019	0	20000000
SCHED A DIVISION OF 38.9 AC INTO 82 SFR LOTS				
TR34534	DRT	20060313	0	20000000
SUBDIVIDE 158.84 ACRES INTO 12 LOTS				
TR34689	DRT	20060825	0	20000000
SCHED A DIVISION OF 4.8 AC INTO 19 8,000 SQ FT LOT				
TR34735	DRT	20060710	0	20000000
SUBDVD 73AC ONTO 314 SFR LOTS/SCHEDULE "A"/5 PARKS				
TR35328	DRT	20070410	0	20000000
SUBDIVIDE 10 ACRES INTO 38 RESIDENTIAL LOTS				
TR36467	DRT	20140226	0	0
TRACT MAP TO SUBDIVIDE 156.12 ACRES INTO 421 LOTS.				
TR36785	DRT	20141124	0	0
SCHED."A" DIVISION OF 170.8 AC. INTO 523 RES. LOTS				
TR37028	DRT	20151014	0	20000000
SCHED A-43.91 AC INTO 133 LOTS/1 OPEN SPC/6 BASINS				
TR37053	DRT	20160128	0	0
SCHED A - 747 RESIDENTIAL LOTS/84 OPEN SPACE LOTS				
TR37089	APPLIED	20160503	0	0
PROPOSE SCH B DEV 48.4 AC TO 21 SFR LOTS 2 OPEN SP				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
CUP01485	APPROVED	02/05/2008	0	NA
PROPOSAL FOR PLANNED RESIDENTIAL DEVELOPMENT				
CUP02546	APPROVED	12/26/2000	0	NA
RECREATION VEHICLE PARK				
CUP02982	APPROVED	12/08/2000	0	09/28/2008
DAIRY FARM				
CUP03078R1	EXPIRED	03/03/1998	19980623	06/06/2006
RENEW CUP3078 FOR ADDITIONAL 10 YEARS				
CUP03078R2	APPROVED	06/18/2004	20041130	06/16/2016
CHANGE COND.10 PLANNING 30 - FLIGHT PATTERN WILL				
CUP03295	APPROVED	08/16/1999	0	NA
CUP FOR RV/BOAT STORAGE W/CARETAKER QUARTERS.				
CUP03359	APPROVED	12/13/2001	20030415	04/15/2006
CHEVRON GAS STATION W/CONVENIENCE STORE & CAR WASH				
CUP03385	APPROVED	07/25/2002	20040608	NA
NEIGHBORHOOD SHOPPING CENTER				
CUP03467	APPROVED	09/13/2005	20071218	12/18/2010
SHOPPING CENTER W/ 106,278 SF HOME DEPOT W/ 34,760				
CUP03471	APPROVED	10/18/2005	20070227	12/13/2009
SELF STORAGE FACILITY ON 4.63 AC UNDER SHED. E				
CUP03681	APPROVED	03/06/2012	20150630	06/30/2035
WEDDING/SPECIAL EVENTS FACILITIES				
CUP03700	APPROVED	01/07/2014	20150520	NA
CONSTRUCT A NEW ARCO AM/PM STORE CONSISTING OF A 3				
PM28079	APPROVED	04/14/1995	19960102	01/02/1999
DIVIDE APPROX 298 ACRES INTO 4 PARCELS				
PM28229	APPROVED	04/20/2001	20020723	NA
SUBDIVIDE 20 ACRES INTO 4 FIVE (5) ACRE PARCELS				
PM28381	APPROVED	08/26/1996	19970107	01/07/2000
DIVIDE 41.16 ACRES INTO FOUR 10-ACRE PARCELS				
PM28909	APPROVED	08/12/1998	19990330	03/29/2002
SUBDIVIDE 29.39 AC INTO FOUR PARCELS W/ 5 AC MIN.				
PM29704	APPROVED	09/13/2000	20011023	10/23/2004
DIVIDE 121.78 ACRES INTO 2 PARCELS				
PM30239	APPROVED	06/08/2001	20011211	NA
DIVIDE 103.7 GROSS ACRES INTO 3 PARCELS				
PM30363	APPROVED	03/06/2002	20031007	10/07/2006
SUBDIVIDE 4.42 AC INTO 3 PARCELS				
PM30474	APPROVED	01/11/2002	20030415	04/15/2014
SCHED E DIVISION OF 5 AC INTO 4 PARCELS.				
PM30590	APPROVED	04/09/2002	20030107	NA
DIVIDE 5 ACRES INTO TWO 2.5 ACRE PARCELS				
PM30693	APPROVED	06/11/2003	20040608	06/08/2007
COMM. DEV. 16.05 ACRES INTO 12 COMMERCIAL LOTS				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
PM30693M1	APPROVED	08/18/2005	20071120	11/20/2010
ADD DED EASEMNTS/ROW,CHANGE LL,REDUCE LTS/SEE DESC				
PM30790	APPROVED	12/12/2002	20040713	07/13/2016
DIVIDE 20 ACRES INTO 19 CPS AND MSC LOTS AND 2 DET				
PM30853	APPROVED	10/04/2002	20031007	10/07/2006
SCH "H" MAP-DIVIDE 10AC INTO (2) 5AC LOTS				
PM31447	APPROVED	09/24/2003	20040629	NA
SUBDIVIDE 25.26 ACRES INTO 4 5AC PARCELS & 1 REMAI				
PM31918	APPROVED	07/09/2004	20060918	09/18/2014
SCHED H DIVISION OF 9.9 AC. INTO 2 PARCELS.				
PM32379	APPROVED	05/07/2004	20060614	06/14/2016
(1) 21 AC PARCEL INTO (3) LOTS & ROAD REALIGNMENT				
PM32914	APPROVED	03/24/2005	20060206	02/06/2009
SCHED H SUBDIVISION OF 29.59 AC INTO 2 PARCELS				
PM33691	APPROVED	11/22/2005	20080325	03/25/2017
SCHED E DIVISION OF 82.07 AC INTO 11 PARCELS & 6 O				
PM33859	APPROVED	09/30/2005	20070205	02/05/2011
SCHED H DIVISION OF 20 ACRES INTO 4 PARCELS.				
PM35212	APPROVED	10/10/2006	20101214	12/14/2017
DIVIDE 2 PARCELS INTO 23 COMMERCIAL OFC/RETAIL LOT				
PM35686	ANNEXED	09/19/2007	20090810	NA
SUBDIVIDE 7 ACRE PARCELS INTO 2 LOTS SCHED H				
PM36049	APPROVED	06/09/2008	20120409	04/09/2015
SCH H DIVISION OF 29.5 AC INTO 2 PARCELS.				
PM36161	APPROVED	04/06/2009	0	08/05/2017
SCHEDULE E SUBDIVISION OF 23.66 AC. INTO 6 PARCELS				
PM36628	APPROVED	12/23/2014	20160125	NA
SCHEDULE I PARCEL MAP TO SUBDIVIDE 285.46 ACRES IN				
PP12454R1	APPROVED	10/13/1998	19990419	04/19/2000
ADD 2725 SQ FT TO EXSTG INDUSTRIAL BLDG				
PP13046	APPROVED	11/21/1991	19950411	04/11/1999
ESTABLISH COMMERCIAL USES, BAKERY, RESTAURANT ETC				
PP13284	APPROVED	06/17/1992	19930208	02/08/1995
PAC-TEL CELLULAR MONOPOLE AND EQUIPMENT BUILDING				
PP15239	APPROVED	12/02/1997	19980921	09/21/2000
75' FT. MONOPOLE/ANTENNA FOR WIRELESS TELECOM SITE				
PP15239R1	APPROVED	02/28/2001	20010426	NA
REVISE PP15239-ADD SHELTER/ANNTENNAS TO TOWER				
PP15445R1	APPROVED	08/30/2000	20001127	11/27/2002
CO-LOCATE CELL SITE, ADD TOWER HEIGHT,ANTENNA AND				
PP16117	APPROVED	08/24/1999	20020819	08/19/2004
MINI STORAGE FACILITY				
PP16518	APPROVED	04/26/2000	20001106	11/06/2002
CONSTRUCT FIBER OPTIC REGENERATION FACILITY.				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
PP17145	APPROVED	05/29/2001	20020701	NA
85 FT MONOPINE & EQUIP CABINETS FOR SPRINT				
PP17282	APPROVED	08/15/2001	20020826	NA
CONSTRUCT TWO 23,467 SF DISTRIBUTION FACILITIES				
PP17367	APPROVED	09/28/2001	20031222	12/22/2005
85 FT MONOPINE W/12 ANTENNAS				
PP18411	APPROVED	01/23/2003	20030819	NA
204 MULTI FAMILY CONDO UNITS IN 34 BLDGS				
PP19317	APPROVED	03/24/2004	20051031	10/31/2007
7,143 SQ. FT. CHILD CARE CENTER				
PP19414	APPROVED	05/03/2004	20070123	01/23/2010
PP FOR 3-STORY COM. OFF. BLDG ON 4.2 AC IN A-1-5				
PP19442	APPROVED	05/13/2004	20070313	03/13/2009
186 MULTI-FAMILY CONDOMINIUMS W/I 32 BUILDINGS				
PP19962	APPROVED	11/09/2004	20060418	04/18/2008
PLOT PLAN FOR 140 CONDO UNITS WITH TR33170				
PP20375	APPROVED	03/23/2005	20090112	01/12/2014
PROPOSED FARMER BOYS RESTAURANT W/DRIVE TRHU LANE				
PP20392	APPROVED	03/30/2005	20060710	07/10/2010
BOYS & GIRLS CLUB FACILITY				
PP21024	APPROVED	10/28/2005	20070731	07/31/2009
THE CONSTRUCTION OF A 51,314 SQUARE FOOT BUILDING				
PP21087	APPROVED	11/09/2005	20060214	NA
Model Home Complex and Sales Office in Tract No.				
PP21163	APPROVED	11/22/2005	20080225	02/25/2013
27 1STORY OFFICE BLDGS 39 1STORY INDUSTRIAL BLDGS,				
PP22561	APPROVED	02/15/2007	20070820	08/20/2009
INSTALL 6 EQUIP CABINETS& 12 ANTENNAS ON EXSTG TWR				
PP22650	APPROVED	03/20/2007	20071217	12/17/2009
174 APTS UNITS WITHIN 9 3STORY BLDG /SING CLUB HSE				
PP23239	APPROVED	12/27/2007	20090406	04/06/2011
CONSTRUCT A 44 FEET MONOPINE WIRLESS FACILITY				
PP23860	APPROVED	10/30/2008	20090921	09/21/2011
70' BROADLEAF TREE W/9 ANTENNAE & 160 SQ FT EQUIPM				
PP23975	APPROVED	02/04/2009	20090914	09/14/2011
CONSTRUCT A 24,605 S.F. BLDG FOR EXOTIC ELECTRO OP				
PP24054	APPROVED	04/06/2009	0	08/05/2017
160,680 SF MIX OF COMMERCIAL, RESTAURANT, FINANCIA				
PP24267	APPROVED	10/06/2009	20091130	11/30/2013
PROPOSE TO USE NORTH HALF OF PROP FOR CHURCH				
PP24268	APPROVED	10/06/2009	20091116	11/16/2014
4900 SQ FT CHURCH W/1 1600 SQ FT CARETAKER QUARTER				
PP24289	APPROVED	10/28/2009	20110425	04/25/2013
70'MONOPINE 18 PANEL ANTENNAS,EQUIP SHELTER				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
PP24903	APPROVED	03/31/2011	0	05/01/2016
CHURCH CAMPUS TOTALING 80,673 SF IN 3 PHASES				
PP25183	APPROVED	08/14/2012	0	NA
331,003 S.F. 57 UNIT INDUSTRIAL OFFICE COMPLEX				
PP25848	APPROVED	07/16/2015	20151211	NA
VERIZON MODIFY EXISTING BY-RIGHT CELL TOWER				
PUP00767	APPROVED	06/09/1995	19951219	12/19/1997
MULTI USE COMMUNICATION SITE				
PUP00789	APPROVED	12/29/1997	19990824	NA
CHURCH, FELLOWSHIP HALL, SCHOOL, CLASSROOMS				
PUP00789R1	APPROVED	09/28/2005	20061128	11/28/2009
RENEW EXPIRED CHURCH USE PUP789				
SP00106	APPROVED	01/10/1973	19730619	NA
SP ON 2,866 ACRES WITH 2,919 DU'S ON 2,630 RESIDEN				
SP00106A2	APPROVED	06/30/1981	19820609	NA
AMEND 2,866 ACRES OF SP 106 BY DELETING 1,618 ACRE				
SP00106A3	APPROVED	07/03/1985	19861014	NA
AMEND SP 106 BY DELETING COND. 45 REQUIRING WATER				
SP00106A4	APPROVED	01/14/1989	19921020	NA
AMEND 28.7 AC OF SP 106 FROM RESIDENT. W/ 6 DU'S T				
SP00106A5	APPROVED	02/05/1991	19950509	NA
AMEND 30.1 ACRES OF SP 106 FROM RESIDENTIAL W/ 4 D				
SP00106A7	APPROVED	08/06/1998	19991221	NA
CHANGE DESIGNATION TO 3.0 DU/AC & 3.7 DU/AC				
SP00106A8	APPROVED	01/22/1999	19991221	NA
CHANGE FROM AG DESIGNATION TO SINGLE FAMILY				
SP00106A9	APPROVED	01/25/2000	20020507	NA
CHANGE INDUSTRIAL DESIGNATION TO SFR.				
SP00106AA	APPROVED	03/07/2001	20011218	NA
AMEND LAND USE DESIG.FOR PORTIONS OF PA8,PA9,PA10,				
SP00106AB	APPROVED	12/12/2002	20050208	NA
AMEND SP00106 TO CHANGE LAND USE DESIGNATIONS ON A				
SP00106AC	APPROVED	12/17/2002	20040323	NA
CHANGE DESIG FROM 5 AC MIN TO 3-5 DU/AC				
SP00106AD	APPROVED	05/15/2003	20040323	NA
AMEND DUTCH VILLAGE DENSITY FROM LOW TO MEDIUM				
SP00106AE	APPROVED	06/04/2003	20050228	NA
CHANGE OF LAND USE FORM INDUSTRIAL TO RESIDENTIAL				
SP00158	APPROVED	12/08/1980	19820330	NA
SP ON 1857 ACRES WITH 7854 DU'S ON 1168 ACRES, 77				
SP00158A4	APPROVED	02/13/1996	19960813	NA
AMEND SP 158 TEXT INCLUDING CHANGES TO TIMING OF F				
SP00184A2	APPROVED	10/16/1995	19970617	02/11/2017
INCREASE OPEN SPACE BY 150 ACRES, REDUCE NUMBER OF				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
SP00247A1	APPROVED	05/31/2002	20031007	NA
AMENDMENT TO SP FOR OVERALL LOT REDUCTION				
SP00284	APPROVED	10/03/1990	19940830	08/30/2004
DEVELOPMENT OF MIXED USE COMMUNITY				
SP00284A2	APPROVED	09/29/2004	20060418	06/27/2026
AMD SP00284 PLANNING AREA 6 FROM MHDR TO HDR				
SP00286	APPROVED	11/05/1990	19970429	08/15/2010
1889.6 ACRES IN MIXED USES				
SP00286A1	APPROVED	08/20/1999	20000711	NA
AMEND PL AREAS 43-47 FOR INCREASE OF 65 RES UNITS				
SP00286A2	APPROVED	06/18/2001	20011218	NA
ADD 40.1 ACRES TO SP286 FOR CONSTRUCTION OF 93 SFR				
SP00286A3	APPROVED	12/13/2001	20020625	NA
AMD SP TO ADD PLANNING AREA 51				
SP00286A4	APPROVED	09/27/2002	20040323	NA
AMENDING PLANNING AREA BOUNDARIES/STANDARDS				
SP00286A5	APPROVED	11/09/2004	20070313	06/05/2027
CHANGE PA7 MDR TO PA2A OS/DRAINAGE, TRANSFER OF				
SP00293	APPROVED	05/03/1991	19971028	05/14/2016
MIXED USE SP WITH RES., COMMERCIAL & INDUSTRIAL US				
SP00293A5	APPROVED	11/28/2006	20090616	NA
DIVIDE PA 47 INTO PA 47A & 47B/DIVIDE PA 50 INTO P				
SP00310	APPROVED	05/05/1998	20041214	NA
SPECIFIC PLAN OF LAND USE				
SP00312	APPROVED	09/14/1998	20010605	NA
SP ON 607.8 ACRES WITH 2,135 DU'S AND 1.5 A. COMM				
SP00312A1	TENTAPPR	12/22/2011	20131230	NA
MODIFY PA'S TO REDUCE INTENSITY AND CHNG LAND USES				
SP00322	APPROVED	04/07/2000	20020625	NA
MIXED COMML/MIXED DENSITY RES/PARK/OPEN SPACE				
SP00380	APPROVED	11/24/2009	20131105	NA
SP COMMERCIAL OFFICE,RETAIL MIXED USE,RESIDENTIAL				
SP00382	TENTAPPR	04/23/2012	20150611	NA
343.6 AC SPECIFIC PLAN FOR RES DEV "BELLE TERRE"				
TR25930	APPROVED	03/21/1990	19911119	11/19/1997
DIVIDE APPROX 80 ACRES INTO 31 LOTS				
TR26798	APPROVED	08/19/1994	20000321	03/21/2003
DIVIDE APPROX 59 ACRES INTO 175 LOTS				
TR28092M1	APPROVED	11/16/2000	20010619	NA
REVISE TRAFFIC STUDY AN CONDITION OF APPROVAL IN				
TR28093M1	APPROVED	06/24/1998	19981201	10/24/1999
MINOR CHANGE TO AMEND TRANSPORTATION DEPT. COA				
TR28296	APPROVED	10/28/1996	19970708	07/08/2001
DIVIDE 33.8 AC INTO 108 RES. LOTS,1 PARK,4 OPEN SP				

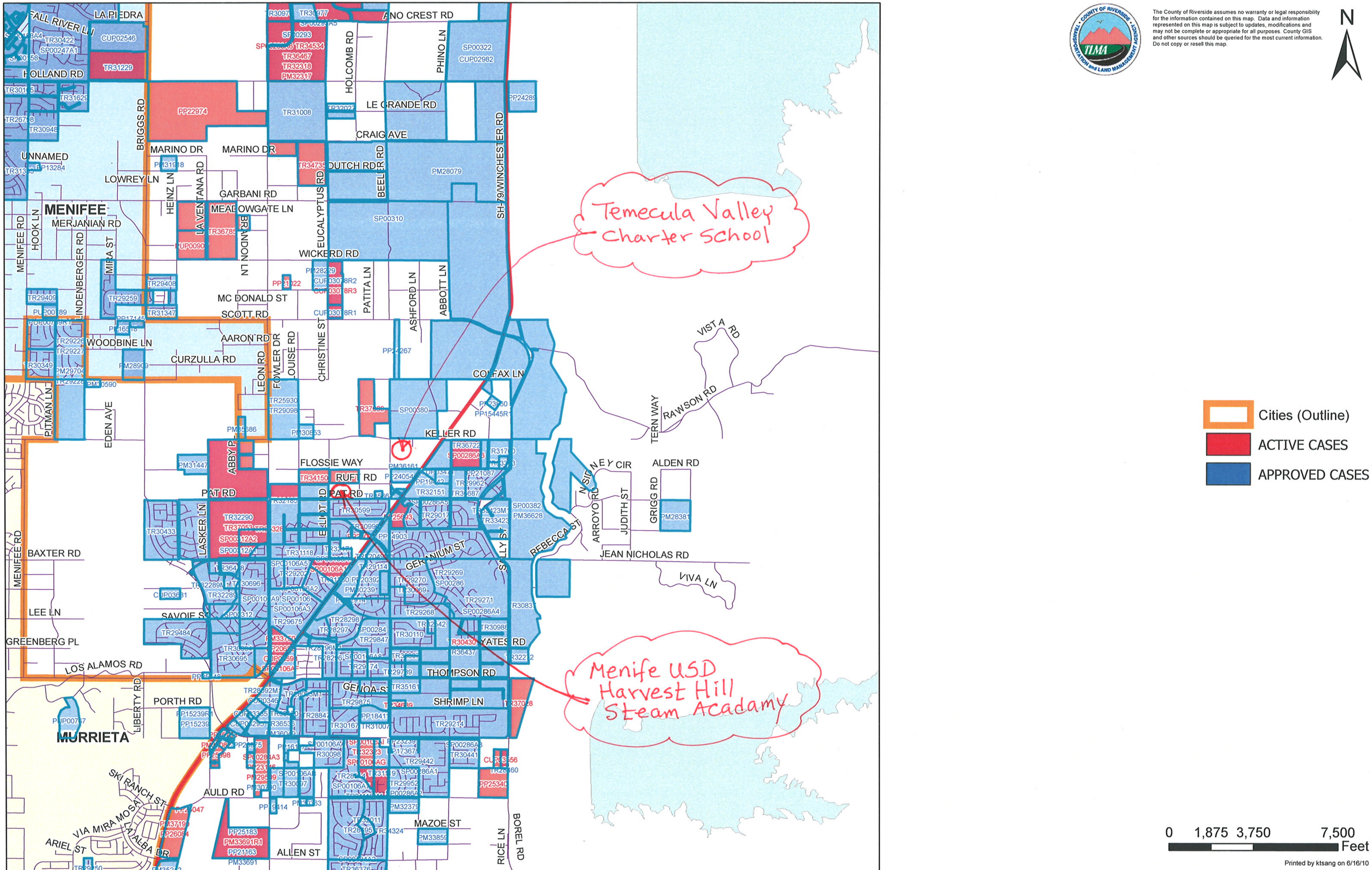
CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
TR28296M1	APPROVED	10/22/1999	20000516	07/08/2003
ELIM PK SITE ADD 2 INT DET BASINS ELIM F/POR E DR				
TR28297	APPROVED	10/28/1996	19970708	07/08/2005
DIVIDE 23.5 ACRES INTO 88 RES LOTS,1 MEADOW 2 OS				
TR28298	APPROVED	10/28/1996	19970708	07/08/2005
DIVIDE 38.1 AC INTO 147 RES LOT 1MEADOW,1PARK2OPEN				
TR28460	APPROVED	11/26/1996	19980818	08/18/2001
DIVISION OF 36.2 AC INTO 183 RES LOTS 2 OPEN SP LO				
TR28695	APPROVED	09/16/1998	20010501	05/01/2006
DVD 166AC TO 421SFR/1 MFR/1 SCHOOL/1 PRK/21 OS LOT				
TR28847	APPROVED	04/21/1998	19980901	09/01/2001
DIV 52.5 AC TO 207 RES LOTS & 3 OPEN SPACE(DETENTI				
TR28914	APPROVED	08/06/1998	19991102	11/01/2002
DVD 80 AC/240 SFR LOTS/3 DETN BASIN/1 OS LOT				
TR29017	APPROVED	09/15/1998	19991026	10/26/2003
117.37AC/364 SFR LOTS/1 PRK/1TRL/7 RD WY L/S LOTS				
TR29098	APPROVED	07/29/1999	20061017	10/17/2016
DVD 80.4 AC/39 SFR LOTS/4 O-S/1 DETN BSN/1 MSHCP				
TR29114	APPROVED	12/20/2000	20011211	12/11/2007
DIVIDE 74.12 AC/259 SFR LOTS/7 OPEN SPACE LOTS				
TR29174	APPROVED	01/22/1999	19991109	11/08/2002
DIV APX 60 AC INTO 227 LOTS & 2 DET BASINS				
TR29202	APPROVED	08/03/2000	20021001	NA
30 ACRES INTO 107 RES. LOTS				
TR29214	APPROVED	02/04/2003	20040124	01/24/2007
SCH "A" SUBDIVISION (1)135AC PARCEL INTO 375 LOTS				
TR29226	APPROVED	03/05/1999	20010227	NA
DIVIDE 38.96 ACRES INTO 145 LOTS				
TR29227	APPROVED	03/05/1999	20010227	NA
DIVIDE 39.20 ACRES INTO 128 LOTS				
TR29228	APPROVED	03/05/1999	20010227	02/27/2005
DIV 54.70 AC INTO 135 RES,2 DET BASINS& 1 LIFT STA				
TR29250	APPROVED	03/08/1999	19991116	11/16/2002
TRACT MAP TO DIVIDE 1 LOT INTO 25 LOTS				
TR29259	APPROVED	03/16/1999	20010626	06/26/2005
DIV 59.6 AC INTO 153 RES,1 DET BASIN 1 PARK LOTS				
TR29268	APPROVED	05/06/1999	20000516	05/16/2003
51 AC INTO 123 RES LOTS AND 3 OPEN SPACES				
TR29269	APPROVED	05/06/1999	20000516	05/16/2003
34.46 ACRES DIVIDED INTO 143 RES LOTS AND OPEN SP				
TR29270	APPROVED	05/06/1999	20000516	05/16/2003
35.49 ACRES INTO 127 RES LOTS AND 2 OPEN SPACE				
TR29271	APPROVED	05/06/1999	20000516	05/16/2003
17.74 AC INTO 55 RES LOTS AND 1 OPEN SPACE				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
TR29408	APPROVED	02/14/2000	20010626	06/26/2005
40 ACRES INTO 116 RES,1 DET BASIN 1 LIFT STATION				
TR29409	APPROVED	03/22/2000	20010626	06/26/2004
SUBD 19.62 AC INTO 59 RES LOTS & 2 DET BASIN LOTS				
TR29442	APPROVED	08/20/1999	20000502	05/02/2003
SUBD 120 AC INTO 305 RES/10 OPEN SP/1 SCHOOL/1 PK				
TR29484	APPROVED	01/19/2000	20010828	08/28/2005
DIV 90.61 AC 242 RES,3 DET BSNS,3 OS & 1 LIFT STA				
TR29675	APPROVED	06/30/2000	20010717	07/17/2004
DIV 87.53 AC INTO 253 RES,1 PARK,4 OS & 1 DET BASN				
TR29789	APPROVED	04/21/2000	20010828	NA
SUDIVIDE 10.05 ACRES INTO 34 RESIDENTIAL PARCELS				
TR29847	APPROVED	07/06/2000	20010626	NA
DIV 62.40 AC IN 156 RES, 1 SCH 1 PARK 4 OS LOTS				
TR29875	APPROVED	07/06/2000	20010417	04/17/2004
SUBD 80 AC INTO 306 RES, 1 PARK 3 OPEN SPACE LOTS				
TR29952	APPROVED	07/05/2001	20011218	NA
SUBDIVIDE 40 ACRES INTO 93 SINGLE FAMILY RES LOTS				
TR29952M1	APPROVED	09/19/2002	20021210	12/09/2005
MC- CHANGE COA NO. 50 TRANS 23 (SECONDARY ACCESS)				
TR29962	APPROVED	03/27/2001	20040622	06/22/2007
SUBDIVIDE 46 ACRES INTO 149 SFR/1 O/S & 1 PARK LOT				
TR30069	APPROVED	01/15/2002	20031028	10/28/2006
DIVIDE 317 AC INTO 654 RES LOTS & 27 OPEN SPACE				
TR30097	APPROVED	03/07/2001	20011023	10/23/2004
DIVIDE 40 AC INTO 132 LOTS,3 OPEN SPACES & ONE DET				
TR30098	APPROVED	03/07/2001	20011023	10/23/2004
DIVIDE 45.67 AC IN 133 LOTS, 1 OPEN SPACE & 2 DETE				
TR30105	APPROVED	03/06/2002	20030722	NA
DIVIDE 40 AC INTO 100 LOTS-SCHED A 7200 SF				
TR30110	APPROVED	06/12/2001	20020409	NA
DIVIDE 52.6 AC INTO 168 SFR LOTS				
TR30167	APPROVED	05/22/2001	20030422	NA
SUBDIVIDE 40 AC INTO 143 RES LOTS/8 OPEN SP LOTS				
TR30349	APPROVED	11/28/2001	20030826	08/26/2006
SUBDIVIDE 40.19 AC INTO 146 RES LOTS/1 DET BASIN				
TR30422	APPROVED	05/31/2002	20030429	04/29/2011
TO SUBDIVIDE 399 ACRES INTO 992 LOTS				
TR30433	APPROVED	12/20/2001	20051115	11/15/2015
SUBD 167 AC INTO 498 RES LOTS & 33 OPEN SP LOTS				
TR30441	APPROVED	12/13/2001	20020416	NA
SUBDIVIDE 39.96 ACRES INTO 125 SFR				
TR30599	APPROVED	11/06/2002	20040113	NA
SUBDIVIDE 52.93 ACRES INTO 179 SINGLE FAMILY RES-				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
TR30694	APPROVED	11/14/2002	20040810	08/10/2007
SUBDIVIDE 33.81 ACRES INTO 81 LOTS				
TR30695	APPROVED	05/07/2003	20041109	11/09/2007
SUBD 49.27 AC INTO 111 RES LOTS				
TR30696	APPROVED	05/07/2003	20040810	08/10/2009
SCHED A SUBDIVISION OF 173 AC INTO 438 RES LOTS				
TR30791	APPROVED	12/17/2002	20030909	09/09/2007
SUBD 20 AC INTO 50 SFR/1 OPEN SPACE/1 PARK SITE				
TR30837	APPROVED	10/23/2002	20041019	10/19/2015
SUBDIVIDE 99.77 ACRES INTO 335 SINGLE FAMILY LOTS				
TR30948	APPROVED	02/11/2003	20030819	08/19/2006
SCH"A"SUBDIVISION 79 AC INTO (193)LOTS--SEE#11---				
TR30976	APPROVED	03/04/2004	20090616	06/16/2017
DIVIDE 53.39 AC INTO 162 SFR W/5 OPEN SPACE				
TR30977	APPROVED	03/10/2004	20090616	06/16/2017
FOR 414 SFR(7200sq')/12 OS ON 260.5 AC IN SP# 293				
TR30988	APPROVED	05/01/2003	20040511	05/11/2007
TO DIVIDE 80 AC INTO 117 RES LOTS				
TR30996	APPROVED	12/24/2002	20040824	08/24/2007
TO DIVIDE 40 AC INTO 74 RES LOTS/1 COMM/3 O/S				
TR31007	APPROVED	01/23/2003	20030819	NA
SCHEDULE "A" MAP DIVIDE 19.1 ACRES INTO 204 CONDO				
TR31008	DRT	11/27/2002	20040413	04/13/2016
SCHED A SUBDIVISION OF 160 ACRES INTO 366 SFR LOTS				
TR31118	APPROVED	05/06/2003	20040224	02/24/2007
CREATE 133 RESID LOTS & 2 OPEN SPACE LOTS ON 40.43				
TR31119	APPROVED	05/06/2003	20040127	01/27/2007
CREATE 31 LOTS & 1 DET BASIN ON 20.01 ACRES				
TR31119M1	APPROVED	12/09/2005	20060124	01/24/2009
INCREASED TO 32 LOTS FROM 31 DUE TO DETENTION BASI				
TR31229	ANNEXED	12/04/2003	20090722	NA
Proposal for a Schedule A subdivision of 77.15 gro				
TR31330	APPROVED	06/04/2003	20040504	05/04/2007
SUBDIVIDE 29.3 ACRES INTO 86 RES. LOTS, 1 PARK &				
TR31347	APPROVED	06/18/2003	20040622	NA
SUBDIVIDE 21 ACRES INTO 69 SINGLE FAMILY LOTS				
TR31383	APPROVED	07/15/2003	20040629	06/29/2007
SCH"A" SUBDIVISION 180 RESIDENTIAL LOTS				
TR31629	APPROVED	01/09/2004	20041109	NA
SCH A SUBDIVISION (115) 7200SF SINGLE FAMILY LOTS				
TR31700	APPROVED	09/03/2003	20060829	08/29/2016
SCHED "A" SUBDIVISION OF 20.9 AC INTO 64 SFR LOTS				
TR32011	APPROVED	03/17/2004	20071003	10/03/2015
SUBDIVIDE 12 AC INTO 33 SINGLE FAMILY LOTS - SCHED				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
TR32027	APPROVED	08/12/2004	20090303	03/03/2016
DIVIDE 27.5 ACRES INTO 101 SFR R-1 LOT/SCHEDULE A				
TR32049	APPROVED	12/23/2003	20050509	03/01/2008
DIVIDE 18.5 AC INTO 1 LOT FOR 162 CONDO UNTS/3 OS				
TR32049M1	APPROVED	10/18/2006	20070206	02/06/2010
ENCROACH W/IN THE 15' SB AREA AGAINST OPEN SPACE				
TR32151	APPROVED	05/13/2004	20070313	03/13/2017
MULTI-FAMILY SCH"A" SUBDIVISION (136 CONDOMINIUMS)				
TR32171	APPROVED	02/05/2004	20041214	12/14/2013
DIVIDE 9.04 AC INTO 56 RES LOTS				
TR32185	APPROVED	02/18/2004	20041130	11/30/2018
DIV 163.57 AC INTO 426 SFR LOTS, 32 OPEN SP LOTS				
TR32272	APPROVED	04/01/2004	20060523	05/23/2016
SUBDIVIDE 12 ACRES INTO 38 RES & 1 DET BASIN LOTS				
TR32289	APPROVED	08/24/2004	20060118	01/18/2016
DIV 81.87 ACRES INTO 197 SFR LOTS/SCHEDULE A IN				
TR32289M1	APPROVED	02/14/2011	0	NA
THE MC PROPOSES TO COMBINE LOTS 181-183, 184-197 A				
TR32290	APPROVED	08/24/2004	20060301	03/01/2016
DIVIDE 267.40 ACRES INTO 808 SFR LOTS - SCHEDULE A				
TR32542	APPROVED	05/12/2004	20050126	01/26/2016
SUBDIVIDE INTO 11 SF RES LOTS AND 1 OPEN SPACE LOT				
TR33170	APPROVED	11/09/2004	20060418	04/18/2016
CONDO MAP CREATING 24 MULTI-FAMILY LOTS				
TR33303	APPROVED	09/22/2005	20070424	04/24/2017
SUBDIVIDE 7.4 ACRES INTO 24 SFR LOTS				
TR33307	APPROVED	02/17/2005	20060531	05/31/2016
DIVIDE 13 AC INTO 41 SFR & 1 OPEN SPACE LOT				
TR33423	APPROVED	03/16/2005	20070123	01/23/2017
DIVIDE 46.15 ACRES INTO 134 SFR LOTS - SCHEDULE A				
TR33423M1	APPROVED	05/19/2008	20090304	03/04/2012
REVISING ACCESS' N TO FIELDS & S TO SALLY STREET				
TR34324	APPROVED	01/04/2006	20061107	09/20/2014
11.10 AC/2 LOTS FOR 127 CONDO UNITS/5 OPEN SPACE				
TR35161	APPROVED	03/14/2008	20100622	06/22/2017
SCHEDULE 'A' TO DIVIDE 20 ACRES INTO 51 SFR LOTS				
TR35664	APPROVED	07/13/2007	20080624	06/24/2015
SUBDIVIDE 2.31 ACRES INTO (5) 1/2 LOTS				
TR36376	APPROVED	04/13/2011	20120731	07/31/2017
SUBDIVIDE 143 AC INTO 446 SFR LOTS-SCHEDULE A MAP				
TR36418	APPROVED	12/22/2011	20131008	10/08/2016
SUBDVD 10.06AC INTO 50 SFR LOTS,1 UTILITY,3 OS LOT				
TR36437	APPROVED	11/21/2012	20140408	04/08/2017
SUBDIVIDE 40 AC INTO 102 SFR LOTS-SCHEDULE A MAP				

CASE NAME	STATUS	APPLIED DATE	APPROVAL DATE	EXPIRED DATE
CASE DESCRIPTION				
TR36536	APPROVED	03/14/2013	20140917	09/17/2017
84 SINGLE FAMILY DETACHED. SCHEDULE A SUBDIVISION				
TR36687	APPROVED	04/18/2014	20160202	NA
SCHED A SUBDIV OF 20.3 AC INTO 71 RES & 14 OS LOTS				
TR36722	BOS	03/25/2014	20150602	NA
SCHED A SUBDIV OF 40.6 AC INTO 146 RES & 22 OS LOT				


Temecula Valley Charter School
Menife USD Harvest Hill Steam Acadamy
Cities (Outline)
ACTIVE CASES
APPROVED CASES
N
0 1,875 3,750 7,500 Feet
Printed by ktsang on 6/16/10
The County of Riverside assumes no warranty or legal responsibility for the information contained on this map. Data and information represented on this map is subject to updates, modifications and may not be complete or appropriate for all purposes. County GIS and other sources should be queried for the most current information. Do not copy or resell this map.
COUNTY OF RIVERSIDE TRANSPORTATION and LAND MANAGEMENT AGENCY
TLMA
MENIFEE
MURRIETA
LA PIEDRA
FALL RIVER LN
HOLLAND RD
ANO CREST RD
HOLCOMB RD
PHINO LN
LE GRANDE RD
CRAIG AVE
MARINO DR
BRIGGS RD
UNNAMED
LOWREY LN
DUTCH RD
BEELER RD
GARBANI RD
MEADOWGATE LN
MERJANIAN RD
SH-79/WINCHESTER RD
WICKERD RD
MC DONALD ST
SCOTT RD
AARON RD
WOODBINE LN
CURZULLA RD
COLFAX LN
KELLER RD
FLOSSIE WAY
RUFT RD
PAT RD
GERANIUM ST
JEAN NICHOLAS RD
VIVA LN
ALDEN RD
RAWSON RD
VISTA RD
TERN WAY
BAXTER RD
LEE LN
GREENBERG PL
LOS ALAMOS RD
PORTH RD
LIBERTY RD
YATES RD
THOMPSON RD
SHRIMP LN
GENOA ST
AULD RD
MAZOE ST
ALLEN ST
RICE LN
BOREL RD
SKI RANCH ST
VIA MIRA MOSA
ARIEL ST
LA ALBA DR
EDEN AVE
PITMAN LN
MENIFEE RD
HOOK LN
LINDENBERGER RD
MIRA ST
HEINZ LN
LA VENTANA RD
BRANDON LN
EUCALYPTUS RD
PATITA LN
ASHFORD LN
ABBOTT LN
CHRISTINE ST
LOUISE RD
FOWLER DR
LEON RD
ABBY PL
LASKER LN
ELLIOT RD
SALLY ST
REBECCA ST
ARROYO RD
JUDITH ST
GRIGG RD
SAVOIE ST

Appendix B. Traffic Counts

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Keller Road
Weather: Clear

File Name : CRV79KEAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

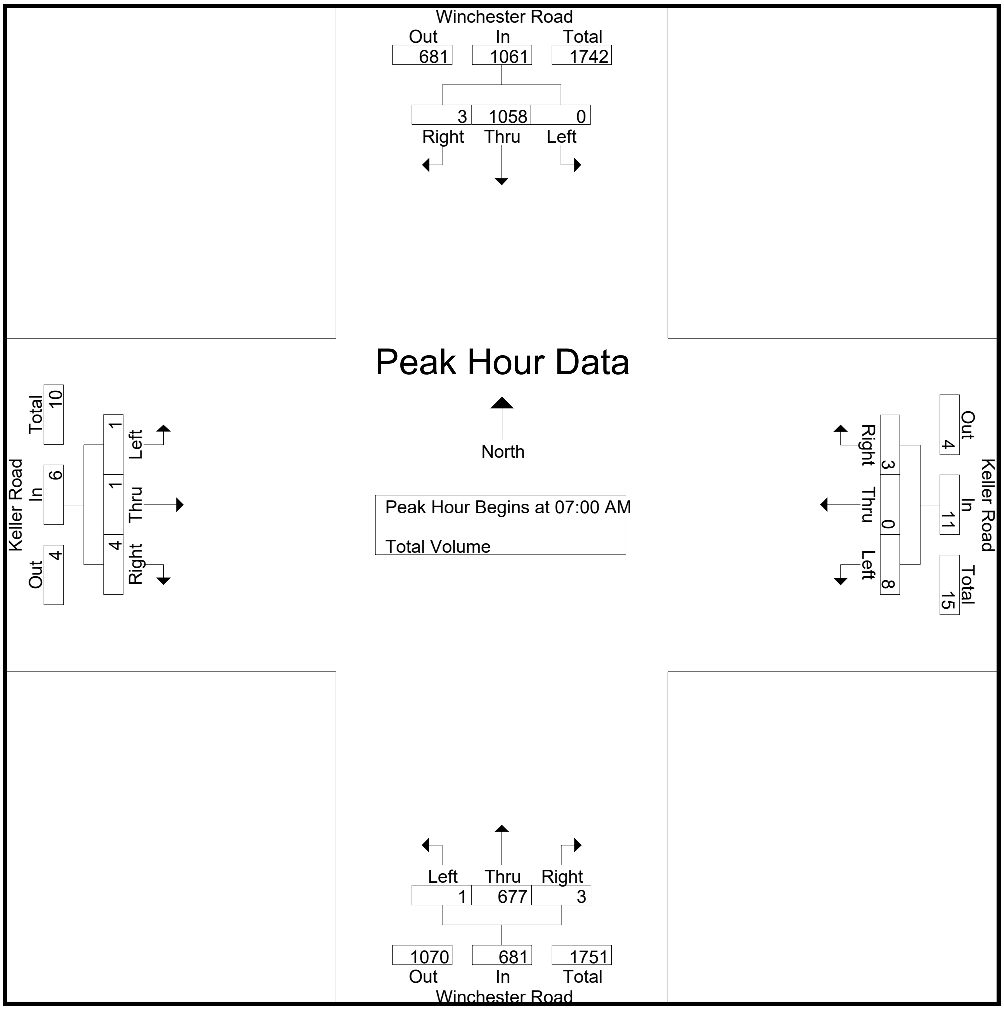
Groups Printed- Total Volume

	Winchester Road Southbound				Keller Road Westbound				Winchester Road Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	212	0	212	2	0	2	4	1	157	1	159	0	0	1	1	376
07:15 AM	0	290	1	291	3	0	1	4	0	191	1	192	0	1	1	2	489
07:30 AM	0	314	0	314	2	0	0	2	0	173	0	173	0	0	2	2	491
07:45 AM	0	242	2	244	1	0	0	1	0	156	1	157	1	0	0	1	403
Total	0	1058	3	1061	8	0	3	11	1	677	3	681	1	1	4	6	1759
08:00 AM	0	240	0	240	1	0	0	1	0	125	2	127	0	0	0	0	368
08:15 AM	0	174	0	174	0	0	0	0	0	127	2	129	0	0	0	0	303
08:30 AM	1	197	1	199	0	0	0	0	1	125	4	130	0	0	0	0	329
08:45 AM	0	162	0	162	2	0	1	3	0	140	5	145	0	0	0	0	310
Total	1	773	1	775	3	0	1	4	1	517	13	531	0	0	0	0	1310
Grand Total	1	1831	4	1836	11	0	4	15	2	1194	16	1212	1	1	4	6	3069
Apprch %	0.1	99.7	0.2		73.3	0	26.7		0.2	98.5	1.3		16.7	16.7	66.7		
Total %	0	59.7	0.1	59.8	0.4	0	0.1	0.5	0.1	38.9	0.5	39.5	0	0	0.1	0.2	

	Winchester Road Southbound				Keller Road Westbound				Winchester Road Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	212	0	212	2	0	**2**	**4**	**1**	157	**1**	159	0	0	1	1	376
07:15 AM	0	290	1	291	**3**	0	1	4	0	**191**	1	**192**	0	**1**	1	**2**	489
07:30 AM	0	**314**	0	**314**	2	0	0	2	0	173	0	173	0	0	**2**	2	**491**
07:45 AM	0	242	**2**	244	1	0	0	1	0	156	1	157	**1**	0	0	1	403
Total Volume	0	1058	3	1061	8	0	3	11	1	677	3	681	1	1	4	6	1759
% App. Total	0	99.7	0.3		72.7	0	27.3		0.1	99.4	0.4		16.7	16.7	66.7		
PHF	.000	.842	.375	.845	.667	.000	.375	.688	.250	.886	.750	.887	.250	.250	.500	.750	.896

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Keller Road
Weather: Clear

File Name : CRV79KEAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	290	1	291	2	0	**2**	**4**	**1**	157	**1**	159	0	0	1	1
+15 mins.	0	**314**	0	**314**	**3**	0	1	4	0	**191**	1	**192**	0	**1**	1	**2**
+30 mins.	0	242	**2**	244	2	0	0	2	0	173	0	173	0	0	**2**	2
+45 mins.	0	240	0	240	1	0	0	1	0	156	1	157	**1**	0	0	1
Total Volume	0	1086	3	1089	8	0	3	11	1	677	3	681	1	1	4	6
% App. Total	0	99.7	0.3		72.7	0	27.3		0.1	99.4	0.4		16.7	16.7	66.7	
PHF	.000	.865	.375	.867	.667	.000	.375	.688	.250	.886	.750	.887	.250	.250	.500	.750

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: SR-79 (Winchester)
E/W: Keller Road
Weather: Clear

File Name : CRV79KEPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

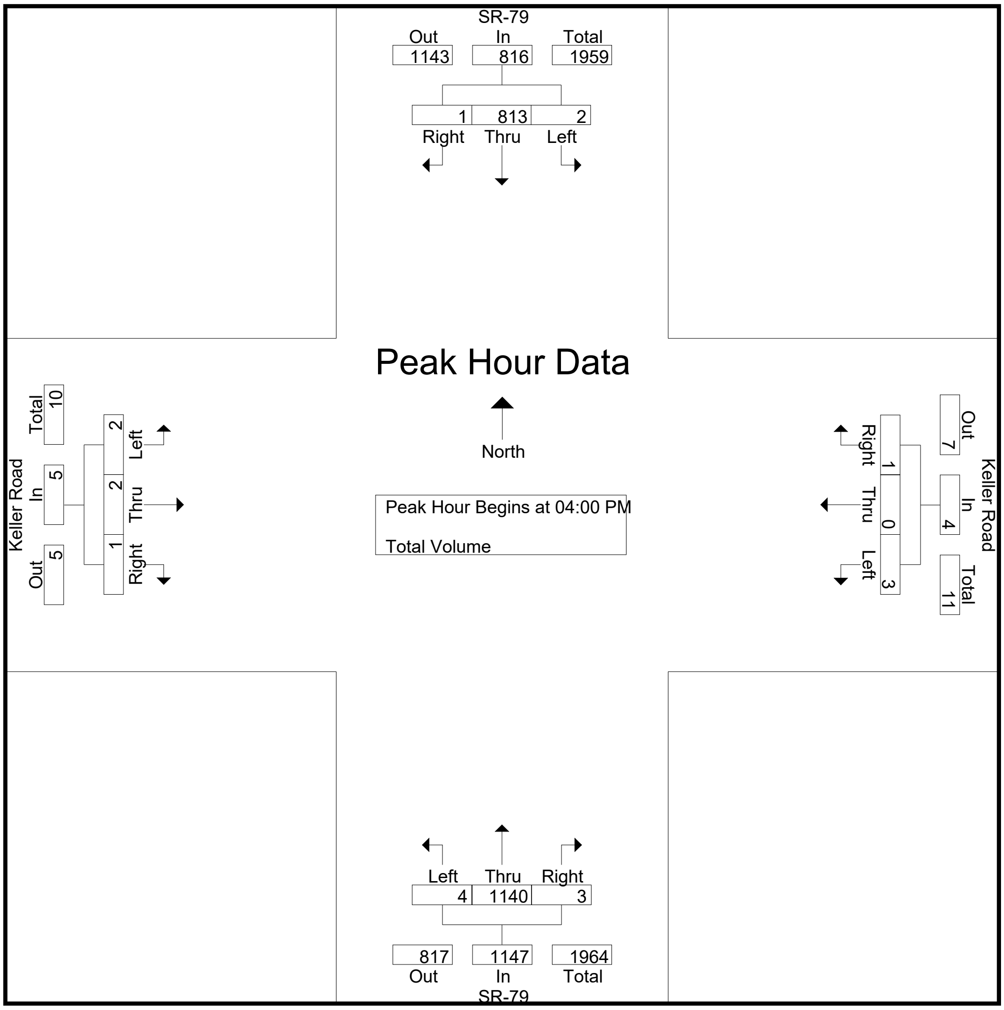
	SR-79 Southbound				Keller Road Westbound				SR-79 Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:00 PM	2	122	1	125	0	0	0	0	0	225	1	226	0	0	1	1	352
02:15 PM	0	144	1	145	2	0	0	2	0	207	1	208	0	0	0	0	355
02:30 PM	0	177	1	178	0	0	0	0	2	202	4	208	1	0	1	2	388
02:45 PM	0	146	1	147	3	0	0	3	0	220	3	223	0	0	1	1	374
Total	2	589	4	595	5	0	0	5	2	854	9	865	1	0	3	4	1469
03:00 PM	1	149	1	151	1	0	1	2	1	198	0	199	0	0	1	1	353
03:15 PM	1	124	0	125	3	0	0	3	2	243	2	247	1	0	2	3	378
03:30 PM	1	160	0	161	2	0	0	2	0	227	3	230	0	0	0	0	393
03:45 PM	0	167	2	169	0	0	0	0	1	265	3	269	0	0	1	1	439
Total	3	600	3	606	6	0	1	7	4	933	8	945	1	0	4	5	1563
04:00 PM	1	191	0	192	0	0	1	1	1	285	1	287	2	2	0	4	484
04:15 PM	0	199	0	199	1	0	0	1	1	283	1	285	0	0	0	0	485
04:30 PM	0	230	0	230	0	0	0	0	0	289	0	289	0	0	1	1	520
04:45 PM	1	193	1	195	2	0	0	2	2	283	1	286	0	0	0	0	483
Total	2	813	1	816	3	0	1	4	4	1140	3	1147	2	2	1	5	1972
05:00 PM	0	200	1	201	2	0	0	2	1	266	1	268	1	1	0	2	473
05:15 PM	0	200	0	200	0	0	0	0	0	283	1	284	0	0	1	1	485
05:30 PM	1	218	0	219	0	0	0	0	0	261	3	264	0	0	0	0	483
05:45 PM	0	181	0	181	3	0	1	4	0	238	3	241	0	0	0	0	426
Total	1	799	1	801	5	0	1	6	1	1048	8	1057	1	1	1	3	1867
Grand Total	8	2801	9	2818	19	0	3	22	11	3975	28	4014	5	3	9	17	6871
Apprch %	0.3	99.4	0.3		86.4	0	13.6		0.3	99	0.7		29.4	17.6	52.9		
Total %	0.1	40.8	0.1	41	0.3	0	0	0.3	0.2	57.9	0.4	58.4	0.1	0	0.1	0.2	

	SR-79 Southbound				Keller Road Westbound				SR-79 Northbound				Keller Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**1**	191	0	192	0	0	**1**	1	1	285	**1**	287	**2**	**2**	0	**4**	484
04:15 PM	0	199	0	199	1	0	0	1	1	283	1	285	0	0	0	0	485
04:30 PM	0	**230**	0	**230**	0	0	0	0	0	**289**	0	**289**	0	0	**1**	1	**520**
04:45 PM	1	193	**1**	195	**2**	0	0	**2**	**2**	283	1	286	0	0	0	0	483
Total Volume	2	813	1	816	3	0	1	4	4	1140	3	1147	2	2	1	5	1972
% App. Total	0.2	99.6	0.1		75	0	25		0.3	99.4	0.3		40	40	20		
PHF	.500	.884	.250	.887	.375	.000	.250	.500	.500	.986	.750	.992	.250	.250	.250	.313	.948

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: SR-79 (Winchester)
E/W: Keller Road
Weather: Clear

File Name : CRV79KEPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				02:45 PM				04:00 PM				03:15 PM			
+0 mins.	0	**230**	0	**230**	**3**	0	0	**3**	1	285	**1**	287	1	0	**2**	3
+15 mins.	**1**	193	**1**	195	1	0	**1**	2	1	283	1	285	0	0	0	0
+30 mins.	0	200	1	201	3	0	0	3	0	**289**	0	**289**	0	0	1	1
+45 mins.	0	200	0	200	2	0	0	2	**2**	283	1	286	**2**	**2**	0	**4**
Total Volume	1	823	2	826	9	0	1	10	4	1140	3	1147	3	2	3	8
% App. Total	0.1	99.6	0.2		90	0	10		0.3	99.4	0.3		37.5	25	37.5	
PHF	.250	.895	.500	.898	.750	.000	.250	.833	.500	.986	.750	.992	.375	.250	.375	.500

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Pourroy Road/Abelia Street
Weather: Clear

File Name : CRV79POAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

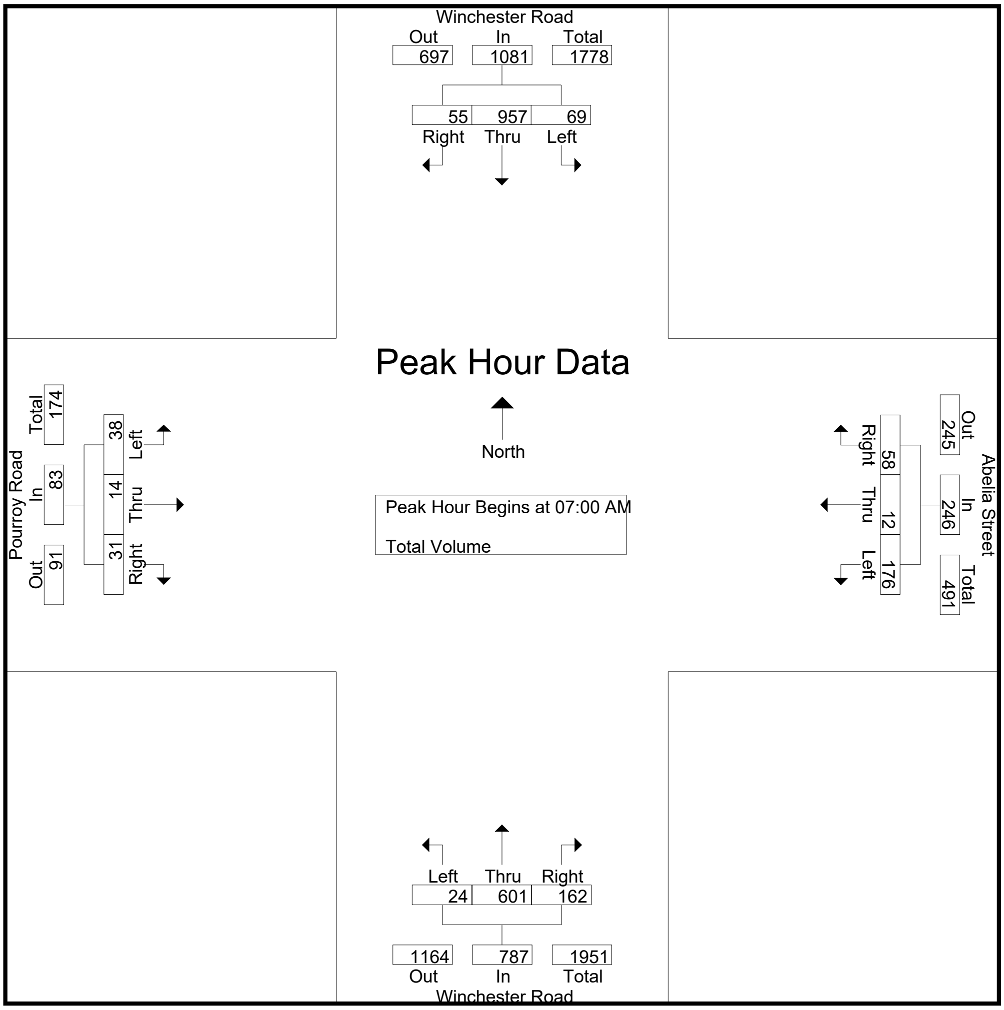
	Winchester Road Southbound				Abelia Street Westbound				Winchester Road Northbound				Pourroy Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	19	186	12	217	45	5	19	69	2	139	51	192	5	3	9	17	495
07:15 AM	8	259	30	297	50	1	20	71	7	159	34	200	12	3	7	22	590
07:30 AM	16	297	10	323	40	3	8	51	12	158	35	205	15	3	10	28	607
07:45 AM	26	215	3	244	41	3	11	55	3	145	42	190	6	5	5	16	505
Total	69	957	55	1081	176	12	58	246	24	601	162	787	38	14	31	83	2197
08:00 AM	9	231	2	242	44	3	18	65	2	101	29	132	6	0	5	11	450
08:15 AM	4	175	2	181	44	0	9	53	3	118	19	140	2	2	5	9	383
08:30 AM	8	181	2	191	28	0	6	34	4	123	17	144	1	1	4	6	375
08:45 AM	7	161	2	170	21	2	10	33	3	140	21	164	3	1	6	10	377
Total	28	748	8	784	137	5	43	185	12	482	86	580	12	4	20	36	1585
Grand Total	97	1705	63	1865	313	17	101	431	36	1083	248	1367	50	18	51	119	3782
Apprch %	5.2	91.4	3.4		72.6	3.9	23.4		2.6	79.2	18.1		42	15.1	42.9		
Total %	2.6	45.1	1.7	49.3	8.3	0.4	2.7	11.4	1	28.6	6.6	36.1	1.3	0.5	1.3	3.1	

	Winchester Road Southbound				Abelia Street Westbound				Winchester Road Northbound				Pourroy Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	19	186	12	217	45	**5**	19	69	2	139	**51**	192	5	3	9	17	495
07:15 AM	8	259	**30**	297	**50**	1	**20**	**71**	7	**159**	34	200	12	3	7	22	590
07:30 AM	16	**297**	10	**323**	40	3	8	51	**12**	158	35	**205**	**15**	3	**10**	**28**	**607**
07:45 AM	**26**	215	3	244	41	3	11	55	3	145	42	190	6	**5**	5	16	505
Total Volume	69	957	55	1081	176	12	58	246	24	601	162	787	38	14	31	83	2197
% App. Total	6.4	88.5	5.1		71.5	4.9	23.6		3	76.4	20.6		45.8	16.9	37.3		
PHF	.663	.806	.458	.837	.880	.600	.725	.866	.500	.945	.794	.960	.633	.700	.775	.741	.905

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Pourroy Road/Abelia Street
Weather: Clear

File Name : CRV79POAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	8	259	**30**	297	45	**5**	19	69	2	139	**51**	192	5	3	9	17
+15 mins.	16	**297**	10	**323**	**50**	1	**20**	**71**	7	**159**	34	200	12	3	7	22
+30 mins.	**26**	215	3	244	40	3	8	51	**12**	158	35	**205**	**15**	3	**10**	**28**
+45 mins.	9	231	2	242	41	3	11	55	3	145	42	190	6	**5**	5	16
Total Volume	59	1002	45	1106	176	12	58	246	24	601	162	787	38	14	31	83
% App. Total	5.3	90.6	4.1		71.5	4.9	23.6		3	76.4	20.6		45.8	16.9	37.3	
PHF	.567	.843	.375	.856	.880	.600	.725	.866	.500	.945	.794	.960	.633	.700	.775	.741

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Pourroy Road/Abelia Street
Weather: Clear

File Name : CRV79POPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

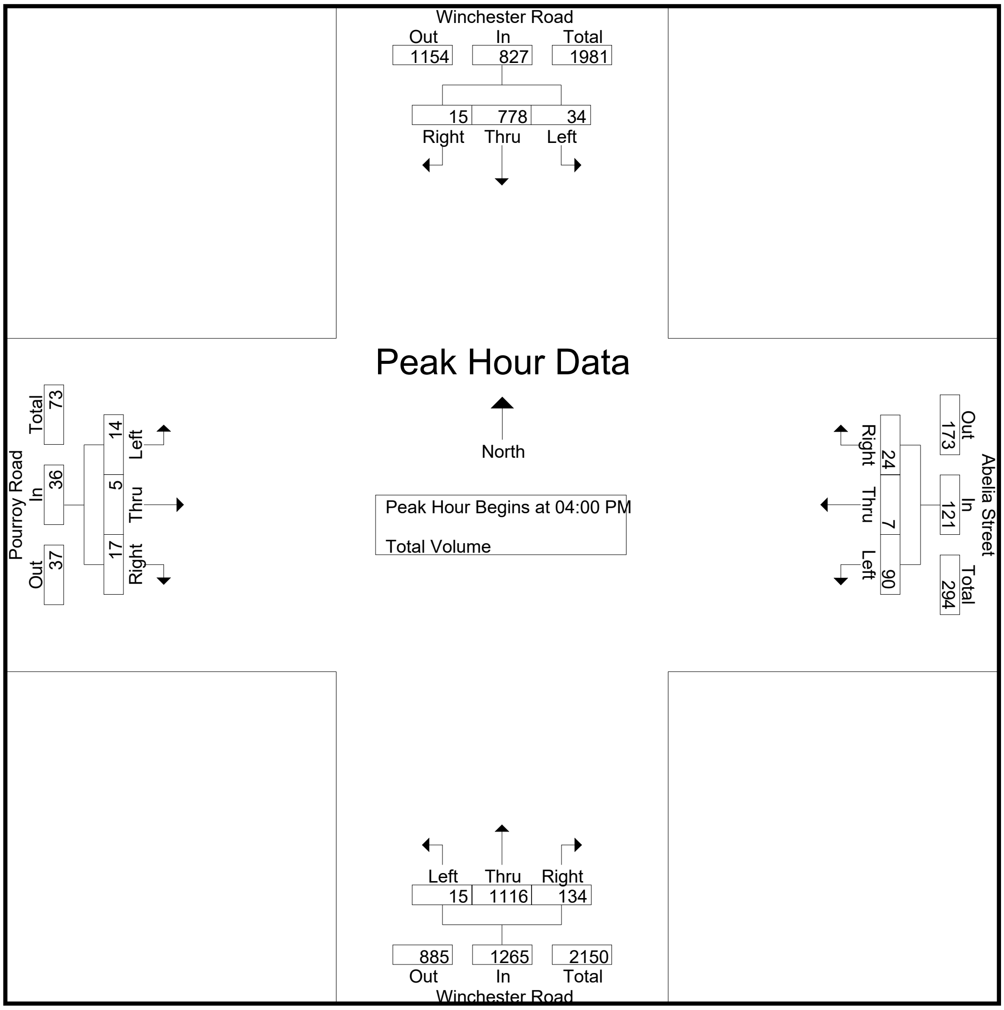
	Winchester Road Southbound				Abelia Street Westbound				Winchester Road Northbound				Pourroy Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:00 PM	13	105	5	123	27	1	13	41	6	208	36	250	9	2	15	26	440
02:15 PM	4	132	1	137	30	3	11	44	2	178	44	224	25	5	10	40	445
02:30 PM	11	166	1	178	28	2	11	41	2	186	29	217	4	4	3	11	447
02:45 PM	13	131	3	147	36	1	6	43	7	213	32	252	5	1	4	10	452
Total	41	534	10	585	121	7	41	169	17	785	141	943	43	12	32	87	1784
03:00 PM	7	141	3	151	28	1	15	44	1	181	23	205	4	2	5	11	411
03:15 PM	8	118	1	127	27	2	6	35	3	231	26	260	2	2	3	7	429
03:30 PM	10	152	3	165	31	3	8	42	5	223	46	274	2	3	5	10	491
03:45 PM	9	152	2	163	27	1	8	36	3	251	41	295	2	2	4	8	502
Total	34	563	9	606	113	7	37	157	12	886	136	1034	10	9	17	36	1833
04:00 PM	9	185	6	200	25	2	6	33	5	282	43	330	5	2	6	13	576
04:15 PM	6	194	6	206	17	2	5	24	1	270	32	303	3	1	4	8	541
04:30 PM	14	208	2	224	28	2	12	42	2	281	30	313	1	0	0	1	580
04:45 PM	5	191	1	197	20	1	1	22	7	283	29	319	5	2	7	14	552
Total	34	778	15	827	90	7	24	121	15	1116	134	1265	14	5	17	36	2249
05:00 PM	11	190	3	204	20	3	18	41	4	254	36	294	1	2	6	9	548
05:15 PM	13	190	3	206	27	2	14	43	2	265	36	303	3	2	3	8	560
05:30 PM	9	206	6	221	21	1	9	31	8	242	28	278	3	0	5	8	538
05:45 PM	16	168	3	187	16	0	13	29	7	222	36	265	2	0	7	9	490
Total	49	754	15	818	84	6	54	144	21	983	136	1140	9	4	21	34	2136
Grand Total	158	2629	49	2836	408	27	156	591	65	3770	547	4382	76	30	87	193	8002
Apprch %	5.6	92.7	1.7		69	4.6	26.4		1.5	86	12.5		39.4	15.5	45.1		
Total %	2	32.9	0.6	35.4	5.1	0.3	1.9	7.4	0.8	47.1	6.8	54.8	0.9	0.4	1.1	2.4	

	Winchester Road Southbound				Abelia Street Westbound				Winchester Road Northbound				Pourroy Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	9	185	**6**	200	25	**2**	6	33	5	282	**43**	**330**	**5**	**2**	6	13	576
04:15 PM	6	194	6	206	17	2	5	24	1	270	32	303	3	1	4	8	541
04:30 PM	**14**	**208**	2	**224**	**28**	2	**12**	**42**	2	281	30	313	1	0	0	1	**580**
04:45 PM	5	191	1	197	20	1	1	22	**7**	**283**	29	319	5	2	**7**	**14**	552
Total Volume	34	778	15	827	90	7	24	121	15	1116	134	1265	14	5	17	36	2249
% App. Total	4.1	94.1	1.8		74.4	5.8	19.8		1.2	88.2	10.6		38.9	13.9	47.2		
PHF	.607	.935	.625	.923	.804	.875	.500	.720	.536	.986	.779	.958	.700	.625	.607	.643	.969

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Pourroy Road/Abelia Street
Weather: Clear

File Name : CRV79POPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM				02:15 PM				04:00 PM				02:00 PM			
+0 mins.	6	194	**6**	206	30	**3**	11	**44**	5	282	**43**	**330**	9	2	**15**	26
+15 mins.	**14**	**208**	2	**224**	28	2	11	41	1	270	32	303	**25**	**5**	10	**40**
+30 mins.	5	191	1	197	**36**	1	6	43	2	281	30	313	4	4	3	11
+45 mins.	11	190	3	204	28	1	**15**	44	**7**	**283**	29	319	5	1	4	10
Total Volume	36	783	12	831	122	7	43	172	15	1116	134	1265	43	12	32	87
% App. Total	4.3	94.2	1.4		70.9	4.1	25		1.2	88.2	10.6		49.4	13.8	36.8	
PHF	.643	.941	.500	.927	.847	.583	.717	.977	.536	.986	.779	.958	.430	.600	.533	.544

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Whisper Heights/Pourroy Road
Weather: Clear

File Name : CRV79WHAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

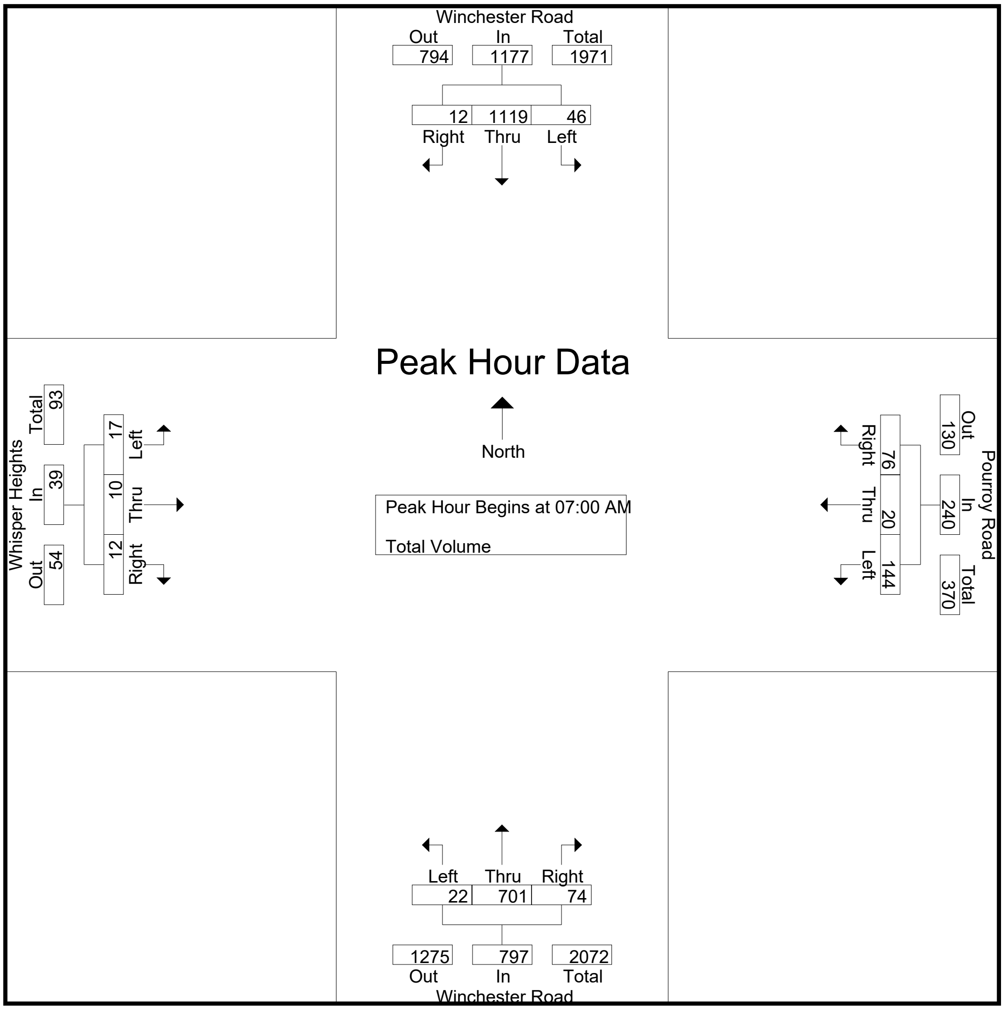
	Winchester Road Southbound				Pourroy Road Westbound				Winchester Road Northbound				Whisper Heights Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	15	228	2	245	46	7	25	78	6	166	26	198	5	1	1	7	528
07:15 AM	9	301	6	316	41	9	21	71	8	173	17	198	2	2	4	8	593
07:30 AM	7	342	3	352	29	3	19	51	7	179	22	208	6	6	3	15	626
07:45 AM	15	248	1	264	28	1	11	40	1	183	9	193	4	1	4	9	506
Total	46	1119	12	1177	144	20	76	240	22	701	74	797	17	10	12	39	2253
08:00 AM	11	268	2	281	43	5	8	56	2	110	17	129	4	7	18	29	495
08:15 AM	9	206	2	217	31	1	7	39	1	127	19	147	0	2	7	9	412
08:30 AM	20	197	1	218	36	5	16	57	1	121	9	131	0	8	1	9	415
08:45 AM	7	183	1	191	37	7	39	83	0	131	13	144	0	4	5	9	427
Total	47	854	6	907	147	18	70	235	4	489	58	551	4	21	31	56	1749
Grand Total	93	1973	18	2084	291	38	146	475	26	1190	132	1348	21	31	43	95	4002
Apprch %	4.5	94.7	0.9		61.3	8	30.7		1.9	88.3	9.8		22.1	32.6	45.3		
Total %	2.3	49.3	0.4	52.1	7.3	0.9	3.6	11.9	0.6	29.7	3.3	33.7	0.5	0.8	1.1	2.4	

	Winchester Road Southbound				Pourroy Road Westbound				Winchester Road Northbound				Whisper Heights Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	**15**	228	2	245	**46**	7	**25**	**78**	6	166	**26**	198	5	1	1	7	528
07:15 AM	9	301	**6**	316	41	**9**	21	71	**8**	173	17	198	2	2	**4**	8	593
07:30 AM	7	**342**	3	**352**	29	3	19	51	7	179	22	**208**	**6**	**6**	3	**15**	**626**
07:45 AM	15	248	1	264	28	1	11	40	1	**183**	9	193	4	1	4	9	506
Total Volume	46	1119	12	1177	144	20	76	240	22	701	74	797	17	10	12	39	2253
% App. Total	3.9	95.1	1		60	8.3	31.7		2.8	88	9.3		43.6	25.6	30.8		
PHF	.767	.818	.500	.836	.783	.556	.760	.769	.688	.958	.712	.958	.708	.417	.750	.650	.900

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Whisper Heights/Pourroy Road
Weather: Clear

File Name : CRV79WHAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	9	301	**6**	316	**46**	7	**25**	**78**	6	166	**26**	198	**6**	6	3	15
+15 mins.	7	**342**	3	**352**	41	**9**	21	71	**8**	173	17	198	4	1	4	9
+30 mins.	**15**	248	1	264	29	3	19	51	7	179	22	**208**	4	**7**	**18**	**29**
+45 mins.	11	268	2	281	28	1	11	40	1	**183**	9	193	0	2	7	9
Total Volume	42	1159	12	1213	144	20	76	240	22	701	74	797	14	16	32	62
% App. Total	3.5	95.5	1		60	8.3	31.7		2.8	88	9.3		22.6	25.8	51.6	
PHF	.700	.847	.500	.862	.783	.556	.760	.769	.688	.958	.712	.958	.583	.571	.444	.534

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Whisper Heights/Pourroy Road
Weather: Clear

File Name : CRV79WHPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

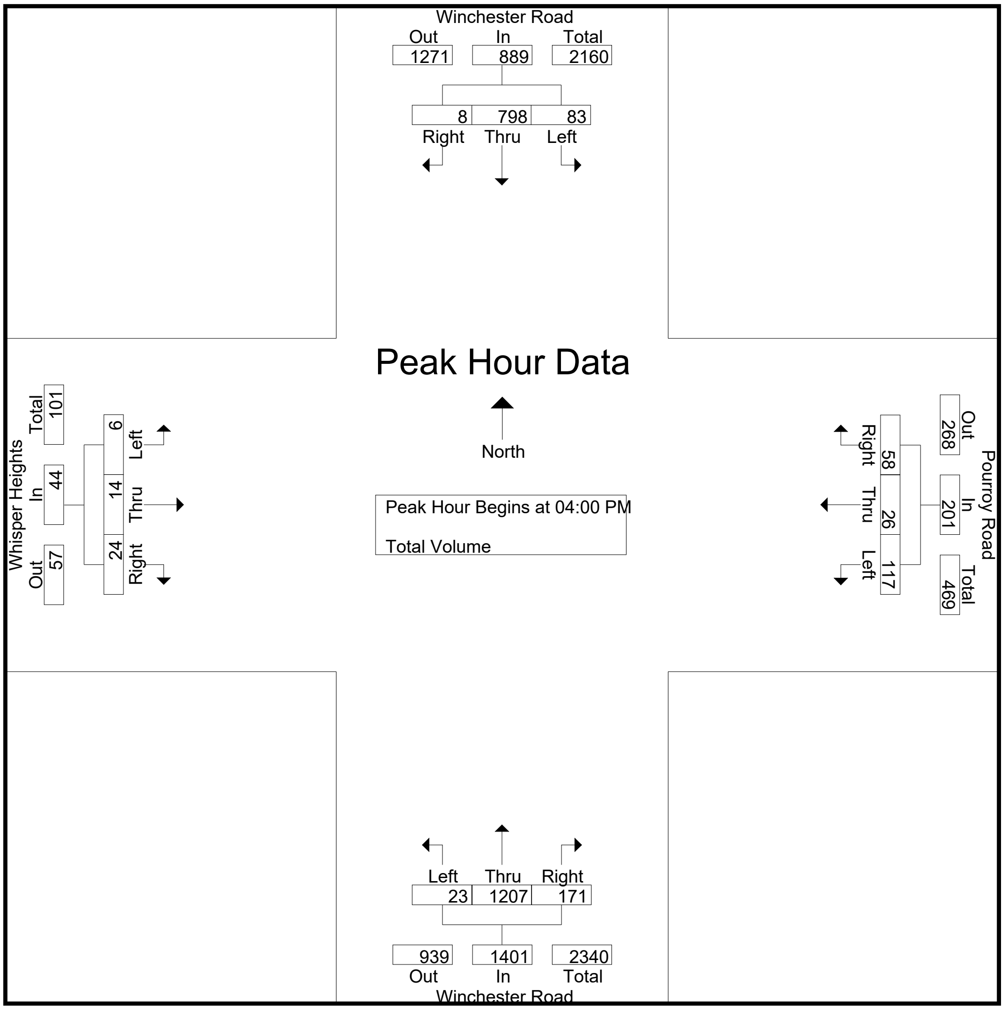
	Winchester Road Southbound				Pourroy Road Westbound				Winchester Road Northbound				Whisper Heights Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:00 PM	9	130	5	144	23	3	13	39	1	230	15	246	6	3	3	12	441
02:15 PM	9	161	5	175	19	1	8	28	3	221	23	247	3	2	3	8	458
02:30 PM	17	173	5	195	27	4	11	42	3	202	17	222	2	3	6	11	470
02:45 PM	15	159	1	175	21	1	16	38	2	231	48	281	3	4	1	8	502
Total	50	623	16	689	90	9	48	147	9	884	103	996	14	12	13	39	1871
03:00 PM	15	150	3	168	16	1	15	32	2	186	28	216	1	5	1	7	423
03:15 PM	12	130	3	145	11	0	18	29	3	246	30	279	2	1	3	6	459
03:30 PM	17	173	0	190	28	10	21	59	4	246	31	281	0	2	2	4	534
03:45 PM	13	164	3	180	23	4	18	45	2	269	38	309	1	5	0	6	540
Total	57	617	9	683	78	15	72	165	11	947	127	1085	4	13	6	23	1956
04:00 PM	21	196	6	223	32	11	15	58	12	317	50	379	3	1	4	8	668
04:15 PM	24	191	1	216	32	8	14	54	6	295	33	334	1	5	8	14	618
04:30 PM	19	214	0	233	23	5	17	45	2	299	42	343	1	4	8	13	634
04:45 PM	19	197	1	217	30	2	12	44	3	296	46	345	1	4	4	9	615
Total	83	798	8	889	117	26	58	201	23	1207	171	1401	6	14	24	44	2535
05:00 PM	16	205	2	223	33	5	12	50	1	288	32	321	2	0	2	4	598
05:15 PM	17	205	4	226	43	10	32	85	6	263	25	294	3	4	2	9	614
05:30 PM	23	203	4	230	28	3	16	47	7	254	51	312	6	9	13	28	617
05:45 PM	22	162	15	199	21	3	11	35	5	247	38	290	8	8	8	24	548
Total	78	775	25	878	125	21	71	217	19	1052	146	1217	19	21	25	65	2377
Grand Total	268	2813	58	3139	410	71	249	730	62	4090	547	4699	43	60	68	171	8739
Apprch %	8.5	89.6	1.8		56.2	9.7	34.1		1.3	87	11.6		25.1	35.1	39.8		
Total %	3.1	32.2	0.7	35.9	4.7	0.8	2.8	8.4	0.7	46.8	6.3	53.8	0.5	0.7	0.8	2	

	Winchester Road Southbound				Pourroy Road Westbound				Winchester Road Northbound				Whisper Heights Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	21	196	**6**	223	**32**	**11**	15	**58**	**12**	**317**	**50**	**379**	**3**	1	4	8	**668**
04:15 PM	**24**	191	1	216	32	8	14	54	6	295	33	334	1	**5**	**8**	**14**	618
04:30 PM	19	**214**	0	**233**	23	5	**17**	45	2	299	42	343	1	4	8	13	634
04:45 PM	19	197	1	217	30	2	12	44	3	296	46	345	1	4	4	9	615
Total Volume	83	798	8	889	117	26	58	201	23	1207	171	1401	6	14	24	44	2535
% App. Total	9.3	89.8	0.9		58.2	12.9	28.9		1.6	86.2	12.2		13.6	31.8	54.5		
PHF	.865	.932	.333	.954	.914	.591	.853	.866	.479	.952	.855	.924	.500	.700	.750	.786	.949

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Whisper Heights/Pourroy Road
Weather: Clear

File Name : CRV79WHPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:45 PM				04:00 PM				05:00 PM			
+0 mins.	**19**	**214**	0	**233**	30	2	12	44	**12**	**317**	**50**	**379**	2	0	2	4
+15 mins.	19	197	1	217	33	5	12	50	6	295	33	334	3	4	2	9
+30 mins.	16	205	2	223	**43**	**10**	**32**	**85**	2	299	42	343	6	**9**	**13**	**28**
+45 mins.	17	205	**4**	226	28	3	16	47	3	296	46	345	**8**	8	8	24
Total Volume	71	821	7	899	134	20	72	226	23	1207	171	1401	19	21	25	65
% App. Total	7.9	91.3	0.8		59.3	8.8	31.9		1.6	86.2	12.2		29.2	32.3	38.5	
PHF	.934	.959	.438	.965	.779	.500	.563	.665	.479	.952	.855	.924	.594	.583	.481	.580

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Jean Nicholas Road/Skyview Road
Weather: Clear

File Name : CRV79JEAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

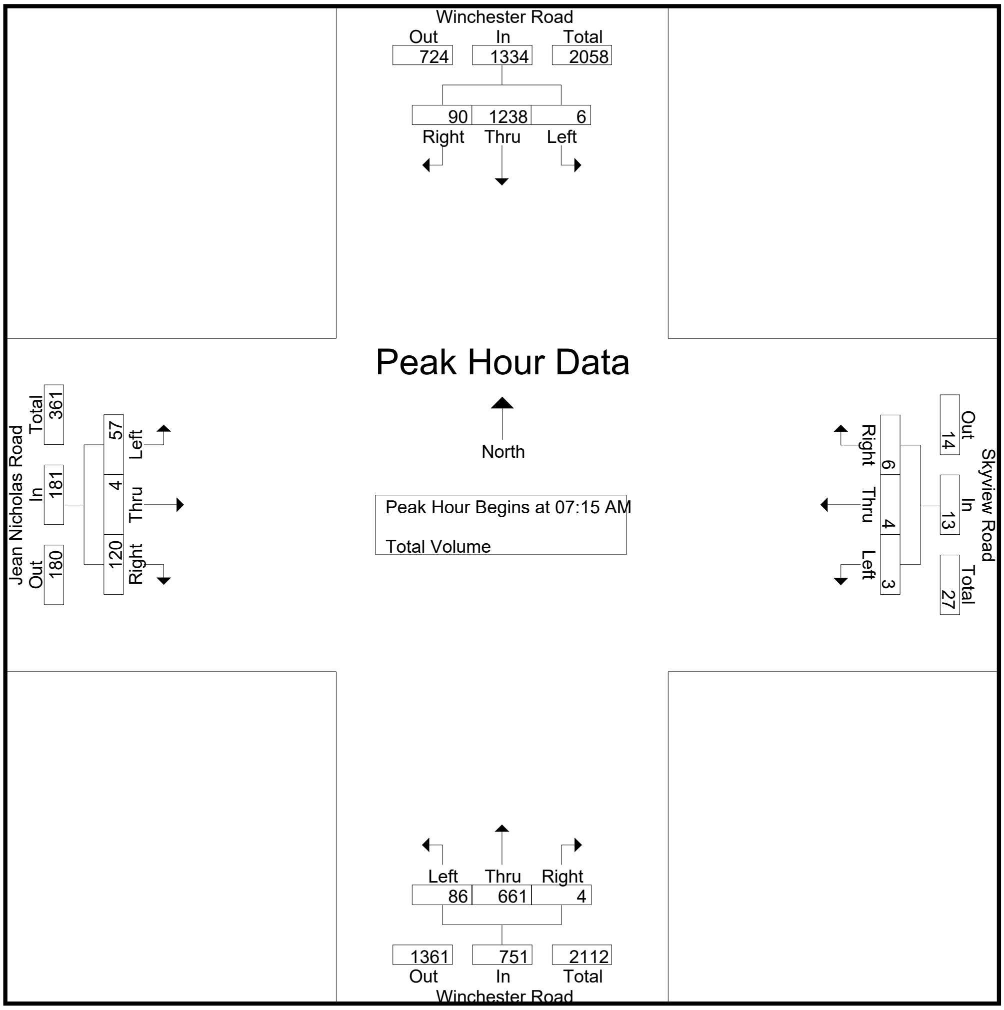
	Winchester Road Southbound				Skyview Road Westbound				Winchester Road Northbound				Jean Nicholas Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	249	23	275	1	0	4	5	17	170	1	188	20	0	25	45	513
07:15 AM	3	323	18	344	1	0	2	3	7	183	0	190	15	2	25	42	579
07:30 AM	1	354	20	375	0	3	2	5	29	188	1	218	17	1	33	51	649
07:45 AM	1	255	21	277	1	0	0	1	27	167	2	196	19	1	26	46	520
Total	8	1181	82	1271	3	3	8	14	80	708	4	792	71	4	109	184	2261
08:00 AM	1	306	31	338	1	1	2	4	23	123	1	147	6	0	36	42	531
08:15 AM	1	227	14	242	1	1	0	2	25	126	3	154	21	3	37	61	459
08:30 AM	0	213	15	228	1	3	2	6	34	112	1	147	17	2	32	51	432
08:45 AM	1	218	14	233	0	1	0	1	26	133	1	160	11	3	22	36	430
Total	3	964	74	1041	3	6	4	13	108	494	6	608	55	8	127	190	1852
Grand Total	11	2145	156	2312	6	9	12	27	188	1202	10	1400	126	12	236	374	4113
Apprch %	0.5	92.8	6.7		22.2	33.3	44.4		13.4	85.9	0.7		33.7	3.2	63.1		
Total %	0.3	52.2	3.8	56.2	0.1	0.2	0.3	0.7	4.6	29.2	0.2	34	3.1	0.3	5.7	9.1	

	Winchester Road Southbound				Skyview Road Westbound				Winchester Road Northbound				Jean Nicholas Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**3**	323	18	344	**1**	0	**2**	3	7	183	0	190	15	**2**	25	42	579
07:30 AM	1	**354**	20	**375**	0	**3**	2	**5**	**29**	**188**	1	**218**	17	1	33	**51**	**649**
07:45 AM	1	255	21	277	1	0	0	1	27	167	**2**	196	**19**	1	26	46	520
08:00 AM	1	306	**31**	338	1	1	2	4	23	123	1	147	6	0	**36**	42	531
Total Volume	6	1238	90	1334	3	4	6	13	86	661	4	751	57	4	120	181	2279
% App. Total	0.4	92.8	6.7		23.1	30.8	46.2		11.5	88	0.5		31.5	2.2	66.3		
PHF	.500	.874	.726	.889	.750	.333	.750	.650	.741	.879	.500	.861	.750	.500	.833	.887	.878

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Jean Nicholas Road/Skyview Road
Weather: Clear

File Name : CRV79JEAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	**3**	323	18	344	**1**	0	**4**	**5**	17	170	1	188	17	1	33	51
+15 mins.	1	**354**	20	**375**	1	0	2	3	7	183	0	190	19	1	26	46
+30 mins.	1	255	21	277	0	**3**	2	5	**29**	**188**	1	**218**	6	0	36	42
+45 mins.	1	306	**31**	338	1	0	0	1	27	167	**2**	196	**21**	**3**	**37**	**61**
Total Volume	6	1238	90	1334	3	3	8	14	80	708	4	792	63	5	132	200
% App. Total	0.4	92.8	6.7		21.4	21.4	57.1		10.1	89.4	0.5		31.5	2.5	66	
PHF	.500	.874	.726	.889	.750	.250	.500	.700	.690	.941	.500	.908	.750	.417	.892	.820

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Jean Nicholas Road/Skyview Road
Weather: Clear

File Name : CRV79JEPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

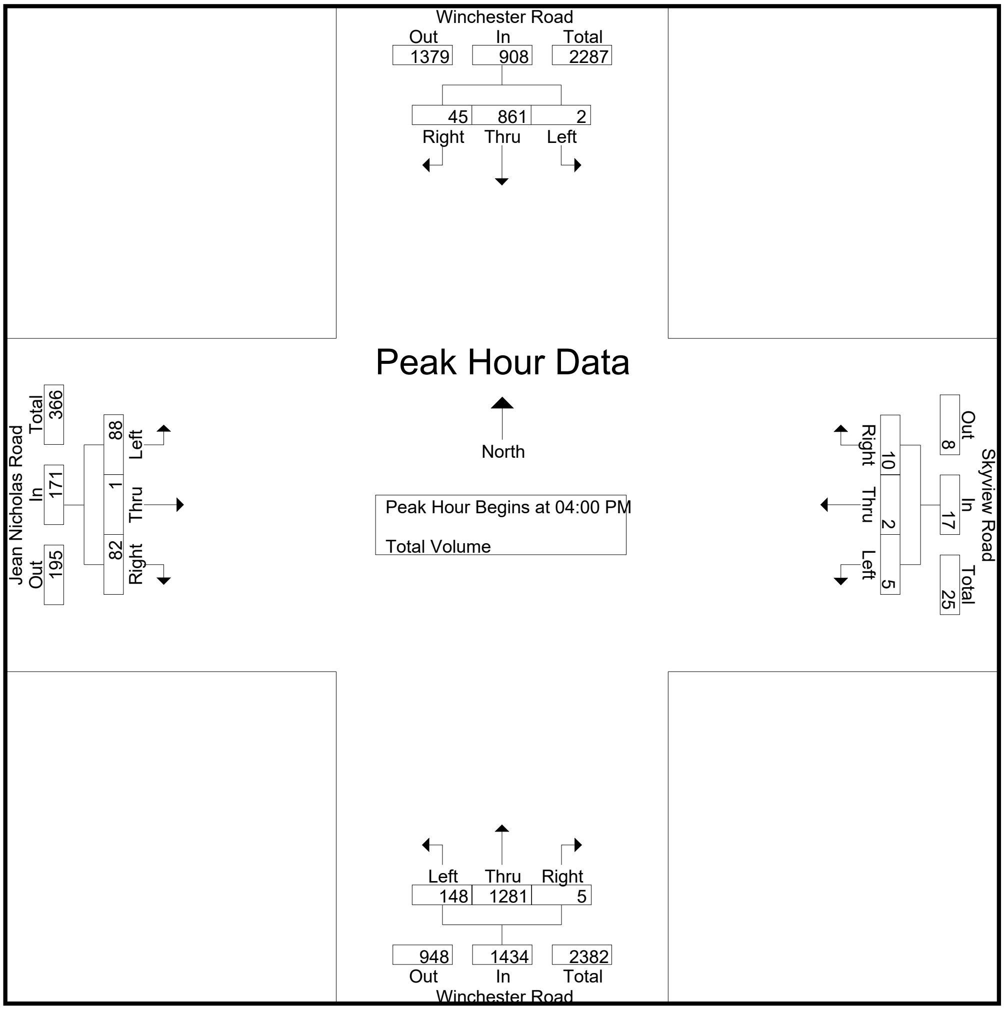
Groups Printed- Total Volume

	Winchester Road Southbound				Skyview Road Westbound				Winchester Road Northbound				Jean Nicholas Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:00 PM	0	143	14	157	1	0	0	1	16	235	1	252	15	1	22	38	448
02:15 PM	1	166	12	179	2	1	3	6	43	230	2	275	14	2	26	42	502
02:30 PM	1	194	12	207	1	3	6	10	42	199	0	241	12	0	17	29	487
02:45 PM	0	165	12	177	1	0	0	1	42	269	0	311	16	0	20	36	525
Total	2	668	50	720	5	4	9	18	143	933	3	1079	57	3	85	145	1962
03:00 PM	0	158	17	175	1	1	1	3	63	211	1	275	10	0	17	27	480
03:15 PM	0	126	13	139	0	0	3	3	48	254	3	305	14	0	28	42	489
03:30 PM	0	189	12	201	0	0	4	4	43	257	2	302	23	1	38	62	569
03:45 PM	1	170	7	178	1	0	1	2	32	295	2	329	13	0	29	42	551
Total	1	643	49	693	2	1	9	12	186	1017	8	1211	60	1	112	173	2089
04:00 PM	1	214	7	222	1	0	7	8	32	347	2	381	15	0	19	34	645
04:15 PM	1	214	10	225	4	1	1	6	30	305	1	336	25	0	23	48	615
04:30 PM	0	229	11	240	0	0	1	1	38	317	1	356	15	1	17	33	630
04:45 PM	0	204	17	221	0	1	1	2	48	312	1	361	33	0	23	56	640
Total	2	861	45	908	5	2	10	17	148	1281	5	1434	88	1	82	171	2530
05:00 PM	0	221	13	234	2	0	0	2	62	301	0	363	23	2	19	44	643
05:15 PM	0	227	18	245	0	0	0	0	50	280	2	332	18	0	20	38	615
05:30 PM	0	237	15	252	1	1	0	2	36	295	1	332	13	0	21	34	620
05:45 PM	1	174	9	184	1	0	2	3	36	275	2	313	15	0	25	40	540
Total	1	859	55	915	4	1	2	7	184	1151	5	1340	69	2	85	156	2418
Grand Total	6	3031	199	3236	16	8	30	54	661	4382	21	5064	274	7	364	645	8999
Apprch %	0.2	93.7	6.1		29.6	14.8	55.6		13.1	86.5	0.4		42.5	1.1	56.4		
Total %	0.1	33.7	2.2	36	0.2	0.1	0.3	0.6	7.3	48.7	0.2	56.3	3	0.1	4	7.2	

	Winchester Road Southbound				Skyview Road Westbound				Winchester Road Northbound				Jean Nicholas Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	**1**	214	7	222	1	0	**7**	**8**	32	**347**	**2**	**381**	15	0	19	34	**645**
04:15 PM	1	214	10	225	**4**	**1**	1	6	30	305	1	336	25	0	**23**	48	615
04:30 PM	0	**229**	11	**240**	0	0	1	1	38	317	1	356	15	**1**	17	33	630
04:45 PM	0	204	**17**	221	0	1	1	2	**48**	312	1	361	**33**	0	23	**56**	640
Total Volume	2	861	45	908	5	2	10	17	148	1281	5	1434	88	1	82	171	2530
% App. Total	0.2	94.8	5		29.4	11.8	58.8		10.3	89.3	0.3		51.5	0.6	48		
PHF	.500	.940	.662	.946	.313	.500	.357	.531	.771	.923	.625	.941	.667	.250	.891	.763	.981

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside	File Name : CRV79JEPM
N/S: Winchester Road (SR-79)	Site Code : 22116465
E/W: Jean Nicholas Road/Skyview Road	Start Date : 9/14/2016
Weather: Clear	Page No : 2



Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				02:15 PM				04:00 PM				03:30 PM			
+0 mins.	0	204	17	221	**2**	1	3	6	32	**347**	**2**	**381**	23	**1**	**38**	**62**
+15 mins.	0	221	13	234	1	**3**	**6**	**10**	30	305	1	336	13	0	29	42
+30 mins.	0	227	**18**	245	1	0	0	1	38	317	1	356	15	0	19	34
+45 mins.	0	**237**	15	**252**	1	1	1	3	**48**	312	1	361	**25**	0	23	48
Total Volume	0	889	63	952	5	5	10	20	148	1281	5	1434	76	1	109	186
% App. Total	0	93.4	6.6		25	25	50		10.3	89.3	0.3		40.9	0.5	58.6	
PHF	.000	.938	.875	.944	.625	.417	.417	.500	.771	.923	.625	.941	.760	.250	.717	.750

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Max Gilliss Boulevard/Thompson Road
Weather: Clear

File Name : CRV79MAAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

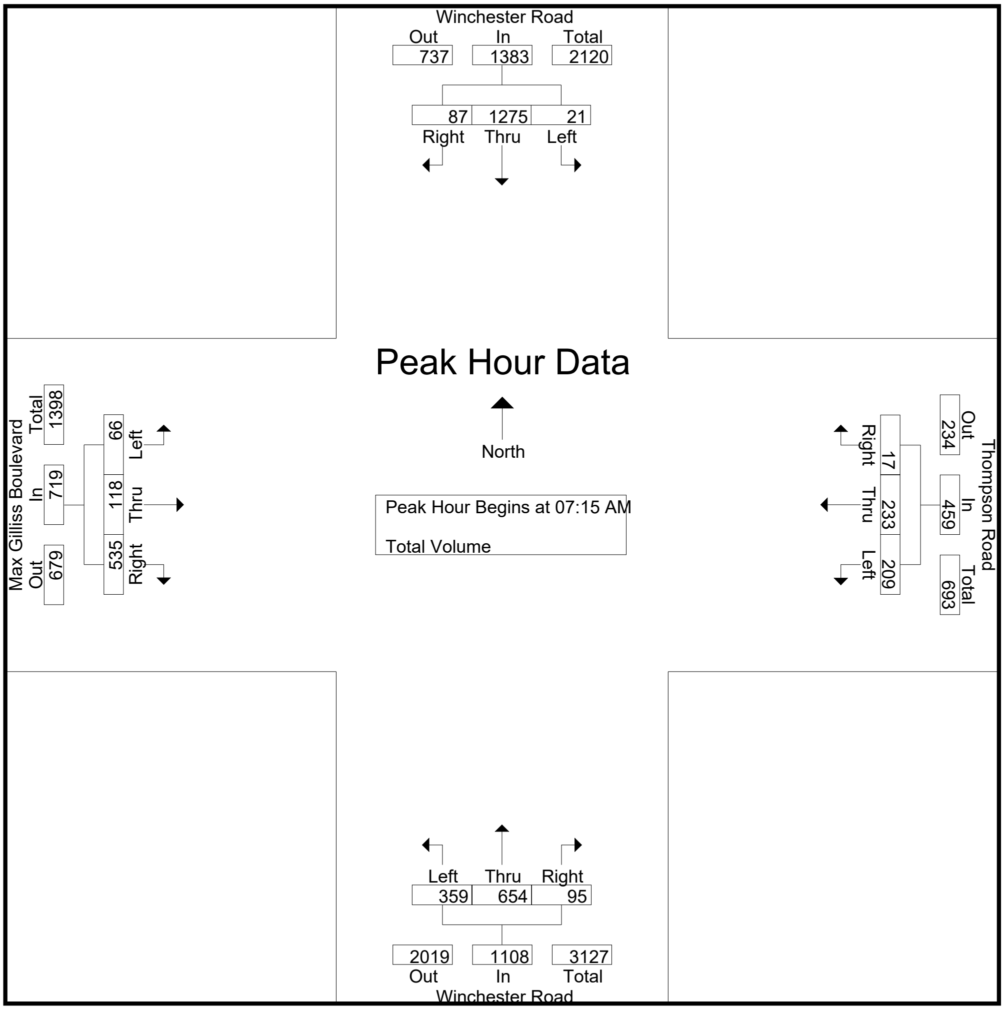
	Winchester Road Southbound				Thompson Road Westbound				Winchester Road Northbound				Max Gilliss Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	5	245	21	271	69	69	3	141	63	160	17	240	8	26	101	135	787
07:15 AM	6	321	29	356	39	56	4	99	62	164	30	256	18	30	102	150	861
07:30 AM	3	326	21	350	48	62	3	113	118	209	35	362	17	36	140	193	1018
07:45 AM	3	302	20	325	56	65	7	128	99	157	19	275	16	30	171	217	945
Total	17	1194	91	1302	212	252	17	481	342	690	101	1133	59	122	514	695	3611
08:00 AM	9	326	17	352	66	50	3	119	80	124	11	215	15	22	122	159	845
08:15 AM	9	261	12	282	43	32	1	76	107	147	19	273	9	29	149	187	818
08:30 AM	3	221	14	238	48	62	3	113	119	141	21	281	15	28	134	177	809
08:45 AM	6	232	15	253	50	62	4	116	104	118	24	246	7	27	151	185	800
Total	27	1040	58	1125	207	206	11	424	410	530	75	1015	46	106	556	708	3272
Grand Total	44	2234	149	2427	419	458	28	905	752	1220	176	2148	105	228	1070	1403	6883
Apprch %	1.8	92	6.1		46.3	50.6	3.1		35	56.8	8.2		7.5	16.3	76.3		
Total %	0.6	32.5	2.2	35.3	6.1	6.7	0.4	13.1	10.9	17.7	2.6	31.2	1.5	3.3	15.5	20.4	

	Winchester Road Southbound				Thompson Road Westbound				Winchester Road Northbound				Max Gilliss Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	6	321	**29**	**356**	39	56	4	99	62	164	30	256	**18**	30	102	150	861
07:30 AM	3	**326**	21	350	48	62	3	113	**118**	**209**	**35**	**362**	17	**36**	140	193	**1018**
07:45 AM	3	302	20	325	56	**65**	**7**	**128**	99	157	19	275	16	30	**171**	**217**	945
08:00 AM	**9**	326	17	352	**66**	50	3	119	80	124	11	215	15	22	122	159	845
Total Volume	21	1275	87	1383	209	233	17	459	359	654	95	1108	66	118	535	719	3669
% App. Total	1.5	92.2	6.3		45.5	50.8	3.7		32.4	59	8.6		9.2	16.4	74.4		
PHF	.583	.978	.750	.971	.792	.896	.607	.896	.761	.782	.679	.765	.917	.819	.782	.828	.901

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Max Gilliss Boulevard/Thompson Road
Weather: Clear

File Name : CRV79MAAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	6	321	**29**	**356**	**69**	**69**	3	**141**	63	160	17	240	**17**	**36**	140	193
+15 mins.	3	**326**	21	350	39	56	4	99	62	164	30	256	16	30	**171**	**217**
+30 mins.	3	302	20	325	48	62	3	113	**118**	**209**	**35**	**362**	15	22	122	159
+45 mins.	**9**	326	17	352	56	65	**7**	128	99	157	19	275	9	29	149	187
Total Volume	21	1275	87	1383	212	252	17	481	342	690	101	1133	57	117	582	756
% App. Total	1.5	92.2	6.3		44.1	52.4	3.5		30.2	60.9	8.9		7.5	15.5	77	
PHF	.583	.978	.750	.971	.768	.913	.607	.853	.725	.825	.721	.782	.838	.813	.851	.871

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Max Gilliss Boulevard/Thompson Road
Weather: Clear

File Name : CRV79MAPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

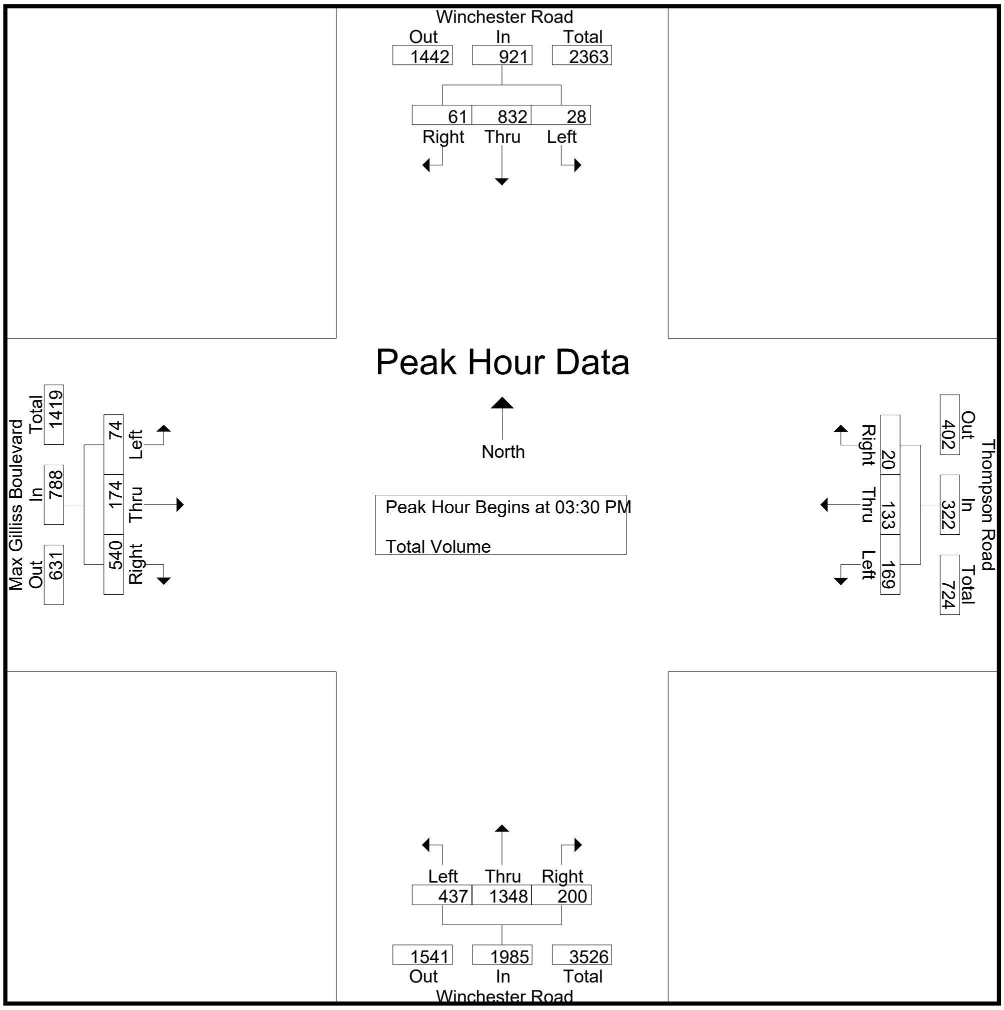
	Winchester Road Southbound				Thompson Road Westbound				Winchester Road Northbound				Max Gilliss Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:00 PM	4	154	9	167	40	34	2	76	84	280	37	401	5	14	80	99	743
02:15 PM	7	204	17	228	35	44	7	86	84	278	32	394	10	23	68	101	809
02:30 PM	6	200	15	221	29	37	4	70	110	237	36	383	17	21	96	134	808
02:45 PM	14	197	13	224	28	41	4	73	108	282	45	435	14	39	124	177	909
Total	31	755	54	840	132	156	17	305	386	1077	150	1613	46	97	368	511	3269
03:00 PM	5	151	9	165	22	43	2	67	132	306	63	501	13	39	101	153	886
03:15 PM	3	150	14	167	40	30	7	77	119	282	51	452	12	46	134	192	888
03:30 PM	6	228	12	246	48	47	4	99	113	316	48	477	10	49	193	252	1074
03:45 PM	7	196	14	217	50	25	2	77	113	327	46	486	29	48	171	248	1028
Total	21	725	49	795	160	145	15	320	477	1231	208	1916	64	182	599	845	3876
04:00 PM	10	192	16	218	36	29	7	72	105	361	54	520	17	36	96	149	959
04:15 PM	5	216	19	240	35	32	7	74	106	344	52	502	18	41	80	139	955
04:30 PM	7	199	9	215	33	39	6	78	120	337	53	510	12	36	81	129	932
04:45 PM	16	229	22	267	29	58	5	92	105	332	60	497	19	52	86	157	1013
Total	38	836	66	940	133	158	25	316	436	1374	219	2029	66	165	343	574	3859
05:00 PM	5	204	14	223	44	52	6	102	116	361	51	528	11	52	88	151	1004
05:15 PM	10	217	16	243	44	42	3	89	113	311	51	475	25	59	101	185	992
05:30 PM	7	229	19	255	47	31	3	81	121	354	47	522	14	36	98	148	1006
05:45 PM	10	191	11	212	36	39	5	80	110	294	47	451	24	52	101	177	920
Total	32	841	60	933	171	164	17	352	460	1320	196	1976	74	199	388	661	3922
Grand Total	122	3157	229	3508	596	623	74	1293	1759	5002	773	7534	250	643	1698	2591	14926
Apprch %	3.5	90	6.5		46.1	48.2	5.7		23.3	66.4	10.3		9.6	24.8	65.5		
Total %	0.8	21.2	1.5	23.5	4	4.2	0.5	8.7	11.8	33.5	5.2	50.5	1.7	4.3	11.4	17.4	

	Winchester Road Southbound				Thompson Road Westbound				Winchester Road Northbound				Max Gilliss Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	6	**228**	12	**246**	48	**47**	4	**99**	**113**	316	48	477	10	**49**	**193**	**252**	**1074**
03:45 PM	7	196	14	217	**50**	25	2	77	113	327	46	486	**29**	48	171	248	1028
04:00 PM	**10**	192	16	218	36	29	**7**	72	105	**361**	**54**	**520**	17	36	96	149	959
04:15 PM	5	216	**19**	240	35	32	7	74	106	344	52	502	18	41	80	139	955
Total Volume	28	832	61	921	169	133	20	322	437	1348	200	1985	74	174	540	788	4016
% App. Total	3	90.3	6.6		52.5	41.3	6.2		22	67.9	10.1		9.4	22.1	68.5		
PHF	.700	.912	.803	.936	.845	.707	.714	.813	.967	.934	.926	.954	.638	.888	.699	.782	.935

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Max Gilliss Boulevard/Thompson Road
Weather: Clear

File Name : CRV79MAPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:15 PM				03:00 PM			
+0 mins.	**16**	**229**	**22**	**267**	29	**58**	5	92	106	344	52	502	13	39	101	153
+15 mins.	5	204	14	223	44	52	**6**	**102**	**120**	337	53	510	12	46	134	192
+30 mins.	10	217	16	243	44	42	3	89	105	332	**60**	497	10	**49**	**193**	**252**
+45 mins.	7	229	19	255	**47**	31	3	81	116	**361**	51	**528**	**29**	48	171	248
Total Volume	38	879	71	988	164	183	17	364	447	1374	216	2037	64	182	599	845
% App. Total	3.8	89	7.2		45.1	50.3	4.7		21.9	67.5	10.6		7.6	21.5	70.9	
PHF	.594	.960	.807	.925	.872	.789	.708	.892	.931	.952	.900	.964	.552	.929	.776	.838

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Benton Road
Weather: Clear

File Name : CRV79BEAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

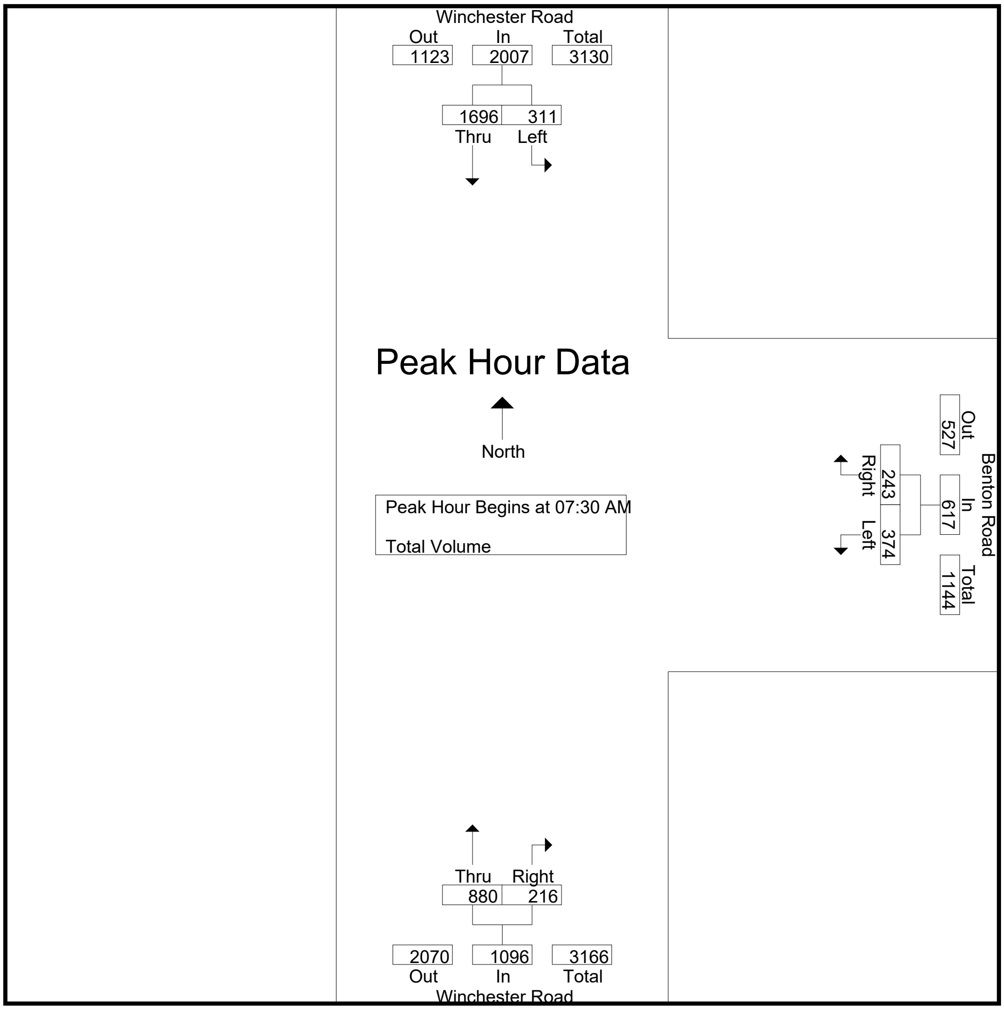
Groups Printed- Total Volume

	Winchester Road Southbound			Benton Road Westbound			Winchester Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	63	360	423	114	53	167	172	43	215	805
07:15 AM	77	374	451	87	42	129	219	66	285	865
07:30 AM	82	420	502	79	67	146	289	63	352	1000
07:45 AM	78	467	545	91	59	150	203	49	252	947
Total	300	1621	1921	371	221	592	883	221	1104	3617
08:00 AM	80	416	496	111	49	160	178	41	219	875
08:15 AM	71	393	464	93	68	161	210	63	273	898
08:30 AM	87	337	424	91	69	160	220	61	281	865
08:45 AM	81	340	421	116	74	190	178	48	226	837
Total	319	1486	1805	411	260	671	786	213	999	3475
Grand Total	619	3107	3726	782	481	1263	1669	434	2103	7092
Apprch %	16.6	83.4		61.9	38.1		79.4	20.6		
Total %	8.7	43.8	52.5	11	6.8	17.8	23.5	6.1	29.7	

	Winchester Road Southbound			Benton Road Westbound			Winchester Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	**82**	420	502	79	67	146	**289**	**63**	**352**	**1000**
07:45 AM	78	**467**	**545**	91	59	150	203	49	252	947
08:00 AM	80	416	496	**111**	49	160	178	41	219	875
08:15 AM	71	393	464	93	**68**	**161**	210	63	273	898
Total Volume	311	1696	2007	374	243	617	880	216	1096	3720
% App. Total	15.5	84.5		60.6	39.4		80.3	19.7		
PHF	.948	.908	.921	.842	.893	.958	.761	.857	.778	.930

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Benton Road
Weather: Clear

File Name : CRV79BEAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			08:00 AM			07:15 AM		
+0 mins.	**82**	420	502	111	49	160	219	**66**	285
+15 mins.	78	**467**	**545**	93	68	161	**289**	63	**352**
+30 mins.	80	416	496	91	69	160	203	49	252
+45 mins.	71	393	464	**116**	**74**	**190**	178	41	219
Total Volume	311	1696	2007	411	260	671	889	219	1108
% App. Total	15.5	84.5		61.3	38.7		80.2	19.8	
PHF	.948	.908	.921	.886	.878	.883	.769	.830	.787

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Winchester Road (SR-79)
E/W: Benton Road
Weather: Clear

File Name : CRV79BEPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

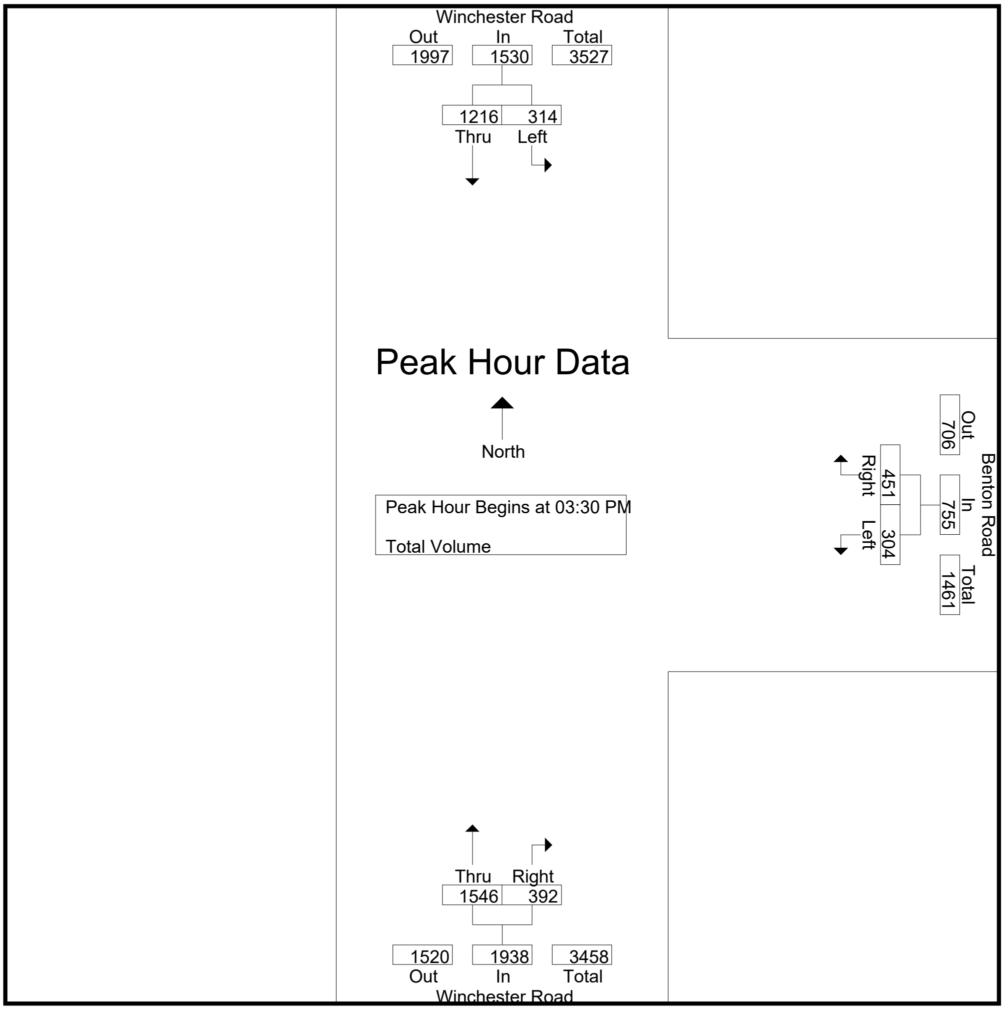
Groups Printed- Total Volume

	Winchester Road Southbound			Benton Road Westbound			Winchester Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
02:00 PM	54	209	263	62	91	153	289	98	387	803
02:15 PM	63	232	295	72	80	152	333	90	423	870
02:30 PM	77	253	330	67	98	165	306	85	391	886
02:45 PM	72	260	332	72	100	172	358	124	482	986
Total	266	954	1220	273	369	642	1286	397	1683	3545
03:00 PM	74	217	291	81	111	192	396	133	529	1012
03:15 PM	70	244	314	64	104	168	370	92	462	944
03:30 PM	82	374	456	91	121	212	379	92	471	1139
03:45 PM	74	340	414	84	115	199	396	113	509	1122
Total	300	1175	1475	320	451	771	1541	430	1971	4217
04:00 PM	72	237	309	49	110	159	393	95	488	956
04:15 PM	86	265	351	80	105	185	378	92	470	1006
04:30 PM	67	267	334	71	136	207	391	125	516	1057
04:45 PM	75	250	325	54	120	174	395	108	503	1002
Total	300	1019	1319	254	471	725	1557	420	1977	4021
05:00 PM	65	274	339	79	134	213	410	110	520	1072
05:15 PM	74	312	386	83	120	203	350	93	443	1032
05:30 PM	78	278	356	90	107	197	419	111	530	1083
05:45 PM	87	257	344	80	106	186	357	120	477	1007
Total	304	1121	1425	332	467	799	1536	434	1970	4194
Grand Total	1170	4269	5439	1179	1758	2937	5920	1681	7601	15977
Apprch %	21.5	78.5		40.1	59.9		77.9	22.1		
Total %	7.3	26.7	34	7.4	11	18.4	37.1	10.5	47.6	

	Winchester Road Southbound			Benton Road Westbound			Winchester Road Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 03:30 PM										
03:30 PM	82	**374**	**456**	**91**	**121**	**212**	379	92	471	**1139**
03:45 PM	74	340	414	84	115	199	**396**	**113**	**509**	1122
04:00 PM	72	237	309	49	110	159	393	95	488	956
04:15 PM	**86**	265	351	80	105	185	378	92	470	1006
Total Volume	314	1216	1530	304	451	755	1546	392	1938	4223
% App. Total	20.5	79.5		40.3	59.7		79.8	20.2		
PHF	.913	.813	.839	.835	.932	.890	.976	.867	.952	.927

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside	File Name : CRV79BEPM
N/S: Winchester Road (SR-79)	Site Code : 22116465
E/W: Benton Road	Start Date : 9/14/2016
Weather: Clear	Page No : 2



Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:30 PM			05:00 PM			04:15 PM		
+0 mins.	82	**374**	**456**	79	**134**	**213**	378	92	470
+15 mins.	74	340	414	83	120	203	391	**125**	516
+30 mins.	72	237	309	**90**	107	197	395	108	503
+45 mins.	**86**	265	351	80	106	186	**410**	110	**520**
Total Volume	314	1216	1530	332	467	799	1574	435	2009
% App. Total	20.5	79.5		41.6	58.4		78.3	21.7	
PHF	.913	.813	.839	.922	.871	.938	.960	.870	.966

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Pat Road
E/W: Pourroy Road
Weather: Clear

File Name : CRVPAPOAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

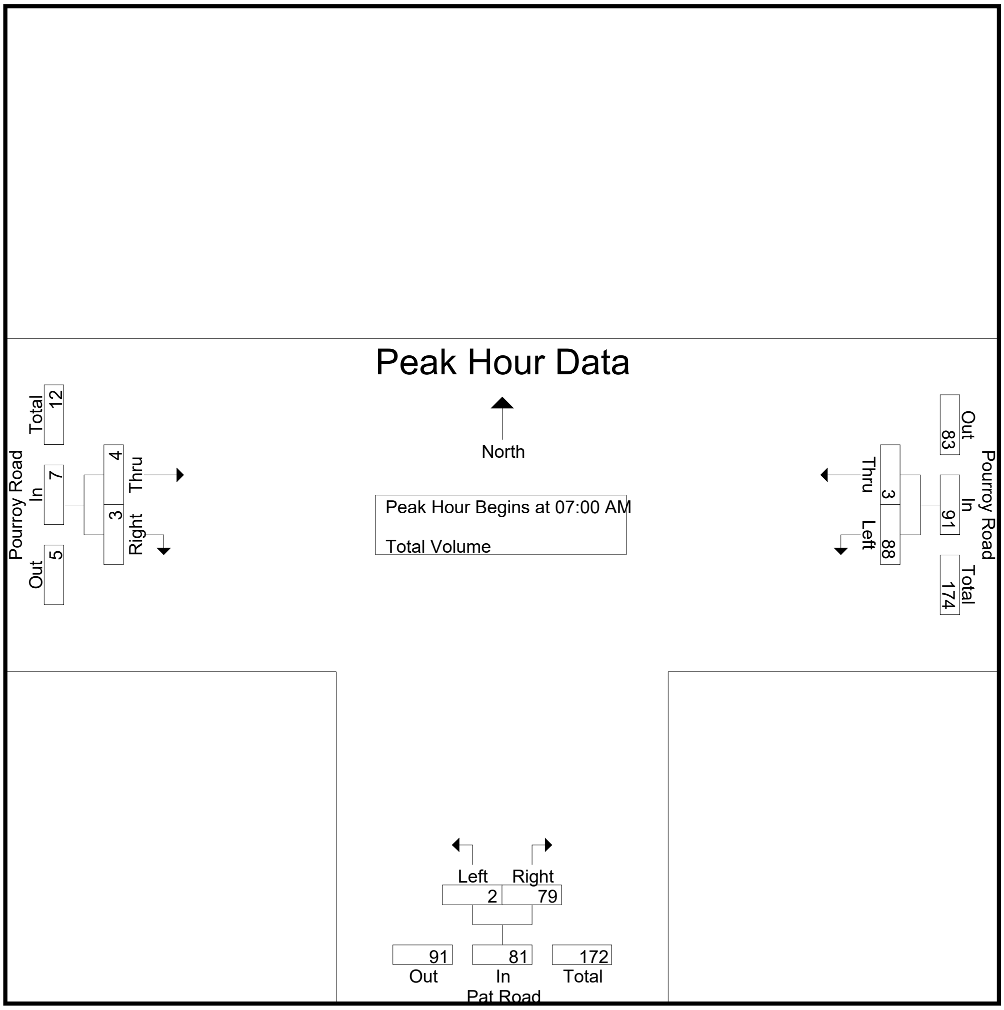
	Pourroy Road Westbound			Pat Road Northbound			Pourroy Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	18	1	19	0	14	14	3	0	3	36
07:15 AM	38	0	38	0	22	22	0	1	1	61
07:30 AM	25	0	25	2	27	29	1	1	2	56
07:45 AM	7	2	9	0	16	16	0	1	1	26
Total	88	3	91	2	79	81	4	3	7	179
08:00 AM	7	0	7	1	11	12	0	2	2	21
08:15 AM	3	2	5	0	9	9	0	0	0	14
08:30 AM	4	2	6	2	6	8	0	0	0	14
08:45 AM	5	2	7	0	8	8	2	1	3	18
Total	19	6	25	3	34	37	2	3	5	67
Grand Total	107	9	116	5	113	118	6	6	12	246
Apprch %	92.2	7.8		4.2	95.8		50	50		
Total %	43.5	3.7	47.2	2	45.9	48	2.4	2.4	4.9	

	Pourroy Road Westbound			Pat Road Northbound			Pourroy Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	18	1	19	0	14	14	**3**	0	**3**	36
07:15 AM	**38**	0	**38**	0	22	22	0	**1**	1	**61**
07:30 AM	25	0	25	**2**	**27**	**29**	1	1	2	56
07:45 AM	7	**2**	9	0	16	16	0	1	1	26
Total Volume	88	3	91	2	79	81	4	3	7	179
% App. Total	96.7	3.3		2.5	97.5		57.1	42.9		
PHF	.579	.375	.599	.250	.731	.698	.333	.750	.583	.734

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Pat Road
E/W: Pourroy Road
Weather: Clear

File Name : CRVPAPOAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	18	1	19	0	14	14	**3**	0	**3**
+15 mins.	**38**	0	**38**	0	22	22	0	**1**	1
+30 mins.	25	0	25	**2**	**27**	**29**	1	1	2
+45 mins.	7	**2**	9	0	16	16	0	1	1
Total Volume	88	3	91	2	79	81	4	3	7
% App. Total	96.7	3.3		2.5	97.5		57.1	42.9	
PHF	.579	.375	.599	.250	.731	.698	.333	.750	.583

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Pat Road
E/W: Pourroy Road
Weather: Clear

File Name : CRVPAPOPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

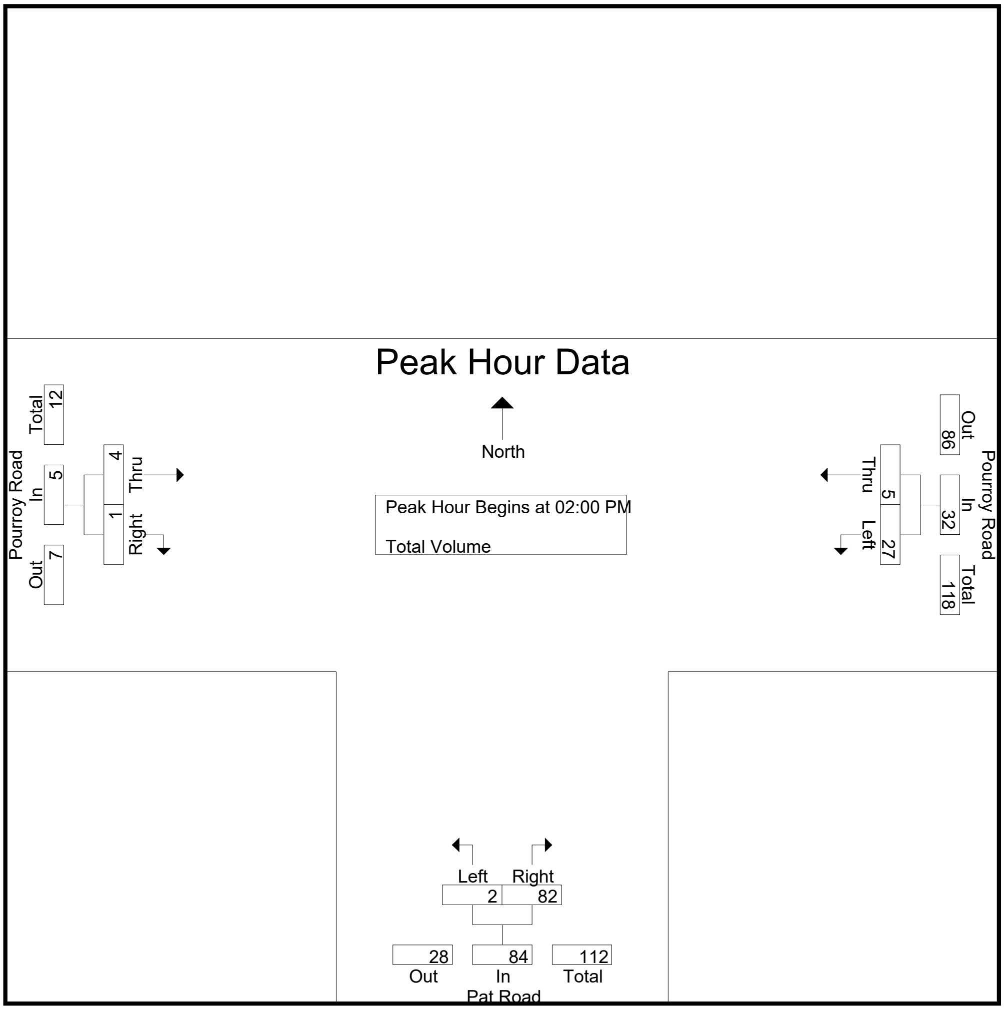
Groups Printed- Total Volume

	Pourroy Road Westbound			Pat Road Northbound			Pourroy Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
02:00 PM	11	0	11	1	25	26	1	1	2	39
02:15 PM	5	1	6	0	37	37	2	0	2	45
02:30 PM	3	1	4	0	11	11	1	0	1	16
02:45 PM	8	3	11	1	9	10	0	0	0	21
Total	27	5	32	2	82	84	4	1	5	121
03:00 PM	7	0	7	0	9	9	3	0	3	19
03:15 PM	5	1	6	0	6	6	1	0	1	13
03:30 PM	9	1	10	0	9	9	0	0	0	19
03:45 PM	6	1	7	0	8	8	1	1	2	17
Total	27	3	30	0	32	32	5	1	6	68
04:00 PM	12	1	13	0	12	12	1	1	2	27
04:15 PM	8	1	9	1	7	8	1	1	2	19
04:30 PM	6	0	6	0	1	1	0	0	0	7
04:45 PM	6	3	9	2	14	16	0	0	0	25
Total	32	5	37	3	34	37	2	2	4	78
05:00 PM	9	1	10	0	6	6	3	0	3	19
05:15 PM	7	0	7	0	6	6	2	0	2	15
05:30 PM	15	0	15	0	6	6	2	0	2	23
05:45 PM	8	2	10	0	9	9	0	0	0	19
Total	39	3	42	0	27	27	7	0	7	76
Grand Total	125	16	141	5	175	180	18	4	22	343
Apprch %	88.7	11.3		2.8	97.2		81.8	18.2		
Total %	36.4	4.7	41.1	1.5	51	52.5	5.2	1.2	6.4	

	Pourroy Road Westbound			Pat Road Northbound			Pourroy Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:00 PM										
02:00 PM	**11**	0	**11**	**1**	25	26	1	**1**	**2**	39
02:15 PM	5	1	6	0	**37**	**37**	**2**	0	2	**45**
02:30 PM	3	1	4	0	11	11	1	0	1	16
02:45 PM	8	**3**	11	1	9	10	0	0	0	21
Total Volume	27	5	32	2	82	84	4	1	5	121
% App. Total	84.4	15.6		2.4	97.6		80	20		
PHF	.614	.417	.727	.500	.554	.568	.500	.250	.625	.672

County of Riverside
N/S: Pat Road
E/W: Pourroy Road
Weather: Clear

File Name : CRVPAPOPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			02:00 PM			04:45 PM		
+0 mins.	9	1	10	**1**	25	26	0	0	0
+15 mins.	7	0	7	0	**37**	**37**	**3**	0	**3**
+30 mins.	**15**	0	**15**	0	11	11	2	0	2
+45 mins.	8	**2**	10	1	9	10	2	0	2
Total Volume	39	3	42	2	82	84	7	0	7
% App. Total	92.9	7.1		2.4	97.6		100	0	
PHF	.650	.375	.700	.500	.554	.568	.583	.000	.583

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Elliot Road
E/W: Jean Nicholas Road
Weather: Clear

File Name : CRVELJEAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

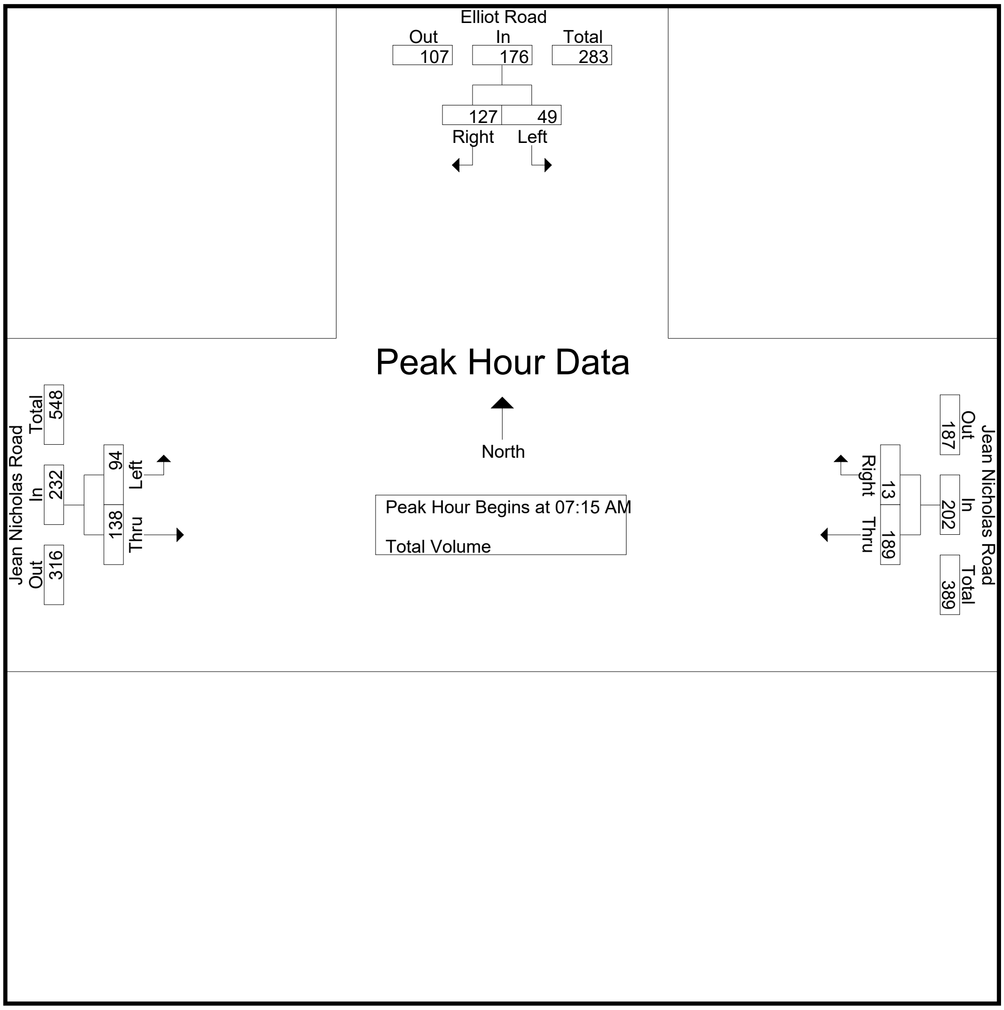
	Elliot Road Southbound			Jean Nicholas Road Westbound			Jean Nicholas Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	13	23	36	45	1	46	19	32	51	133
07:15 AM	10	26	36	23	6	29	49	29	78	143
07:30 AM	19	70	89	43	2	45	37	35	72	206
07:45 AM	8	13	21	58	0	58	6	36	42	121
Total	50	132	182	169	9	178	111	132	243	603
08:00 AM	12	18	30	65	5	70	2	38	40	140
08:15 AM	16	8	24	35	3	38	9	48	57	119
08:30 AM	6	8	14	46	6	52	6	41	47	113
08:45 AM	7	10	17	35	9	44	10	30	40	101
Total	41	44	85	181	23	204	27	157	184	473
Grand Total	91	176	267	350	32	382	138	289	427	1076
Apprch %	34.1	65.9		91.6	8.4		32.3	67.7		
Total %	8.5	16.4	24.8	32.5	3	35.5	12.8	26.9	39.7	

	Elliot Road Southbound			Jean Nicholas Road Westbound			Jean Nicholas Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	10	26	36	23	**6**	29	**49**	29	**78**	143
07:30 AM	**19**	**70**	**89**	43	2	45	37	35	72	**206**
07:45 AM	8	13	21	58	0	58	6	36	42	121
08:00 AM	12	18	30	**65**	5	**70**	2	**38**	40	140
Total Volume	49	127	176	189	13	202	94	138	232	610
% App. Total	27.8	72.2		93.6	6.4		40.5	59.5		
PHF	.645	.454	.494	.727	.542	.721	.480	.908	.744	.740

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Elliot Road
E/W: Jean Nicholas Road
Weather: Clear

File Name : CRVELJEAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:45 AM			07:00 AM		
+0 mins.	13	23	36	58	0	58	19	32	51
+15 mins.	10	26	36	**65**	5	**70**	**49**	29	**78**
+30 mins.	**19**	**70**	**89**	35	3	38	37	35	72
+45 mins.	8	13	21	46	**6**	52	6	**36**	42
Total Volume	50	132	182	204	14	218	111	132	243
% App. Total	27.5	72.5		93.6	6.4		45.7	54.3	
PHF	.658	.471	.511	.785	.583	.779	.566	.917	.779

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Elliot Road
E/W: Jean Nicholas Road
Weather: Clear

File Name : CRVELJEPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

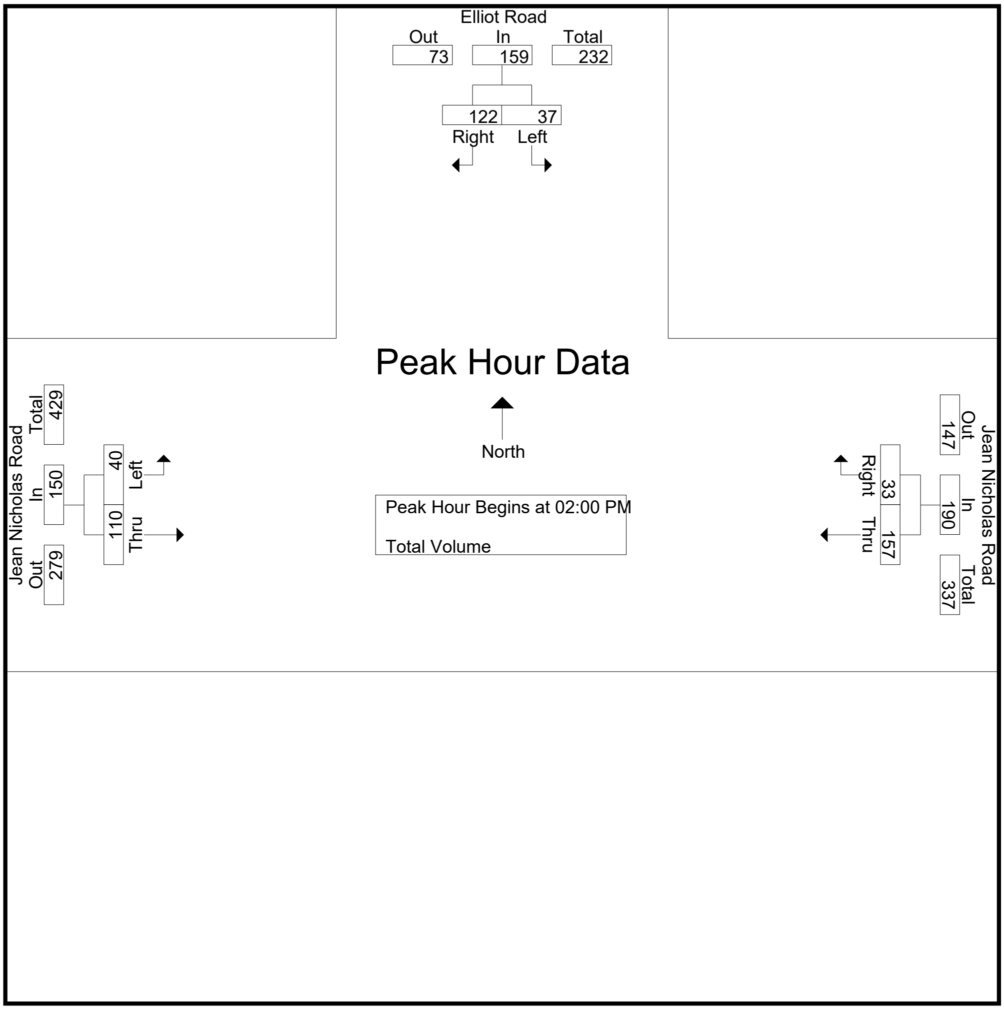
	Elliot Road Southbound			Jean Nicholas Road Westbound			Jean Nicholas Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
02:00 PM	11	48	59	25	10	35	18	23	41	135
02:15 PM	14	53	67	48	6	54	4	26	30	151
02:30 PM	9	13	22	48	9	57	6	26	32	111
02:45 PM	3	8	11	36	8	44	12	35	47	102
Total	37	122	159	157	33	190	40	110	150	499
03:00 PM	6	9	15	61	8	69	13	21	34	118
03:15 PM	8	7	15	47	8	55	12	41	53	123
03:30 PM	4	13	17	39	13	52	17	58	75	144
03:45 PM	8	12	20	29	3	32	15	32	47	99
Total	26	41	67	176	32	208	57	152	209	484
04:00 PM	2	7	9	27	7	34	8	22	30	73
04:15 PM	9	6	15	31	4	35	9	37	46	96
04:30 PM	8	7	15	41	9	50	6	29	35	100
04:45 PM	7	5	12	43	13	56	9	41	50	118
Total	26	25	51	142	33	175	32	129	161	387
05:00 PM	11	6	17	46	14	60	6	29	35	112
05:15 PM	6	7	13	45	9	54	9	26	35	102
05:30 PM	5	11	16	36	17	53	6	29	35	104
05:45 PM	8	13	21	29	7	36	7	30	37	94
Total	30	37	67	156	47	203	28	114	142	412
Grand Total	119	225	344	631	145	776	157	505	662	1782
Apprch %	34.6	65.4		81.3	18.7		23.7	76.3		
Total %	6.7	12.6	19.3	35.4	8.1	43.5	8.8	28.3	37.1	

	Elliot Road Southbound			Jean Nicholas Road Westbound			Jean Nicholas Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:00 PM										
02:00 PM	11	48	59	25	**10**	35	**18**	23	41	135
02:15 PM	**14**	**53**	**67**	**48**	6	54	4	26	30	**151**
02:30 PM	9	13	22	48	9	**57**	6	26	32	111
02:45 PM	3	8	11	36	8	44	12	**35**	**47**	102
Total Volume	37	122	159	157	33	190	40	110	150	499
% App. Total	23.3	76.7		82.6	17.4		26.7	73.3		
PHF	.661	.575	.593	.818	.825	.833	.556	.786	.798	.826

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Elliot Road
E/W: Jean Nicholas Road
Weather: Clear

File Name : CRVELJEPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:00 PM			02:30 PM			02:45 PM		
+0 mins.	11	48	59	48	**9**	57	12	35	47
+15 mins.	**14**	**53**	**67**	36	8	44	13	21	34
+30 mins.	9	13	22	**61**	8	**69**	12	41	53
+45 mins.	3	8	11	47	8	55	**17**	**58**	**75**
Total Volume	37	122	159	192	33	225	54	155	209
% App. Total	23.3	76.7		85.3	14.7		25.8	74.2	
PHF	.661	.575	.593	.787	.917	.815	.794	.668	.697

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Pourroy Road
E/W: Skyview Road
Weather: Clear

File Name : CRVPOSKAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

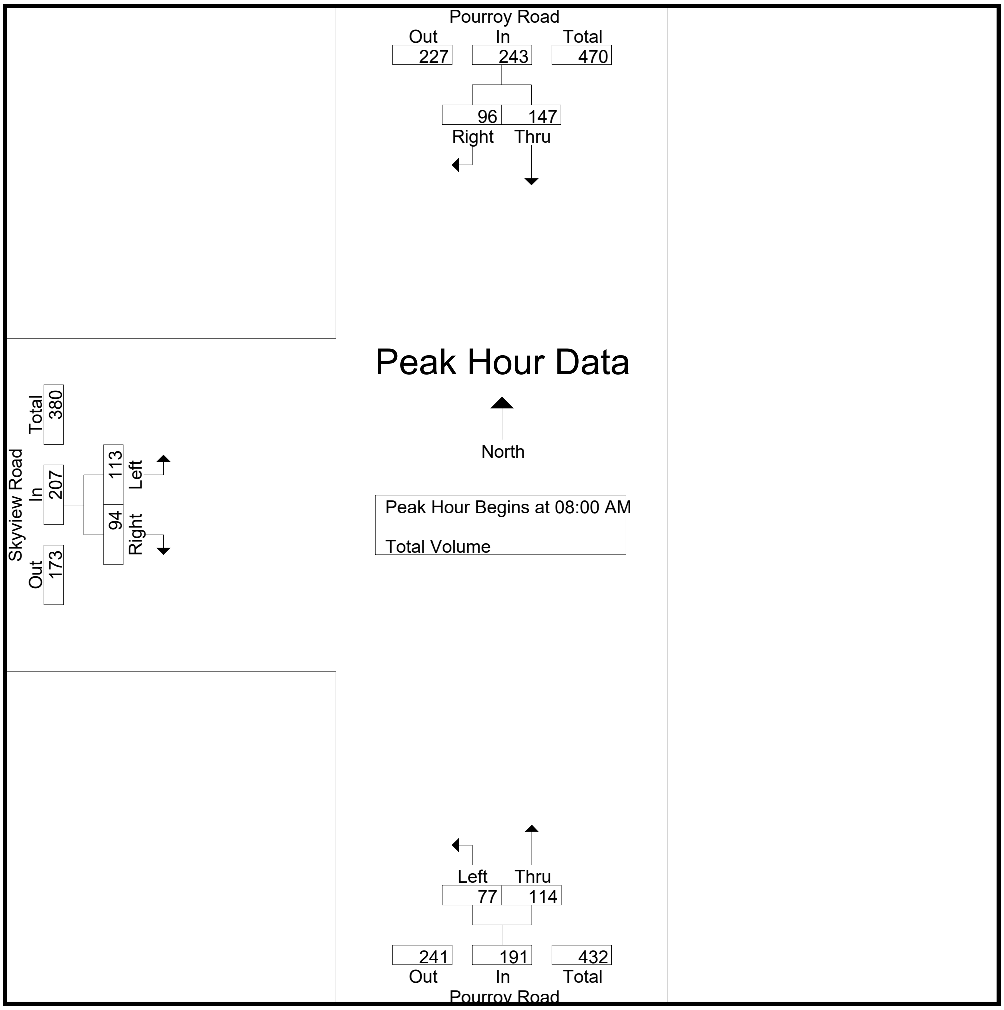
	Pourroy Road Southbound			Pourroy Road Northbound			Skyview Road Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	60	6	66	1	53	54	14	0	14	134
07:15 AM	34	9	43	1	45	46	5	5	10	99
07:30 AM	48	7	55	0	30	30	7	8	15	100
07:45 AM	69	5	74	8	34	42	8	9	17	133
Total	211	27	238	10	162	172	34	22	56	466
08:00 AM	52	7	59	18	29	47	9	5	14	120
08:15 AM	29	15	44	17	20	37	6	7	13	94
08:30 AM	44	42	86	28	37	65	21	16	37	188
08:45 AM	22	32	54	14	28	42	77	66	143	239
Total	147	96	243	77	114	191	113	94	207	641
Grand Total	358	123	481	87	276	363	147	116	263	1107
Apprch %	74.4	25.6		24	76		55.9	44.1		
Total %	32.3	11.1	43.5	7.9	24.9	32.8	13.3	10.5	23.8	

	Pourroy Road Southbound			Pourroy Road Northbound			Skyview Road Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	**52**	7	59	18	29	47	9	5	14	120
08:15 AM	29	15	44	17	20	37	6	7	13	94
08:30 AM	44	**42**	**86**	**28**	**37**	**65**	21	16	37	188
08:45 AM	22	32	54	14	28	42	**77**	**66**	**143**	**239**
Total Volume	147	96	243	77	114	191	113	94	207	641
% App. Total	60.5	39.5		40.3	59.7		54.6	45.4		
PHF	.707	.571	.706	.688	.770	.735	.367	.356	.362	.671

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Pourroy Road
E/W: Skyview Road
Weather: Clear

File Name : CRVPOSKAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			08:00 AM		
+0 mins.	**69**	5	74	8	34	42	9	5	14
+15 mins.	52	7	59	18	29	47	6	7	13
+30 mins.	29	15	44	17	20	37	21	16	37
+45 mins.	44	**42**	**86**	**28**	**37**	**65**	**77**	**66**	**143**
Total Volume	194	69	263	71	120	191	113	94	207
% App. Total	73.8	26.2		37.2	62.8		54.6	45.4	
PHF	.703	.411	.765	.634	.811	.735	.367	.356	.362

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Pourroy Road
E/W: Skyview Road
Weather: Clear

File Name : CRVPOSKPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

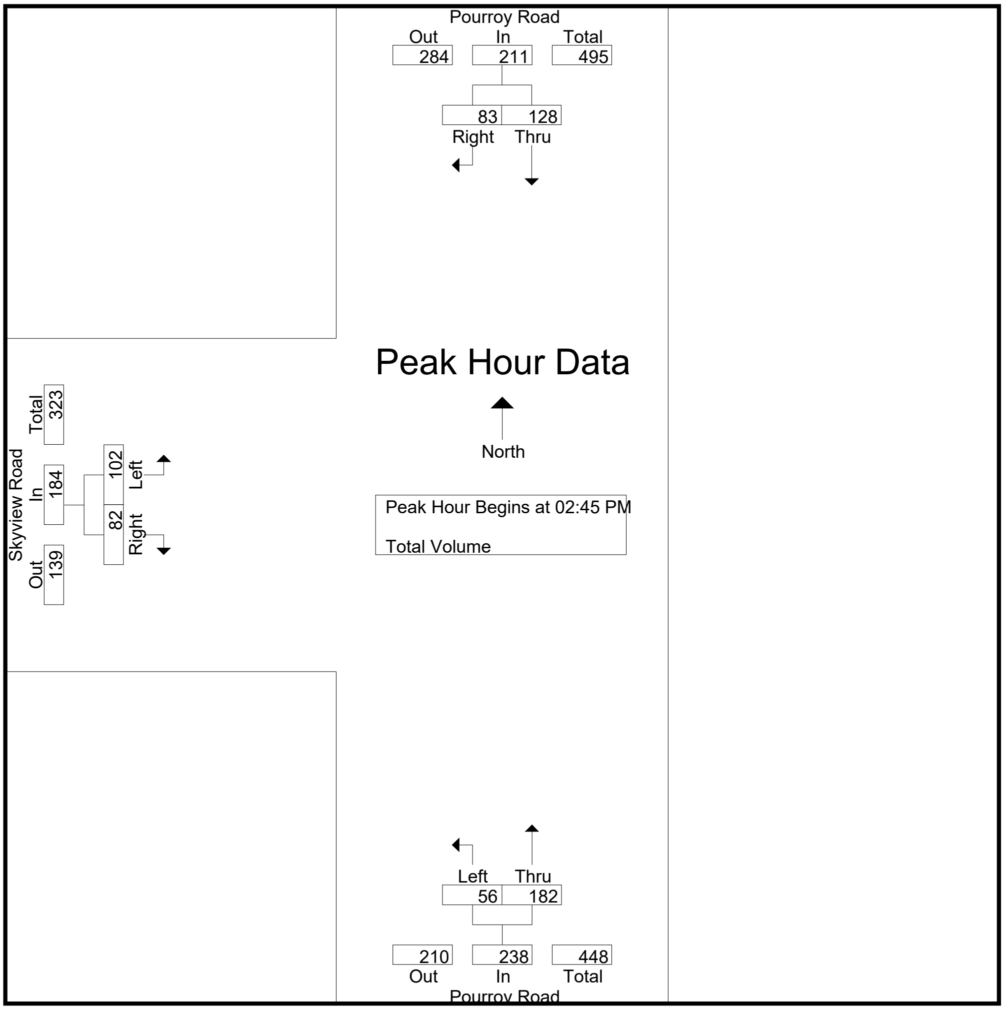
	Pourroy Road Southbound			Pourroy Road Northbound			Skyview Road Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
02:00 PM	26	1	27	1	45	46	7	0	7	80
02:15 PM	38	15	53	14	33	47	7	6	13	113
02:30 PM	52	21	73	7	32	39	15	19	34	146
02:45 PM	30	22	52	8	35	43	9	7	16	111
Total	146	59	205	30	145	175	38	32	70	450
03:00 PM	41	36	77	21	45	66	5	0	5	148
03:15 PM	24	19	43	24	46	70	36	29	65	178
03:30 PM	33	6	39	3	56	59	52	46	98	196
03:45 PM	29	7	36	5	40	45	9	12	21	102
Total	127	68	195	53	187	240	102	87	189	624
04:00 PM	33	2	35	5	50	55	11	10	21	111
04:15 PM	31	5	36	3	32	35	6	7	13	84
04:30 PM	30	7	37	2	43	45	6	6	12	94
04:45 PM	35	6	41	5	64	69	1	2	3	113
Total	129	20	149	15	189	204	24	25	49	402
05:00 PM	33	6	39	7	30	37	4	5	9	85
05:15 PM	33	12	45	6	34	40	7	5	12	97
05:30 PM	35	11	46	2	45	47	7	10	17	110
05:45 PM	43	7	50	2	34	36	6	7	13	99
Total	144	36	180	17	143	160	24	27	51	391
Grand Total	546	183	729	115	664	779	188	171	359	1867
Apprch %	74.9	25.1		14.8	85.2		52.4	47.6		
Total %	29.2	9.8	39	6.2	35.6	41.7	10.1	9.2	19.2	

	Pourroy Road Southbound			Pourroy Road Northbound			Skyview Road Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 02:45 PM										
02:45 PM	30	22	52	8	35	43	9	7	16	111
03:00 PM	**41**	**36**	**77**	21	45	66	5	0	5	148
03:15 PM	24	19	43	**24**	46	**70**	36	29	65	178
03:30 PM	33	6	39	3	**56**	59	**52**	**46**	**98**	**196**
Total Volume	128	83	211	56	182	238	102	82	184	633
% App. Total	60.7	39.3		23.5	76.5		55.4	44.6		
PHF	.780	.576	.685	.583	.813	.850	.490	.446	.469	.807

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Pourroy Road
E/W: Skyview Road
Weather: Clear

File Name : CRVPOSKPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	02:15 PM			03:00 PM			03:15 PM		
+0 mins.	38	15	53	21	45	66	36	29	65
+15 mins.	**52**	21	73	**24**	46	**70**	**52**	**46**	**98**
+30 mins.	30	22	52	3	**56**	59	9	12	21
+45 mins.	41	**36**	**77**	5	40	45	11	10	21
Total Volume	161	94	255	53	187	240	108	97	205
% App. Total	63.1	36.9		22.1	77.9		52.7	47.3	
PHF	.774	.653	.828	.552	.835	.857	.519	.527	.523

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Pourroy Road
E/W: Thompson Road
Weather: Clear

File Name : CRVPOTHAM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

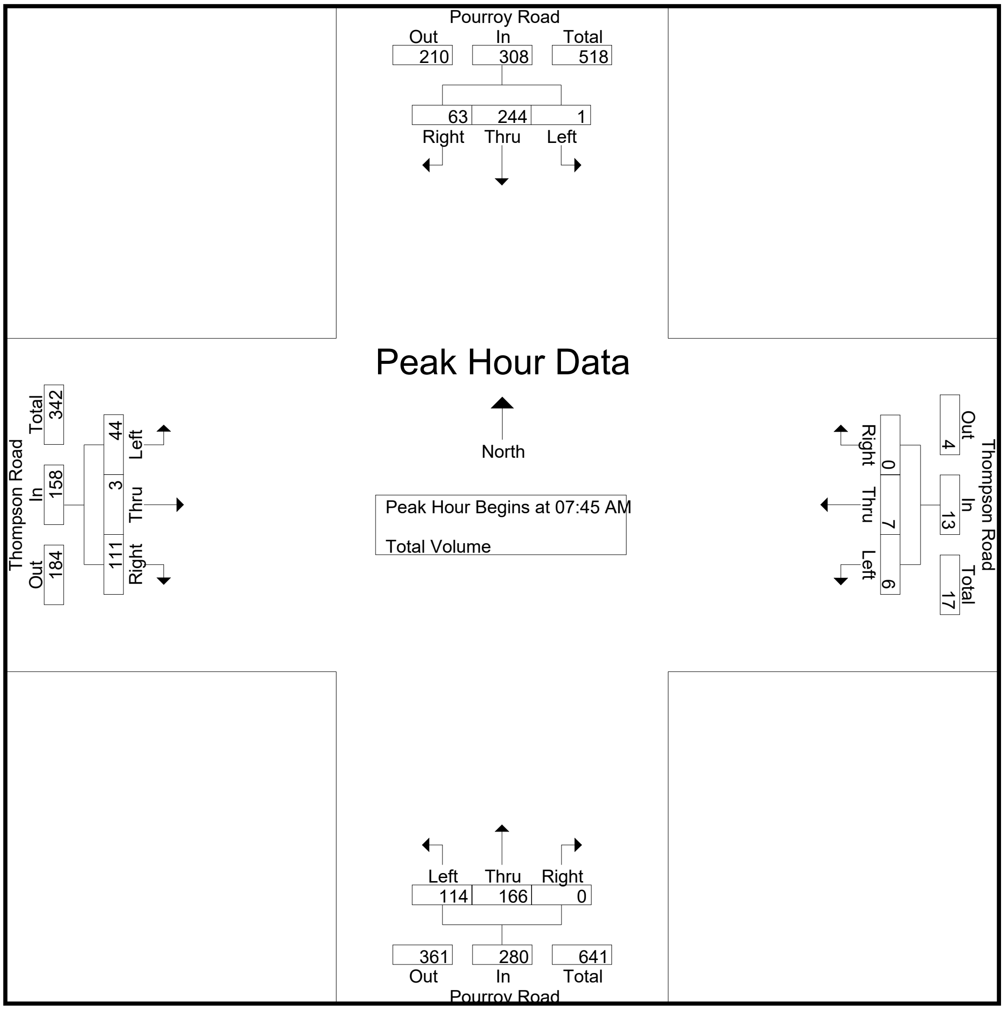
Groups Printed- Total Volume

	Pourroy Road Southbound				Thompson Road Westbound				Pourroy Road Northbound				Thompson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	52	29	81	1	2	0	3	23	40	0	63	13	0	22	35	182
07:15 AM	0	45	12	57	1	0	0	1	20	30	0	50	15	0	23	38	146
07:30 AM	0	56	14	70	1	2	0	3	36	19	0	55	16	1	23	40	168
07:45 AM	0	92	17	109	0	3	0	3	28	39	0	67	15	1	33	49	228
Total	0	245	72	317	3	7	0	10	107	128	0	235	59	2	101	162	724
08:00 AM	1	53	15	69	2	1	0	3	24	50	0	74	10	0	19	29	175
08:15 AM	0	41	19	60	0	2	0	2	26	48	0	74	10	0	26	36	172
08:30 AM	0	58	12	70	4	1	0	5	36	29	0	65	9	2	33	44	184
08:45 AM	1	69	19	89	2	1	1	4	24	26	2	52	14	0	21	35	180
Total	2	221	65	288	8	5	1	14	110	153	2	265	43	2	99	144	711
Grand Total	2	466	137	605	11	12	1	24	217	281	2	500	102	4	200	306	1435
Apprch %	0.3	77	22.6		45.8	50	4.2		43.4	56.2	0.4		33.3	1.3	65.4		
Total %	0.1	32.5	9.5	42.2	0.8	0.8	0.1	1.7	15.1	19.6	0.1	34.8	7.1	0.3	13.9	21.3	

	Pourroy Road Southbound				Thompson Road Westbound				Pourroy Road Northbound				Thompson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	**92**	17	**109**	0	**3**	0	3	28	39	0	67	**15**	1	**33**	**49**	**228**
08:00 AM	**1**	53	15	69	2	1	0	3	24	**50**	0	**74**	10	0	19	29	175
08:15 AM	0	41	**19**	60	0	2	0	2	26	48	0	74	10	0	26	36	172
08:30 AM	0	58	12	70	**4**	1	0	**5**	**36**	29	0	65	9	**2**	33	44	184
Total Volume	1	244	63	308	6	7	0	13	114	166	0	280	44	3	111	158	759
% App. Total	0.3	79.2	20.5		46.2	53.8	0		40.7	59.3	0		27.8	1.9	70.3		
PHF	.250	.663	.829	.706	.375	.583	.000	.650	.792	.830	.000	.946	.733	.375	.841	.806	.832

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside	File Name : CRVPOTHAM
N/S: Pourroy Road	Site Code : 22116465
E/W: Thompson Road	Start Date : 9/14/2016
Weather: Clear	Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				08:00 AM				07:45 AM				07:00 AM			
+0 mins.	0	52	**29**	81	2	1	0	3	28	39	0	67	13	0	22	35
+15 mins.	0	45	12	57	0	**2**	0	2	24	**50**	0	**74**	15	0	23	38
+30 mins.	0	56	14	70	**4**	1	0	**5**	26	48	0	74	**16**	**1**	23	40
+45 mins.	0	**92**	17	**109**	2	1	**1**	4	**36**	29	0	65	15	1	**33**	**49**
Total Volume	0	245	72	317	8	5	1	14	114	166	0	280	59	2	101	162
% App. Total	0	77.3	22.7		57.1	35.7	7.1		40.7	59.3	0		36.4	1.2	62.3	
PHF	.000	.666	.621	.727	.500	.625	.250	.700	.792	.830	.000	.946	.922	.500	.765	.827

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Pourroy Road
E/W: Thompson Road
Weather: Clear

File Name : CRVPOTHPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 1

Groups Printed- Total Volume

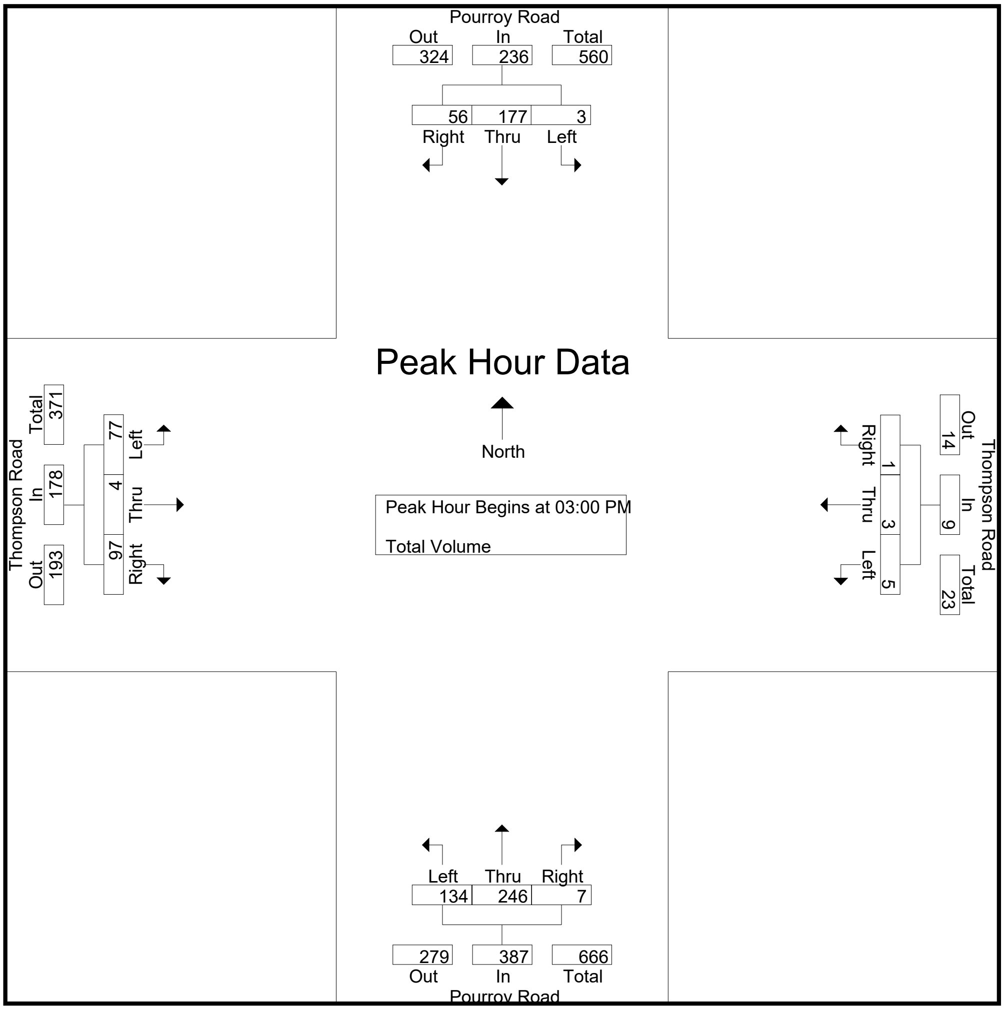
	Pourroy Road Southbound				Thompson Road Westbound				Pourroy Road Northbound				Thompson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
02:00 PM	0	27	12	39	1	1	0	2	14	42	0	56	16	0	10	26	123
02:15 PM	0	34	15	49	0	2	0	2	15	38	0	53	10	0	10	20	124
02:30 PM	0	59	19	78	0	1	0	1	19	27	0	46	11	2	11	24	149
02:45 PM	1	35	10	46	0	0	1	1	27	36	0	63	28	0	24	52	162
Total	1	155	56	212	1	4	1	6	75	143	0	218	65	2	55	122	558
03:00 PM	0	42	16	58	0	2	1	3	30	59	2	91	18	0	28	46	198
03:15 PM	2	35	13	50	0	1	0	1	43	74	2	119	17	2	21	40	210
03:30 PM	1	63	14	78	2	0	0	2	42	67	1	110	22	0	25	47	237
03:45 PM	0	37	13	50	3	0	0	3	19	46	2	67	20	2	23	45	165
Total	3	177	56	236	5	3	1	9	134	246	7	387	77	4	97	178	810
04:00 PM	0	35	9	44	2	2	0	4	27	65	0	92	23	0	13	36	176
04:15 PM	1	29	16	46	2	0	0	2	31	59	2	92	21	3	18	42	182
04:30 PM	0	31	15	46	0	0	0	0	30	56	0	86	15	0	17	32	164
04:45 PM	0	44	12	56	0	1	0	1	29	66	0	95	22	1	21	44	196
Total	1	139	52	192	4	3	0	7	117	246	2	365	81	4	69	154	718
05:00 PM	0	49	16	65	3	0	0	3	22	49	0	71	19	1	25	45	184
05:15 PM	1	43	8	52	1	0	0	1	29	51	1	81	24	1	36	61	195
05:30 PM	0	31	20	51	1	1	0	2	31	52	0	83	19	0	28	47	183
05:45 PM	0	45	6	51	0	0	0	0	36	52	3	91	22	4	27	53	195
Total	1	168	50	219	5	1	0	6	118	204	4	326	84	6	116	206	757
Grand Total	6	639	214	859	15	11	2	28	444	839	13	1296	307	16	337	660	2843
Apprch %	0.7	74.4	24.9		53.6	39.3	7.1		34.3	64.7	1		46.5	2.4	51.1		
Total %	0.2	22.5	7.5	30.2	0.5	0.4	0.1	1	15.6	29.5	0.5	45.6	10.8	0.6	11.9	23.2	

	Pourroy Road Southbound				Thompson Road Westbound				Pourroy Road Northbound				Thompson Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:00 PM																	
03:00 PM	0	42	**16**	58	0	**2**	**1**	**3**	30	59	**2**	91	18	0	**28**	46	198
03:15 PM	**2**	35	13	50	0	1	0	1	**43**	**74**	2	**119**	17	**2**	21	40	210
03:30 PM	1	**63**	14	**78**	2	0	0	2	42	67	1	110	**22**	0	25	**47**	**237**
03:45 PM	0	37	13	50	**3**	0	0	3	19	46	2	67	20	2	23	45	165
Total Volume	3	177	56	236	5	3	1	9	134	246	7	387	77	4	97	178	810
% App. Total	1.3	75	23.7		55.6	33.3	11.1		34.6	63.6	1.8		43.3	2.2	54.5		
PHF	.375	.702	.875	.756	.417	.375	.250	.750	.779	.831	.875	.813	.875	.500	.866	.947	.854

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

County of Riverside
N/S: Pourroy Road
E/W: Thompson Road
Weather: Clear

File Name : CRVPOTHPM
Site Code : 22116465
Start Date : 9/14/2016
Page No : 2



Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	03:00 PM				03:30 PM				03:15 PM				05:00 PM			
+0 mins.	0	42	**16**	58	2	0	0	2	**43**	**74**	**2**	**119**	19	1	25	45
+15 mins.	**2**	35	13	50	**3**	0	0	3	42	67	1	110	**24**	1	**36**	**61**
+30 mins.	1	**63**	14	**78**	2	**2**	0	**4**	19	46	2	67	19	0	28	47
+45 mins.	0	37	13	50	2	0	0	2	27	65	0	92	22	**4**	27	53
Total Volume	3	177	56	236	9	2	0	11	131	252	5	388	84	6	116	206
% App. Total	1.3	75	23.7		81.8	18.2	0		33.8	64.9	1.3		40.8	2.9	56.3	
PHF	.375	.702	.875	.756	.750	.250	.000	.688	.762	.851	.625	.815	.875	.375	.806	.844

Appendix C Intersection Volumes, Delay, and LOS Calculation Outputs, Existing Conditions

Temecula Valley Charter School

Vistro File: Q:\...\tvcs.vistro

Report File: Q:\...\Existing AM.pdf

Scenario 1: Existing AM

10/5/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Left	5,215.732	2.8	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	0.639	17.2	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.694	12.8	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.839	14.3	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	EB Right	1.448	180.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	SB Left	0.911	20.8	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.004	10.7	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.000	9.4	A
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.2	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		13.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	2.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5,215.732

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	189	1	0	295	1	0	0	1	2	0	1
Total Analysis Volume [veh/h]	1	756	3	0	1181	3	1	1	4	9	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	27	89	0	11	73	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	106	0	105	105	2	2	2	2
g / C, Green / Cycle	0.00	0.88	0.00	0.88	0.88	0.02	0.02	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.00	0.45	0.00	0.37	0.00	0.03	0.00	4693.71	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	74	1425	0	1425
c, Capacity [veh/h]	6	1475	0	2805	1252	46	28	60	28
d1, Uniform Delay [s]	59.79	1.56	0.00	1.40	0.88	58.37	57.86	60.00	57.82
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.86	1.29	0.00	0.47	0.00	0.38	2.37	5.22	1.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.51	0.00	0.42	0.00	0.04	0.14	0.15	0.11
d, Delay for Lane Group [s/veh]	72.65	2.85	0.00	1.87	0.89	58.75	60.23	65.22	59.53
Lane Group LOS	E	A	A	A	A	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.53	0.00	0.18	0.00	0.07	0.14	0.36	0.10
50th-Percentile Queue Length [ft]	0.62	13.17	0.00	4.54	0.03	1.64	3.44	9.08	2.57
95th-Percentile Queue Length [veh]	0.04	0.95	0.00	0.33	0.00	0.12	0.25	0.65	0.18
95th-Percentile Queue Length [ft]	1.12	23.70	0.00	8.17	0.05	2.96	6.20	16.34	4.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.65	2.85	2.85	0.00	1.87	0.89	58.75	58.75	60.23	65.22	65.22	59.53
Movement LOS	E	A	A	A	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	2.94			1.86			59.74			63.80		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	2.84											
Intersection LOS	A											
Intersection V/C	5215.732											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	166	45	19	264	15	10	4	9	49	3	16
Total Analysis Volume [veh/h]	27	664	179	76	1057	61	42	15	34	194	13	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	21	0	11	21	0	15	19	0	19	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	34	34	5	37	37	4	4	4	10	11	11
g / C, Green / Cycle	0.04	0.49	0.49	0.08	0.52	0.52	0.06	0.06	0.06	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.21	0.13	0.05	0.33	0.04	0.03	0.01	0.02	0.12	0.01	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	67	1546	690	125	1661	742	91	105	89	235	256	217
d1, Uniform Delay [s]	32.74	11.78	10.67	31.28	12.06	8.42	32.03	31.10	31.58	29.04	25.38	26.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.86	0.87	0.91	4.72	1.87	0.22	3.62	0.62	2.68	7.29	0.08	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.43	0.26	0.61	0.64	0.08	0.46	0.14	0.38	0.83	0.05	0.29
d, Delay for Lane Group [s/veh]	36.60	12.65	11.58	36.01	13.93	8.64	35.65	31.72	34.25	36.33	25.46	27.12
Lane Group LOS	D	B	B	D	B	A	D	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.46	2.51	1.31	1.24	4.25	0.35	0.76	0.25	0.60	3.36	0.18	0.91
50th-Percentile Queue Length [ft]	11.53	62.70	32.69	30.97	106.19	8.81	18.98	6.27	15.04	83.91	4.38	22.80
95th-Percentile Queue Length [veh]	0.83	4.51	2.35	2.23	7.63	0.63	1.37	0.45	1.08	6.04	0.32	1.64
95th-Percentile Queue Length [ft]	20.76	112.85	58.85	55.75	190.70	15.86	34.16	11.28	27.07	151.05	7.89	41.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.60	12.65	11.58	36.01	13.93	8.64	35.65	31.72	34.25	36.33	25.46	27.12
Movement LOS	D	B	B	D	B	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	13.17			15.06			34.48			33.63		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.19											
Intersection LOS	B											
Intersection V/C	0.639											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	195	21	13	311	3	5	3	3	40	6	21
Total Analysis Volume [veh/h]	24	779	82	51	1243	13	19	11	13	160	22	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	21	13	0	40	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	0.00	0.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	41	41	4	43	43	2	0	0	12	6	6
g / C, Green / Cycle	0.04	0.59	0.59	0.06	0.61	0.61	0.03	0.00	0.00	0.18	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.06	0.02	0.39	0.01	0.01	0.01	0.01	0.13	0.01	0.06
s, saturation flow rate [veh/h]	1258	3192	1425	2443	3192	1425	1597	1676	1425	1258	1676	1425
c, Capacity [veh/h]	124	1868	834	206	1950	870	53	0	0	303	149	127
d1, Uniform Delay [s]	34.59	7.99	6.41	32.90	8.71	5.37	33.25	0.00	0.00	28.47	29.55	30.99
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.75	0.69	0.24	0.62	1.61	0.03	4.12	0.00	0.00	1.43	0.45	5.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

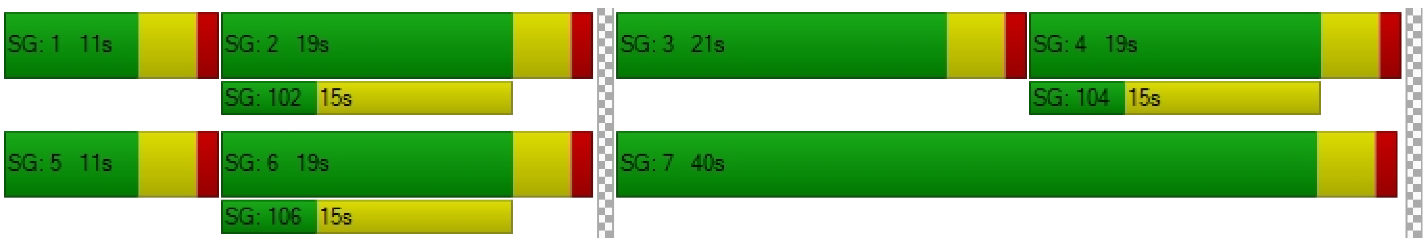
X, volume / capacity	0.19	0.42	0.10	0.25	0.64	0.01	0.36	0.00	0.00	0.53	0.15	0.66
d, Delay for Lane Group [s/veh]	35.34	8.68	6.65	33.52	10.32	5.40	37.36	0.00	0.00	29.90	30.00	36.81
Lane Group LOS	D	A	A	C	B	A	D	A	A	C	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.40	2.25	0.40	0.40	4.01	0.05	0.37	0.00	0.00	2.60	0.35	1.53
50th-Percentile Queue Length [ft]	9.91	56.14	10.09	9.99	100.29	1.34	9.29	0.00	0.00	65.02	8.76	38.33
95th-Percentile Queue Length [veh]	0.71	4.04	0.73	0.72	7.22	0.10	0.67	0.00	0.00	4.68	0.63	2.76
95th-Percentile Queue Length [ft]	17.84	101.05	18.16	17.97	180.52	2.42	16.72	0.00	0.00	117.04	15.77	68.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.34	8.68	6.65	33.52	10.32	5.40	37.36	0.00	0.00	29.90	30.00	36.81
Movement LOS	D	A	A	C	B	A	D	A	A	C	C	D
d_A, Approach Delay [s/veh]	9.22			11.18			16.51			32.09		
Approach LOS	A			B			B			C		
d_I, Intersection Delay [s/veh]	12.80											
Intersection LOS	B											
Intersection V/C	0.694											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	188	1	2	353	26	16	1	34	1	1	2
Total Analysis Volume [veh/h]	98	753	5	7	1410	103	65	5	137	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	33	33	1	28	28	5	7	7	0	3	3
g / C, Green / Cycle	0.10	0.58	0.58	0.01	0.49	0.49	0.08	0.12	0.12	0.01	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.00	0.00	0.44	0.07	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	156	1842	822	21	1572	702	127	204	173	9	80	68
d1, Uniform Delay [s]	24.56	6.63	5.09	27.70	13.07	7.87	25.00	21.92	24.18	28.04	25.77	25.82
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.10	0.15	0.00	8.96	2.07	0.10	3.13	0.05	7.86	18.23	0.33	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.41	0.01	0.33	0.90	0.15	0.51	0.02	0.79	0.32	0.06	0.10
d, Delay for Lane Group [s/veh]	28.67	6.78	5.09	36.66	15.14	7.96	28.13	21.97	32.04	46.27	26.09	26.48
Lane Group LOS	C	A	A	D	B	A	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.24	1.33	0.01	0.13	5.44	0.46	0.89	0.06	2.03	0.09	0.07	0.10
50th-Percentile Queue Length [ft]	30.92	33.22	0.35	3.32	135.94	11.42	22.36	1.44	50.79	2.15	1.69	2.43
95th-Percentile Queue Length [veh]	2.23	2.39	0.02	0.24	9.26	0.82	1.61	0.10	3.66	0.15	0.12	0.18
95th-Percentile Queue Length [ft]	55.65	59.79	0.62	5.98	231.55	20.56	40.24	2.58	91.43	3.87	3.05	4.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.67	6.78	5.09	36.66	15.14	7.96	28.13	21.97	32.04	46.27	26.09	26.48
Movement LOS	C	A	A	D	B	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	9.28			14.75			30.57			30.31		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	14.30											
Intersection LOS	B											
Intersection V/C	0.839											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	180.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.448

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	181	26	6	354	24	18	33	148	58	65	5
Total Analysis Volume [veh/h]	398	726	105	23	1415	97	73	131	594	232	259	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	26	0	39	40	0	44	38	38	17	11	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	53	53	4	36	36	7	34	34	13	40
g / C, Green / Cycle	0.18	0.44	0.44	0.03	0.30	0.30	0.06	0.28	0.28	0.11	0.33
(v / s)_i Volume / Saturation Flow Rate	0.25	0.25	0.25	0.01	0.44	0.07	0.05	0.08	0.42	0.15	0.17
s, saturation flow rate [veh/h]	1597	1676	1603	1597	3192	1425	1597	1676	1425	1597	1656
c, Capacity [veh/h]	279	745	713	50	960	429	92	473	402	173	552
d1, Uniform Delay [s]	49.50	24.78	24.80	57.13	41.95	31.47	55.85	33.52	43.06	53.50	32.05
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	210.55	3.14	3.30	6.47	218.68	1.22	14.23	0.31	227.28	186.98	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

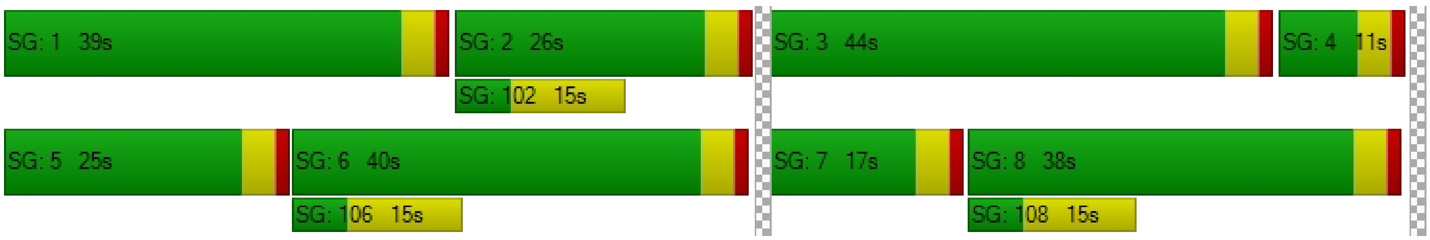
X, volume / capacity	1.42	0.57	0.57	0.46	1.47	0.23	0.80	0.28	1.48	1.34	0.50
d, Delay for Lane Group [s/veh]	260.05	27.91	28.10	63.60	260.62	32.69	70.08	33.83	270.33	240.48	32.76
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.30	8.89	8.56	0.75	42.42	2.15	2.55	3.03	37.20	14.19	6.57
50th-Percentile Queue Length [ft]	607.40	222.14	214.07	18.74	1060.61	53.86	63.64	75.71	929.89	354.85	164.13
95th-Percentile Queue Length [veh]	37.66	13.77	13.36	1.35	64.90	3.88	4.58	5.45	57.37	22.65	10.77
95th-Percentile Queue Length [ft]	941.55	344.36	334.05	33.73	1622.56	96.94	114.56	136.28	1434.25	566.23	269.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	260.05	27.99	28.10	63.60	260.62	32.69	70.08	33.83	270.33	240.48	32.76	32.76
Movement LOS	F	C	C	E	F	C	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	103.15			243.27			213.19			127.25		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	180.55											
Intersection LOS	F											
Intersection V/C	1.448											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.911

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	880	216	311	1696	374	243
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	237	58	84	456	101	65
Total Analysis Volume [veh/h]	946	232	334	1824	402	261
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	26	45	25	25
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	17	47	15	15
g / C, Green / Cycle	0.38	0.38	0.24	0.68	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.30	0.16	0.21	0.57	0.13	0.18
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1213	542	379	2154	655	301
d1, Uniform Delay [s]	19.15	16.09	25.78	8.66	25.06	26.70
k, delay calibration	0.50	0.50	0.20	0.50	0.11	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.00	2.47	11.31	4.35	0.94	10.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

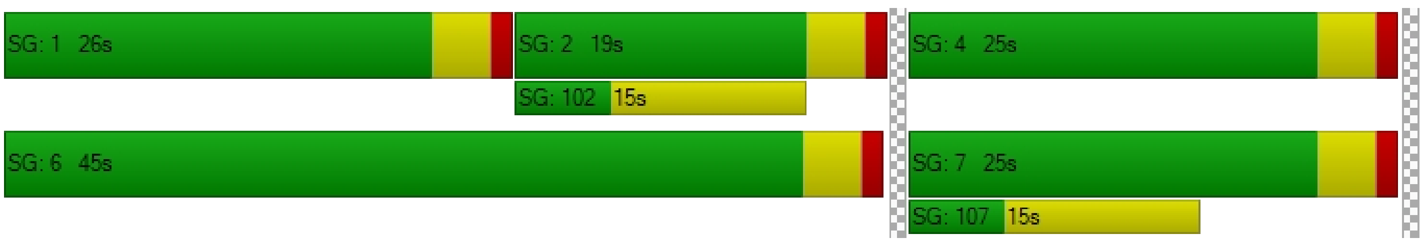
X, volume / capacity	0.78	0.43	0.88	0.85	0.61	0.87
d, Delay for Lane Group [s/veh]	24.14	18.56	37.09	13.01	26.00	36.95
Lane Group LOS	C	B	D	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	6.23	2.59	5.77	6.20	2.97	4.84
50th-Percentile Queue Length [ft]	155.87	64.85	144.15	154.94	74.18	121.09
95th-Percentile Queue Length [veh]	10.33	4.67	9.70	10.28	5.34	8.45
95th-Percentile Queue Length [ft]	258.25	116.74	242.60	257.01	133.52	211.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.14	18.56	37.09	13.01	26.00	36.95
Movement LOS	C	B	D	B	C	D
d_A, Approach Delay [s/veh]	23.04		16.74		30.31	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	20.85					
Intersection LOS	C					
Intersection V/C	0.911					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	79	4	3	88	3
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	27	1	1	30	1
Total Analysis Volume [veh/h]	3	108	5	4	120	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.10	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	10.67	8.75	0.00	0.00	7.41	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.35	0.35	0.00	0.00	0.24	0.00
95th-Percentile Queue Length [ft]	8.76	8.76	0.00	0.00	6.03	0.00
d_A, Approach Delay [s/veh]	8.80		0.00		7.18	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.65					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	49	0	0	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	49	0	0	13
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	17	0	0	4
Total Analysis Volume [veh/h]	0	0	66	0	0	18
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	7.31	0.00	9.41	8.37
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.13	0.00	0.05	0.05
95th-Percentile Queue Length [ft]	0.00	0.00	3.18	0.00	1.26	1.26
d_A, Approach Delay [s/veh]	0.00		7.31		8.37	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.54					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	114	147	96	113	94
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	42	55	36	42	35
Total Analysis Volume [veh/h]	115	170	219	143	168	140
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.84	0.53	0.53	1.35	1.19	1.36	0.83
95th-Percentile Queue Length [ft]	20.98	13.30	13.30	33.84	29.80	34.08	20.85
Approach Delay [s/veh]	10.81			11.33		11.44	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.21						
Intersection LOS	B						

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	50	0	0	73	19	13	1	33	2	2	0
Total Analysis Volume [veh/h]	137	200	0	1	293	76	53	4	133	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

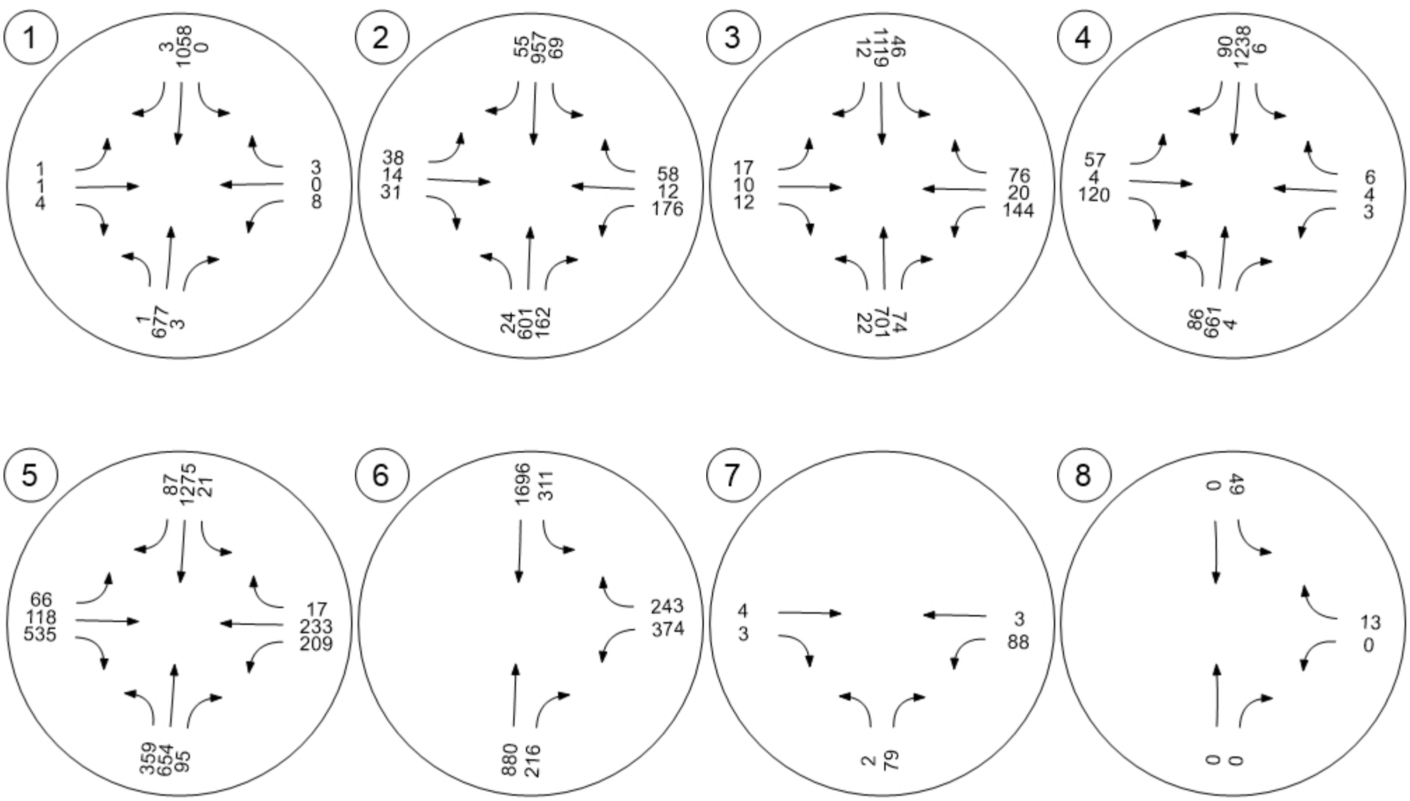
Intersection Settings

Lanes

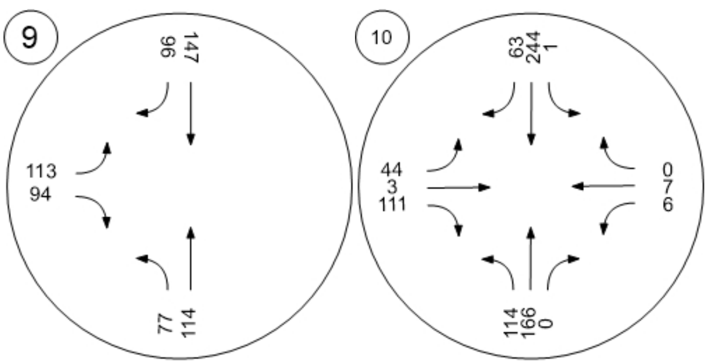
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.12	3.46	0.34	0.02	0.80	0.09
95th-Percentile Queue Length [ft]	77.93	86.50	8.56	0.54	20.09	2.27
Approach Delay [s/veh]	14.84	15.06	10.15			10.28
Approach LOS	B	C	B			B
Intersection Delay [s/veh]	13.88					
Intersection LOS	B					

Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\Existing AM_new.pdf

Scenario 1: Existing AM
12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Left	0.628	2.8	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	0.639	17.2	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.700	15.2	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.779	15.7	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.448	180.4	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.943	21.0	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.004	10.7	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.182	19.0	C
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.2	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		13.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	2.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	189	1	0	295	1	0	0	1	2	0	1
Total Analysis Volume [veh/h]	1	756	3	0	1181	3	1	1	4	9	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	80	0	11	80	0	0	29	0	0	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	106	0	105	105	2	2	2	2
g / C, Green / Cycle	0.00	0.88	0.00	0.88	0.88	0.02	0.02	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.00	0.45	0.00	0.37	0.00	0.01	0.00	0.11	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	161	1425	80	1425
c, Capacity [veh/h]	7	1474	1	2802	1251	48	28	62	28
d1, Uniform Delay [s]	59.71	1.58	0.00	1.42	0.90	57.88	57.81	59.97	57.77
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.00	1.29	0.00	0.47	0.00	0.35	2.30	1.08	1.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.51	0.00	0.42	0.00	0.04	0.14	0.15	0.11
d, Delay for Lane Group [s/veh]	67.71	2.87	0.00	1.89	0.90	58.23	60.11	61.05	59.43
Lane Group LOS	E	A	A	A	A	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.53	0.00	0.18	0.00	0.06	0.14	0.29	0.10
50th-Percentile Queue Length [ft]	0.57	13.19	0.00	4.54	0.03	1.61	3.44	7.35	2.56
95th-Percentile Queue Length [veh]	0.04	0.95	0.00	0.33	0.00	0.12	0.25	0.53	0.18
95th-Percentile Queue Length [ft]	1.02	23.74	0.00	8.18	0.05	2.90	6.18	13.23	4.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.71	2.87	2.87	0.00	1.89	0.90	58.23	58.23	60.11	61.05	61.05	59.43
Movement LOS	E	A	A	A	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	2.96			1.88			59.49			60.64		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	2.84											
Intersection LOS	A											
Intersection V/C	0.628											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	166	45	19	264	15	10	4	9	49	3	16
Total Analysis Volume [veh/h]	27	664	179	76	1057	61	42	15	34	194	13	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	15	19	0	21	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	34	34	5	37	37	4	4	4	10	11	11
g / C, Green / Cycle	0.04	0.48	0.48	0.08	0.52	0.52	0.06	0.06	0.06	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.21	0.13	0.05	0.33	0.04	0.03	0.01	0.02	0.12	0.01	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	67	1544	689	125	1659	741	91	105	89	236	257	218
d1, Uniform Delay [s]	32.74	11.81	10.70	31.28	12.09	8.45	32.03	31.10	31.57	29.00	25.34	26.33
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.86	0.88	0.91	4.72	1.88	0.22	3.62	0.62	2.67	7.05	0.08	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

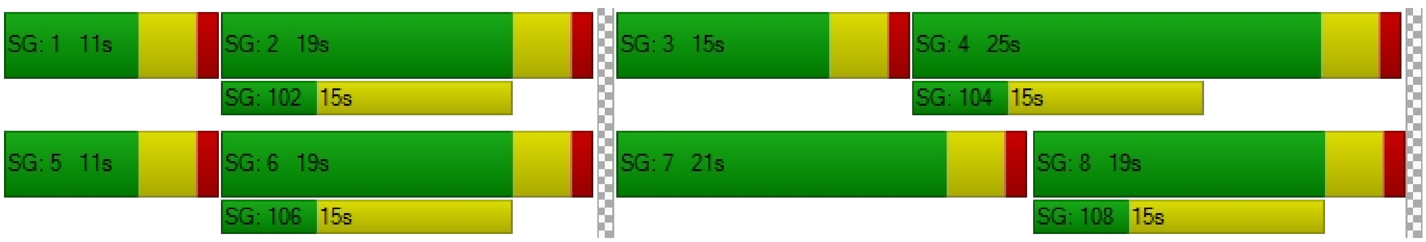
X, volume / capacity	0.40	0.43	0.26	0.61	0.64	0.08	0.46	0.14	0.38	0.82	0.05	0.29
d, Delay for Lane Group [s/veh]	36.60	12.69	11.61	36.01	13.97	8.67	35.65	31.72	34.25	36.05	25.42	27.07
Lane Group LOS	D	B	B	D	B	A	D	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.46	2.51	1.31	1.24	4.26	0.35	0.76	0.25	0.60	3.34	0.18	0.91
50th-Percentile Queue Length [ft]	11.53	62.84	32.77	30.97	106.48	8.83	18.98	6.27	15.04	83.51	4.38	22.77
95th-Percentile Queue Length [veh]	0.83	4.52	2.36	2.23	7.64	0.64	1.37	0.45	1.08	6.01	0.32	1.64
95th-Percentile Queue Length [ft]	20.76	113.11	58.98	55.75	191.10	15.90	34.16	11.28	27.07	150.32	7.88	40.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.60	12.69	11.61	36.01	13.97	8.67	35.65	31.72	34.25	36.05	25.42	27.07
Movement LOS	D	B	B	D	B	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	13.21			15.10			34.48			33.42		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.20											
Intersection LOS	B											
Intersection V/C	0.639											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	195	21	13	311	3	5	3	3	40	6	21
Total Analysis Volume [veh/h]	24	779	82	51	1243	13	19	11	13	160	22	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	11	0	19	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	30	30	4	32	32	2	2	2	8	8	8
g / C, Green / Cycle	0.04	0.50	0.50	0.07	0.53	0.53	0.03	0.04	0.04	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.06	0.02	0.39	0.01	0.01	0.01	0.01	0.10	0.01	0.06
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	64	1595	712	212	1686	752	53	67	57	202	223	190
d1, Uniform Delay [s]	28.15	9.96	7.99	26.54	10.97	6.76	28.46	27.91	27.98	25.51	22.90	24.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.65	1.07	0.33	0.58	2.93	0.04	4.10	1.15	2.03	6.90	0.19	1.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.49	0.12	0.24	0.74	0.02	0.36	0.16	0.23	0.79	0.10	0.44
d, Delay for Lane Group [s/veh]	31.80	11.03	8.32	27.13	13.90	6.80	32.56	29.06	30.01	32.42	23.09	25.64
Lane Group LOS	C	B	A	C	B	A	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.36	2.45	0.44	0.32	4.58	0.06	0.32	0.17	0.21	2.47	0.27	1.12
50th-Percentile Queue Length [ft]	8.93	61.31	10.98	7.91	114.47	1.47	7.98	4.23	5.19	61.72	6.76	28.01
95th-Percentile Queue Length [veh]	0.64	4.41	0.79	0.57	8.09	0.11	0.57	0.30	0.37	4.44	0.49	2.02
95th-Percentile Queue Length [ft]	16.08	110.37	19.76	14.23	202.20	2.65	14.37	7.62	9.33	111.09	12.16	50.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.80	11.03	8.32	27.13	13.90	6.80	32.56	29.06	30.01	32.42	23.09	25.64
Movement LOS	C	B	A	C	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	11.34			14.34			30.89			29.51		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.18											
Intersection LOS	B											
Intersection V/C	0.700											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	188	1	2	353	26	16	1	34	1	1	2
Total Analysis Volume [veh/h]	98	753	5	7	1410	103	65	5	137	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	20	0	11	20	0	20	28	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	44	44	1	39	39	5	8	8	0	4	4
g / C, Green / Cycle	0.09	0.63	0.63	0.01	0.56	0.56	0.07	0.12	0.12	0.01	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.00	0.00	0.44	0.07	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	139	2008	896	23	1777	793	118	203	173	12	92	78
d1, Uniform Delay [s]	31.21	6.33	4.85	34.26	12.36	7.44	31.42	27.21	30.01	34.67	31.47	31.53
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.44	0.54	0.01	7.00	3.74	0.34	4.00	0.05	7.96	10.74	0.24	0.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.38	0.01	0.30	0.79	0.13	0.55	0.02	0.79	0.25	0.05	0.09
d, Delay for Lane Group [s/veh]	37.65	6.86	4.86	41.27	16.10	7.78	35.42	27.26	37.97	45.42	31.71	32.02
Lane Group LOS	D	A	A	D	B	A	D	C	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.69	1.71	0.02	0.15	6.69	0.58	1.16	0.07	2.54	0.08	0.08	0.12
50th-Percentile Queue Length [ft]	42.18	42.65	0.47	3.80	167.28	14.54	28.98	1.86	63.56	2.12	2.10	3.00
95th-Percentile Queue Length [veh]	3.04	3.07	0.03	0.27	10.93	1.05	2.09	0.13	4.58	0.15	0.15	0.22
95th-Percentile Queue Length [ft]	75.93	76.77	0.84	6.85	273.34	26.18	52.16	3.34	114.41	3.82	3.79	5.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.65	6.86	4.86	41.27	16.10	7.78	35.42	27.26	37.97	45.42	31.71	32.02
Movement LOS	D	A	A	D	B	A	D	C	D	D	C	C
d_A, Approach Delay [s/veh]	10.38			15.65			36.91			34.60		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	15.72											
Intersection LOS	B											
Intersection V/C	0.779											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	180.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.448

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	181	26	6	354	24	18	33	148	58	65	5
Total Analysis Volume [veh/h]	398	726	105	23	1415	97	73	131	594	232	259	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	26	0	39	40	0	37	39	39	16	18	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	53	53	4	36	36	7	35	35	12	40
g / C, Green / Cycle	0.18	0.44	0.44	0.03	0.30	0.30	0.06	0.29	0.29	0.10	0.33
(v / s)_i Volume / Saturation Flow Rate	0.25	0.25	0.25	0.01	0.44	0.07	0.05	0.08	0.42	0.15	0.17
s, saturation flow rate [veh/h]	1597	1676	1603	1597	3192	1425	1597	1676	1425	1597	1656
c, Capacity [veh/h]	279	746	713	50	961	429	92	487	414	160	552
d1, Uniform Delay [s]	49.50	24.75	24.78	57.13	41.93	31.45	55.86	32.77	42.57	54.00	32.07
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	210.55	3.13	3.29	6.47	218.11	1.22	14.34	0.29	209.17	235.00	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

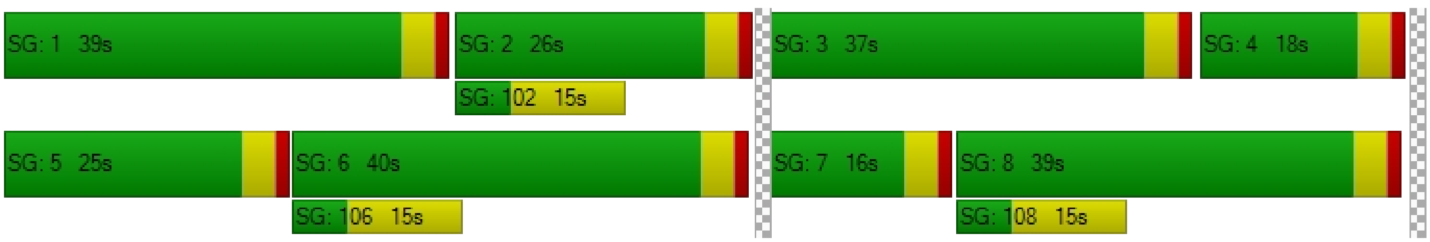
X, volume / capacity	1.42	0.57	0.57	0.46	1.47	0.23	0.80	0.27	1.43	1.45	0.50
d, Delay for Lane Group [s/veh]	260.05	27.89	28.07	63.60	260.04	32.67	70.20	33.06	251.74	289.00	32.78
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.30	8.88	8.56	0.75	42.39	2.15	2.55	2.99	36.16	15.24	6.57
50th-Percentile Queue Length [ft]	607.40	222.06	213.99	18.74	1059.69	53.84	63.70	74.70	903.89	380.96	164.14
95th-Percentile Queue Length [veh]	37.66	13.77	13.36	1.35	64.83	3.88	4.59	5.38	55.46	24.51	10.77
95th-Percentile Queue Length [ft]	941.55	344.25	333.94	33.73	1620.82	96.91	114.66	134.46	1386.55	612.71	269.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	260.05	27.96	28.07	63.60	260.04	32.67	70.20	33.06	251.74	289.00	32.78	32.78
Movement LOS	F	C	C	E	F	C	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	103.13			242.73			199.24			149.34		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	180.38											
Intersection LOS	F											
Intersection V/C	1.448											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.943

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	880	216	311	1696	374	243
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	237	58	84	456	101	65
Total Analysis Volume [veh/h]	946	232	334	1824	402	261
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	22	41	19	19
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	14	39	13	13
g / C, Green / Cycle	0.35	0.35	0.24	0.66	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.30	0.16	0.21	0.57	0.13	0.18
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1108	495	385	2089	659	303
d1, Uniform Delay [s]	18.22	15.31	21.92	8.38	21.44	22.84
k, delay calibration	0.50	0.50	0.21	0.50	0.11	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.40	3.17	10.92	5.41	0.92	13.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

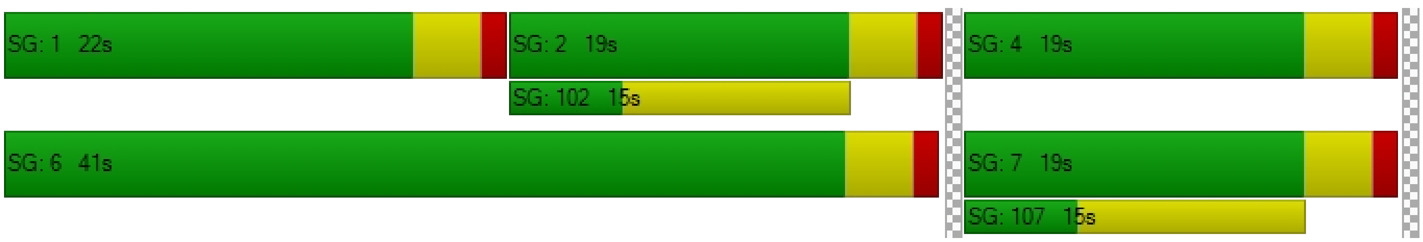
X, volume / capacity	0.85	0.47	0.87	0.87	0.61	0.86
d, Delay for Lane Group [s/veh]	26.62	18.48	32.84	13.79	22.36	36.50
Lane Group LOS	C	B	C	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	5.90	2.33	4.83	5.26	2.46	4.43
50th-Percentile Queue Length [ft]	147.40	58.33	120.65	131.38	61.42	110.79
95th-Percentile Queue Length [veh]	9.88	4.20	8.43	9.02	4.42	7.88
95th-Percentile Queue Length [ft]	246.96	105.00	210.72	225.38	110.56	197.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.62	18.48	32.84	13.79	22.36	36.50
Movement LOS	C	B	C	B	C	D
d_A, Approach Delay [s/veh]	25.02		16.74		27.92	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	21.03					
Intersection LOS	C					
Intersection V/C	0.943					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	79	4	3	88	3
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	27	1	1	30	1
Total Analysis Volume [veh/h]	3	108	5	4	120	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.10	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	10.67	8.75	0.00	0.00	7.41	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.35	0.35	0.00	0.00	0.24	0.00
95th-Percentile Queue Length [ft]	8.76	8.76	0.00	0.00	6.03	0.00
d_A, Approach Delay [s/veh]	8.80		0.00		7.18	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.65					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	19.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.182

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	189	13	94	138	49	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	189	13	94	138	49	127
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	4	32	47	17	43
Total Analysis Volume [veh/h]	255	18	127	186	66	172
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.10	0.00	0.18	0.22
d_M, Delay for Movement [s/veh]	0.00	0.00	8.09	0.00	18.97	13.72
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.33	0.00	1.94	1.94
95th-Percentile Queue Length [ft]	0.00	0.00	8.17	0.00	48.60	48.60
d_A, Approach Delay [s/veh]	0.00		3.28		15.17	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	5.63					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	114	147	96	113	94
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	42	55	36	42	35
Total Analysis Volume [veh/h]	115	170	219	143	168	140
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.84	0.53	0.53	1.35	1.19	1.36	0.83
95th-Percentile Queue Length [ft]	20.98	13.30	13.30	33.84	29.80	34.08	20.85
Approach Delay [s/veh]	10.81			11.33		11.44	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.21						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	50	0	0	73	19	13	1	33	2	2	0
Total Analysis Volume [veh/h]	137	200	0	1	293	76	53	4	133	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

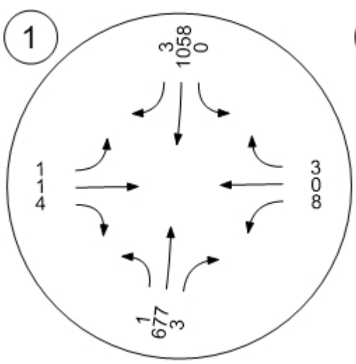
Lanes

Movement, Approach, & Intersection Results

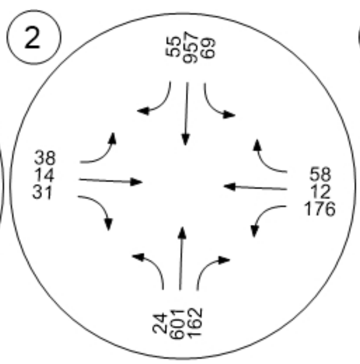
95th-Percentile Queue Length [veh]	3.12	3.46	0.34	0.02	0.80	0.09
95th-Percentile Queue Length [ft]	77.93	86.50	8.56	0.54	20.09	2.27
Approach Delay [s/veh]	14.84	15.06	10.15			10.28
Approach LOS	B	C	B			B
Intersection Delay [s/veh]	13.88					
Intersection LOS	B					

Traffic Volume - Future Total Volume

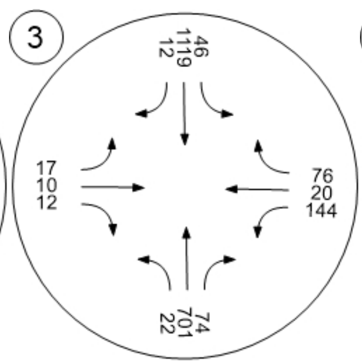
Winchester Road at Keller Ro



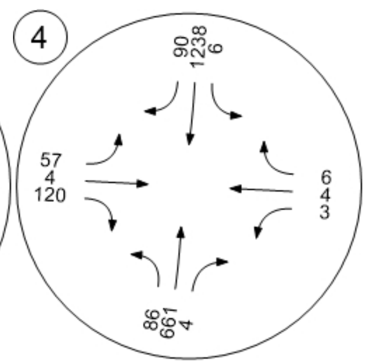
Winchester Road at Pourroy



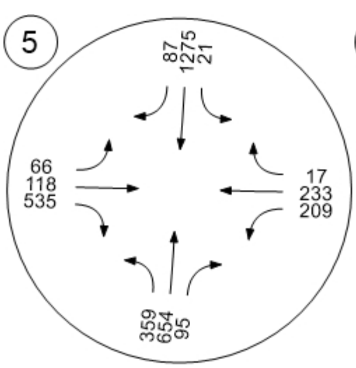
Winchester Road at Whisper



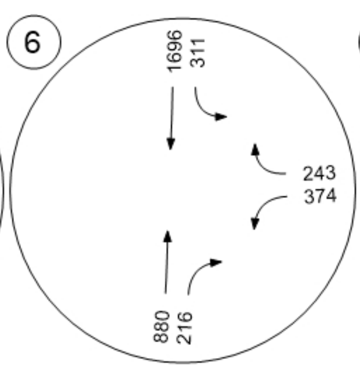
Winchester Road at Jean Nic



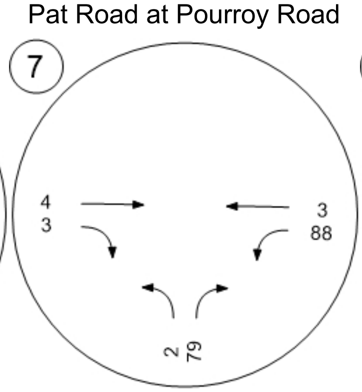
Winchester Road at Max Gilli



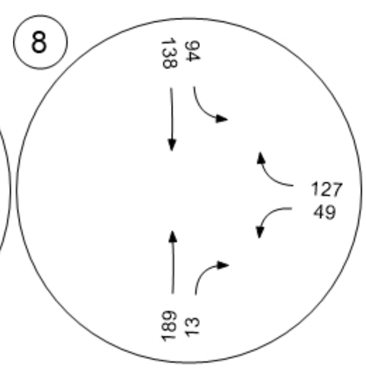
Winchester Road at Benton



Pat Road at Pourroy Road

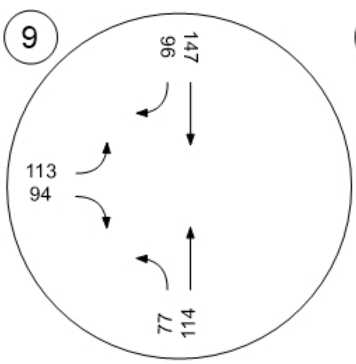


Jean Nicholas Road at Elliot

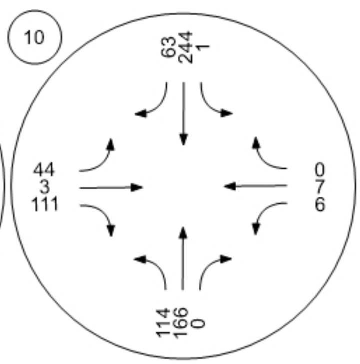


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs.vistro

Report File: Q:\...\Existing PM.pdf

Scenario 2: Existing PM

10/5/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.843	5.5	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	0.484	12.5	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.634	12.8	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.658	8.9	A
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.258	144.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.196	86.8	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.003	9.5	A
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.000	9.2	A
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		10.0	A
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		16.1	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	5.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	301	1	1	214	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1203	3	2	858	1	2	2	1	3	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	89	0	11	89	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.89	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.72	0.00	0.27	0.00	0.04	0.00	0.03	0.00
s, saturation flow rate [veh/h]	3101	1676	1597	3192	1425	105	1425	92	1425
c, Capacity [veh/h]	24	1485	7	2818	1258	46	13	61	13
d1, Uniform Delay [s]	59.13	2.77	59.55	1.13	0.82	59.97	58.90	59.97	58.90
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	4.94	22.54	0.28	0.00	0.80	2.32	0.33	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.81	0.30	0.30	0.00	0.09	0.07	0.05	0.07
d, Delay for Lane Group [s/veh]	62.35	7.71	82.09	1.41	0.83	60.78	61.22	60.30	61.22
Lane Group LOS	E	A	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.07	2.04	0.10	0.11	0.00	0.13	0.04	0.10	0.04
50th-Percentile Queue Length [ft]	1.70	51.00	2.50	2.73	0.01	3.31	0.97	2.43	0.97
95th-Percentile Queue Length [veh]	0.12	3.67	0.18	0.20	0.00	0.24	0.07	0.17	0.07
95th-Percentile Queue Length [ft]	3.06	91.81	4.49	4.92	0.02	5.95	1.75	4.37	1.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	7.71	7.71	82.09	1.41	0.83	60.78	60.78	61.22	60.30	60.30	61.22
Movement LOS	E	A	A	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	7.89			1.59			60.87			60.53		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	5.51											
Intersection LOS	A											
Intersection V/C	0.843											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.484

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Peak Hour Factor	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	288	35	9	201	4	4	1	4	23	2	6
Total Analysis Volume [veh/h]	15	1152	138	35	803	15	14	5	18	93	7	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	7	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	17	22	0	29	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		Yes	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	66	66	4	68	68	2	18	4	10	12	12
g / C, Green / Cycle	0.02	0.66	0.66	0.04	0.68	0.68	0.02	0.18	0.04	0.10	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.36	0.10	0.02	0.25	0.01	0.01	0.01	0.01	0.07	0.00	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1511	1297	1265	1676	1425
c, Capacity [veh/h]	39	2100	937	70	2162	965	26	378	49	169	205	174
d1, Uniform Delay [s]	48.07	9.17	6.49	46.74	6.96	5.26	48.73	33.98	46.97	46.00	38.73	39.26
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.06	1.04	0.33	5.32	0.49	0.03	8.89	0.03	4.51	2.75	0.07	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

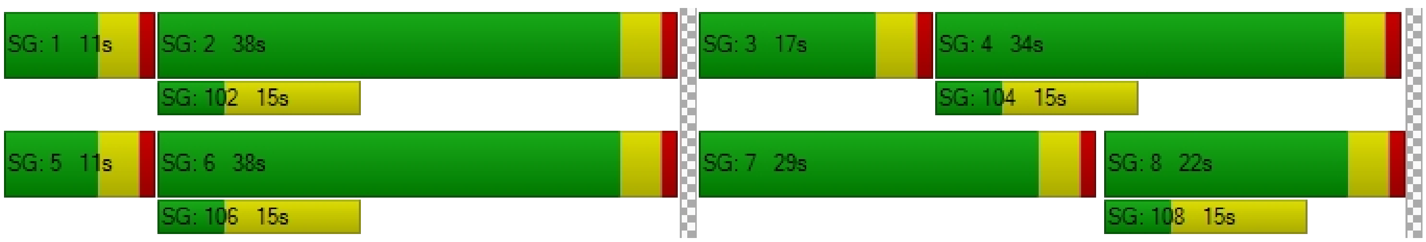
X, volume / capacity	0.38	0.55	0.15	0.50	0.37	0.02	0.38	0.02	0.37	0.55	0.03	0.14
d, Delay for Lane Group [s/veh]	54.13	10.21	6.82	52.06	7.45	5.29	57.62	34.01	51.48	48.75	38.80	39.63
Lane Group LOS	D	B	A	D	A	A	E	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.41	4.82	0.85	0.89	2.54	0.08	0.30	0.19	0.50	2.35	0.15	0.55
50th-Percentile Queue Length [ft]	10.22	120.44	21.29	22.37	63.55	1.89	7.61	4.70	12.43	58.66	3.76	13.71
95th-Percentile Queue Length [veh]	0.74	8.42	1.53	1.61	4.58	0.14	0.55	0.34	0.89	4.22	0.27	0.99
95th-Percentile Queue Length [ft]	18.39	210.43	38.33	40.26	114.38	3.40	13.69	8.46	22.37	105.60	6.77	24.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.13	10.21	6.82	52.06	7.45	5.29	50.32	34.01	51.48	48.75	38.80	39.63
Movement LOS	D	B	A	D	A	A	D	C	D	D	D	D
d_A, Approach Delay [s/veh]	10.35			9.24			48.74			46.37		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	12.50											
Intersection LOS	B											
Intersection V/C	0.484											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.634

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	318	45	22	236	2	2	4	6	31	7	15
Total Analysis Volume [veh/h]	24	1272	180	87	945	8	6	15	25	123	27	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	25	59	0	11	45	0	11	37	0	30	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	0.00	0.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	68	68	7	71	71	1	0	0	14	8	8
g / C, Green / Cycle	0.03	0.68	0.68	0.07	0.71	0.71	0.01	0.00	0.00	0.14	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.02	0.40	0.13	0.04	0.30	0.01	0.00	0.01	0.02	0.10	0.02	0.04
s, saturation flow rate [veh/h]	1253	3192	1425	2434	3192	1425	1597	1676	1425	1253	1676	1425
c, Capacity [veh/h]	90	2161	965	188	2270	1013	17	0	0	214	141	120
d1, Uniform Delay [s]	49.45	8.67	5.97	47.04	5.93	4.20	49.11	0.00	0.00	43.62	42.64	43.83
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.56	1.18	0.43	1.77	0.56	0.01	11.51	0.00	0.00	2.44	0.65	3.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.59	0.19	0.46	0.42	0.01	0.35	0.00	0.00	0.58	0.19	0.51
d, Delay for Lane Group [s/veh]	51.01	9.86	6.40	48.81	6.49	4.21	60.62	0.00	0.00	46.05	43.30	47.16
Lane Group LOS	D	A	A	D	A	A	E	A	A	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.61	5.62	1.14	1.06	2.87	0.04	0.20	0.00	0.00	3.11	0.64	1.55
50th-Percentile Queue Length [ft]	15.26	140.47	28.50	26.45	71.87	0.91	5.12	0.00	0.00	77.74	16.11	38.69
95th-Percentile Queue Length [veh]	1.10	9.51	2.05	1.90	5.17	0.07	0.37	0.00	0.00	5.60	1.16	2.79
95th-Percentile Queue Length [ft]	27.47	237.66	51.31	47.60	129.36	1.63	9.21	0.00	0.00	139.94	29.00	69.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.01	9.86	6.40	48.81	6.49	4.21	60.62	0.00	0.00	46.05	43.30	47.16
Movement LOS	D	A	A	D	A	A	E	A	A	D	D	D
d_A, Approach Delay [s/veh]	10.10			10.02			7.91			46.02		
Approach LOS	B			B			A			D		
d_I, Intersection Delay [s/veh]	12.77											
Intersection LOS	B											
Intersection V/C	0.634											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.658

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Peak Hour Factor	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	326	1	1	219	11	22	0	21	1	1	3
Total Analysis Volume [veh/h]	151	1306	5	2	878	46	90	1	84	5	2	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	75	61	0	14	43	0	45	34	0	11	70	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	0.00	0.00	4.00	4.00	4.00	4.00	0.00	0.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00
g_i, Effective Green Time [s]	90	85	85	0	0	0	22	17	17	1	0	0
g / C, Green / Cycle	0.75	0.71	0.71	0.00	0.00	0.00	0.19	0.14	0.14	0.01	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.27	0.41	0.00	0.00	0.28	0.03	0.16	0.00	0.06	0.01	0.00	0.01
s, saturation flow rate [veh/h]	565	3192	1425	1268	3192	1425	565	1676	1425	566	1676	1425
c, Capacity [veh/h]	473	2262	1010	60	0	0	156	243	207	60	0	0
d1, Uniform Delay [s]	5.96	8.62	5.11	60.00	0.00	0.00	49.19	43.87	46.59	60.00	0.00	0.00
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.78	1.08	0.01	0.22	0.00	0.00	3.34	0.01	1.28	0.59	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

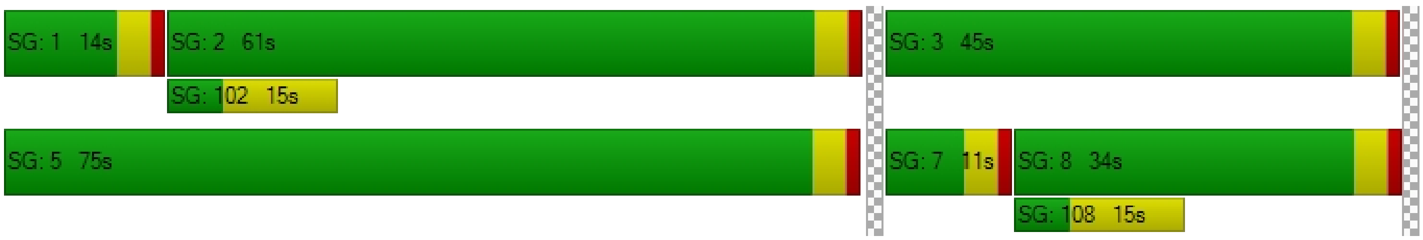
X, volume / capacity	0.32	0.58	0.00	0.03	0.00	0.00	0.58	0.00	0.41	0.08	0.00	0.00
d, Delay for Lane Group [s/veh]	7.74	9.70	5.12	60.22	0.00	0.00	52.53	43.88	47.87	60.59	0.00	0.00
Lane Group LOS	A	A	A	E	A	A	D	D	D	E	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	1.26	6.62	0.03	0.06	0.00	0.00	2.80	0.03	2.36	0.16	0.00	0.00
50th-Percentile Queue Length [ft]	31.42	165.46	0.77	1.56	0.00	0.00	69.98	0.65	59.00	4.08	0.00	0.00
95th-Percentile Queue Length [veh]	2.26	10.84	0.06	0.11	0.00	0.00	5.04	0.05	4.25	0.29	0.00	0.00
95th-Percentile Queue Length [ft]	56.56	270.94	1.39	2.81	0.00	0.00	125.96	1.17	106.21	7.35	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.74	9.70	5.12	60.22	0.00	0.00	52.53	43.88	47.87	60.59	0.00	0.00
Movement LOS	A	A	A	E	A	A	D	D	D	E	A	A
d_A, Approach Delay [s/veh]	9.48			0.13			50.24			17.82		
Approach LOS	A			A			D			B		
d_I, Intersection Delay [s/veh]	8.94											
Intersection LOS	A											
Intersection V/C	0.658											

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	144.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.258

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Peak Hour Factor	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	360	53	7	222	16	20	47	144	45	36	5
Total Analysis Volume [veh/h]	467	1442	214	30	890	65	79	186	578	181	142	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	51	51	4	27	27	7	38	38	11	42
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.06	0.32	0.32	0.09	0.35
(v / s)_i Volume / Saturation Flow Rate	0.29	0.49	0.52	0.02	0.28	0.05	0.05	0.11	0.41	0.11	0.10
s, saturation flow rate [veh/h]	1597	1676	1603	1597	3192	1425	1597	1676	1425	1597	1639
c, Capacity [veh/h]	373	708	677	59	721	322	99	529	450	146	566
d1, Uniform Delay [s]	46.00	34.66	34.66	56.72	46.44	37.66	55.54	31.61	41.06	54.50	28.55
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	134.37	90.87	113.08	6.65	117.06	1.41	13.53	0.40	144.26	151.55	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

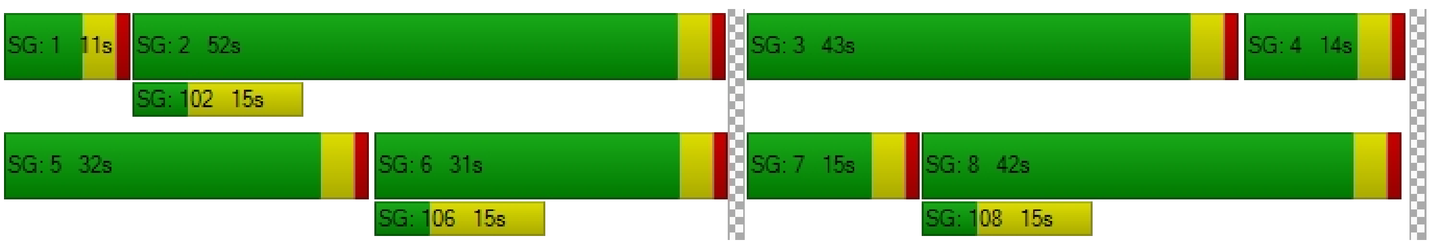
X, volume / capacity	1.25	1.17	1.22	0.51	1.23	0.20	0.80	0.35	1.28	1.24	0.29
d, Delay for Lane Group [s/veh]	180.37	125.53	147.74	63.37	163.50	39.07	69.07	32.00	185.32	206.05	28.83
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.37	36.57	39.15	0.97	21.88	1.61	2.73	4.22	31.11	10.58	3.47
50th-Percentile Queue Length [ft]	609.25	914.25	978.83	24.19	547.09	40.26	68.27	105.60	777.83	264.43	86.71
95th-Percentile Queue Length [veh]	36.52	51.82	56.56	1.74	32.93	2.90	4.92	7.59	46.51	17.13	6.24
95th-Percentile Queue Length [ft]	912.94	1295.61	1414.09	43.53	823.35	72.47	122.89	189.87	1162.64	428.37	156.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	180.37	134.98	147.74	63.37	163.50	39.07	69.07	32.00	185.32	206.05	28.83	28.83
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	146.25			152.24			140.60			122.07		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	144.58											
Intersection LOS	F											
Intersection V/C	1.258											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	86.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.196

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1546	392	314	1216	304	451
Peak Hour Factor	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	417	106	85	328	82	122
Total Analysis Volume [veh/h]	1668	423	339	1312	328	487
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.52	0.30	0.21	0.41	0.11	0.34
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.43	48.95	12.48	34.44	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	100.29	6.10	101.54	1.48	0.26	113.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.69	1.16	0.63	0.37	1.21
d, Delay for Lane Group [s/veh]	134.30	33.53	150.49	13.96	34.70	156.92
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	37.36	9.99	16.60	8.94	3.88	24.61
50th-Percentile Queue Length [ft]	934.03	249.79	415.11	223.50	97.08	615.31
95th-Percentile Queue Length [veh]	53.88	15.18	25.00	13.84	6.99	36.45
95th-Percentile Queue Length [ft]	1347.06	379.39	625.09	346.09	174.74	911.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	134.30	33.53	150.49	13.96	34.70	156.92
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	113.91		41.99		107.73	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	86.75					
Intersection LOS	F					
Intersection V/C	1.196					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	82	4	1	27	5
Peak Hour Factor	0.6720	0.6720	0.6720	0.6720	0.6720	0.6720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	31	1	0	10	2
Total Analysis Volume [veh/h]	3	122	6	1	40	7
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.11	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	9.52	8.79	0.00	0.00	7.29	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.40	0.40	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	9.88	9.88	0.00	0.00	1.91	0.00
d_A, Approach Delay [s/veh]	8.81		0.00		6.20	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.78					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	37	0	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	37	0	0	33
Peak Hour Factor	0.8260	0.8260	0.8260	0.8260	0.8260	0.8260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	11	0	0	10
Total Analysis Volume [veh/h]	0	0	45	0	0	40
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.00	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	7.28	0.00	9.19	8.44
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.09	0.00	0.11	0.11
95th-Percentile Queue Length [ft]	0.00	0.00	2.14	0.00	2.87	2.87
d_A, Approach Delay [s/veh]	0.00		7.28		8.44	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.83					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	182	128	83	102	82
Peak Hour Factor	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	56	40	26	32	25
Total Analysis Volume [veh/h]	69	226	159	103	126	102
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.42	0.67	0.67	0.82	0.73	0.87	0.53
95th-Percentile Queue Length [ft]	10.40	16.82	16.82	20.51	18.19	21.79	13.25
Approach Delay [s/veh]	9.93			9.87		10.17	
Approach LOS	A			A		B	
Intersection Delay [s/veh]	9.98						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	16.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Peak Hour Factor	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	72	2	1	52	16	23	1	28	1	1	0
Total Analysis Volume [veh/h]	157	288	8	4	207	66	90	5	114	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

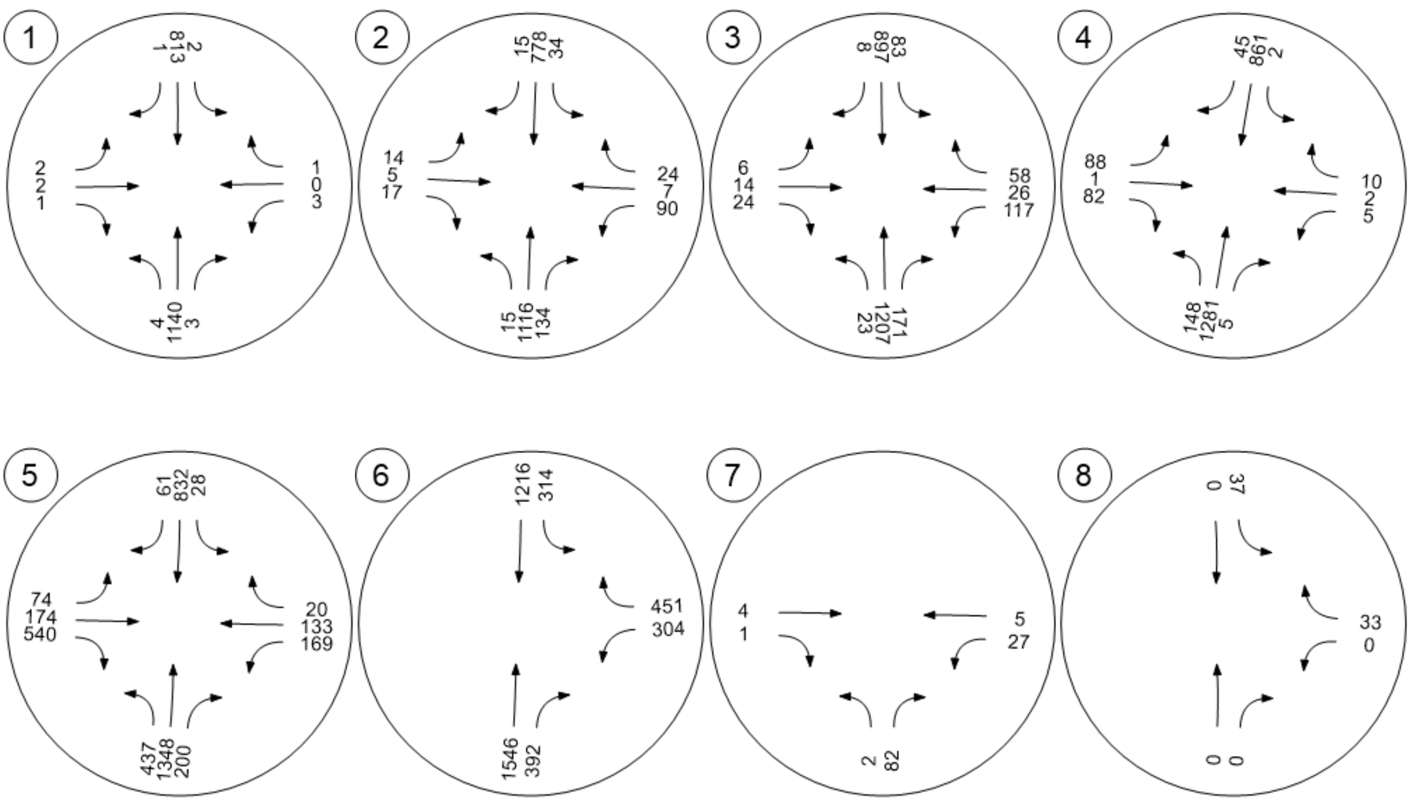
Intersection Settings

Lanes

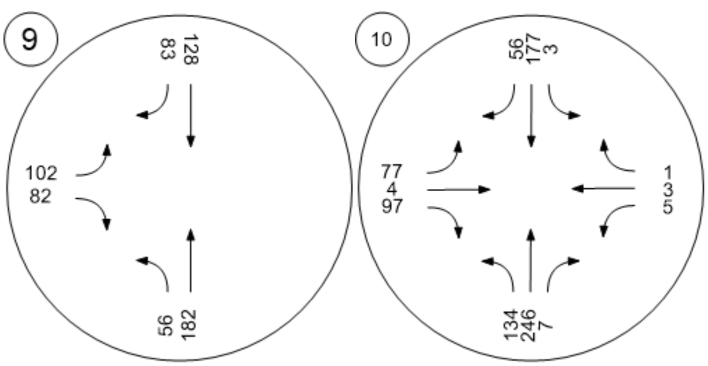
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.75	2.18	0.64	0.03	0.68	0.07
95th-Percentile Queue Length [ft]	143.87	54.57	15.93	0.69	16.90	1.68
Approach Delay [s/veh]	20.81	12.84	10.48			10.34
Approach LOS	C	B	B			B
Intersection Delay [s/veh]	16.09					
Intersection LOS	C					

Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\Existing PM_new.pdf

Scenario 2: Existing PM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.843	5.5	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	0.484	12.5	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.675	15.6	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Left	0.614	13.0	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.258	144.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.196	86.8	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.003	9.5	A
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.081	13.2	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		10.0	A
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		16.1	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	5.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	301	1	1	214	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1203	3	2	858	1	2	2	1	3	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	89	0	11	89	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.89	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.72	0.00	0.27	0.00	0.04	0.00	0.03	0.00
s, saturation flow rate [veh/h]	3101	1676	1597	3192	1425	105	1425	92	1425
c, Capacity [veh/h]	24	1485	7	2818	1258	46	13	61	13
d1, Uniform Delay [s]	59.13	2.77	59.55	1.13	0.82	59.97	58.90	59.97	58.90
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	4.94	22.54	0.28	0.00	0.80	2.32	0.33	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.81	0.30	0.30	0.00	0.09	0.07	0.05	0.07
d, Delay for Lane Group [s/veh]	62.35	7.71	82.09	1.41	0.83	60.78	61.22	60.30	61.22
Lane Group LOS	E	A	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.07	2.04	0.10	0.11	0.00	0.13	0.04	0.10	0.04
50th-Percentile Queue Length [ft]	1.70	51.00	2.50	2.73	0.01	3.31	0.97	2.43	0.97
95th-Percentile Queue Length [veh]	0.12	3.67	0.18	0.20	0.00	0.24	0.07	0.17	0.07
95th-Percentile Queue Length [ft]	3.06	91.81	4.49	4.92	0.02	5.95	1.75	4.37	1.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	7.71	7.71	82.09	1.41	0.83	60.78	60.78	61.22	60.30	60.30	61.22
Movement LOS	E	A	A	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	7.89			1.59			60.87			60.53		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	5.51											
Intersection LOS	A											
Intersection V/C	0.843											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.484

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Peak Hour Factor	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	288	35	9	201	4	4	1	4	23	2	6
Total Analysis Volume [veh/h]	15	1152	138	35	803	15	14	5	18	93	7	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	7	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	17	22	0	29	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		Yes	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	66	66	4	68	68	2	18	4	10	12	12
g / C, Green / Cycle	0.02	0.66	0.66	0.04	0.68	0.68	0.02	0.18	0.04	0.10	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.36	0.10	0.02	0.25	0.01	0.01	0.01	0.01	0.07	0.00	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1511	1297	1265	1676	1425
c, Capacity [veh/h]	39	2100	937	70	2162	965	26	378	49	169	205	174
d1, Uniform Delay [s]	48.07	9.17	6.49	46.74	6.96	5.26	48.73	33.98	46.97	46.00	38.73	39.26
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.06	1.04	0.33	5.32	0.49	0.03	8.89	0.03	4.51	2.75	0.07	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

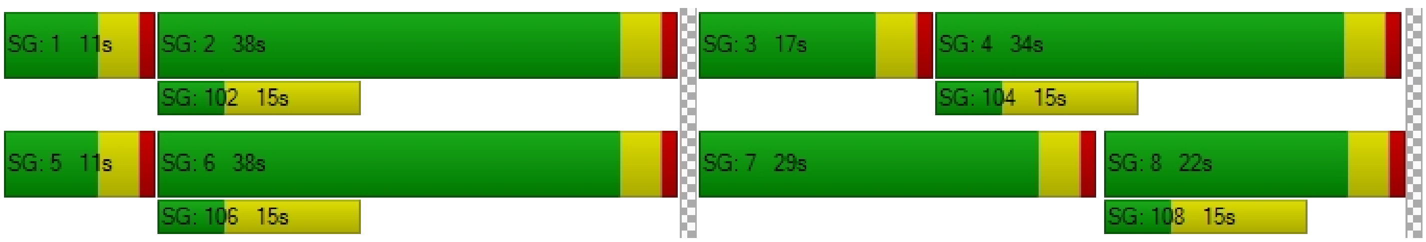
X, volume / capacity	0.38	0.55	0.15	0.50	0.37	0.02	0.38	0.02	0.37	0.55	0.03	0.14
d, Delay for Lane Group [s/veh]	54.13	10.21	6.82	52.06	7.45	5.29	57.62	34.01	51.48	48.75	38.80	39.63
Lane Group LOS	D	B	A	D	A	A	E	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.41	4.82	0.85	0.89	2.54	0.08	0.30	0.19	0.50	2.35	0.15	0.55
50th-Percentile Queue Length [ft]	10.22	120.44	21.29	22.37	63.55	1.89	7.61	4.70	12.43	58.66	3.76	13.71
95th-Percentile Queue Length [veh]	0.74	8.42	1.53	1.61	4.58	0.14	0.55	0.34	0.89	4.22	0.27	0.99
95th-Percentile Queue Length [ft]	18.39	210.43	38.33	40.26	114.38	3.40	13.69	8.46	22.37	105.60	6.77	24.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.13	10.21	6.82	52.06	7.45	5.29	50.32	34.01	51.48	48.75	38.80	39.63
Movement LOS	D	B	A	D	A	A	D	C	D	D	D	D
d_A, Approach Delay [s/veh]	10.35			9.24			48.74			46.37		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	12.50											
Intersection LOS	B											
Intersection V/C	0.484											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	318	45	22	236	2	2	4	6	31	7	15
Total Analysis Volume [veh/h]	24	1272	180	87	945	8	6	15	25	123	27	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	11	0	29	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	38	38	6	41	41	1	4	4	7	10	10
g / C, Green / Cycle	0.04	0.54	0.54	0.08	0.58	0.58	0.01	0.05	0.05	0.10	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.40	0.13	0.03	0.30	0.01	0.00	0.01	0.02	0.08	0.02	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	61	1710	763	256	1851	826	19	92	79	157	237	202
d1, Uniform Delay [s]	32.92	12.57	8.65	30.37	8.79	6.23	34.36	31.59	31.86	30.88	26.26	26.99
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.02	2.98	0.73	0.78	1.01	0.02	9.07	0.81	2.29	8.20	0.21	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

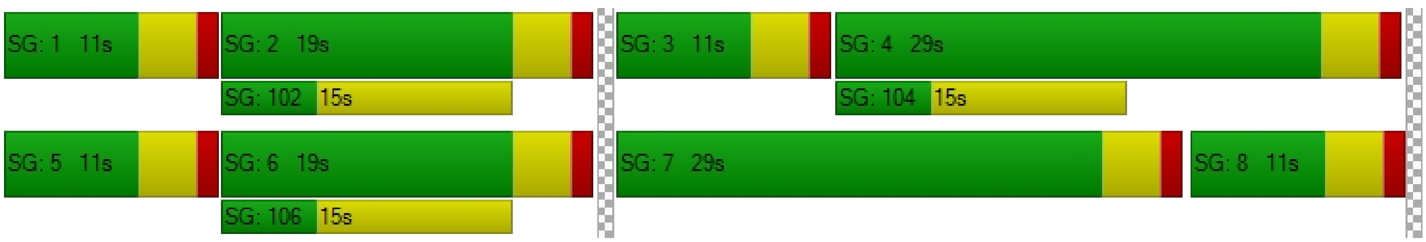
X, volume / capacity	0.39	0.74	0.24	0.34	0.51	0.01	0.31	0.16	0.32	0.78	0.11	0.30
d, Delay for Lane Group [s/veh]	36.94	15.55	9.38	31.15	9.80	6.25	43.43	32.40	34.16	39.08	26.47	27.82
Lane Group LOS	D	B	A	C	A	A	D	C	C	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.43	5.98	1.18	0.65	3.03	0.04	0.15	0.26	0.45	2.31	0.39	0.93
50th-Percentile Queue Length [ft]	10.67	149.58	29.55	16.18	75.78	0.95	3.70	6.48	11.26	57.84	9.84	23.21
95th-Percentile Queue Length [veh]	0.77	9.99	2.13	1.17	5.46	0.07	0.27	0.47	0.81	4.16	0.71	1.67
95th-Percentile Queue Length [ft]	19.20	249.87	53.18	29.13	136.40	1.71	6.66	11.66	20.28	104.12	17.71	41.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.94	15.55	9.38	31.15	9.80	6.25	43.43	32.40	34.16	39.08	26.47	27.82
Movement LOS	D	B	A	C	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	15.14			11.56			34.79			34.21		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.58											
Intersection LOS	B											
Intersection V/C	0.675											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Peak Hour Factor	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	326	1	1	219	11	22	0	21	1	1	3
Total Analysis Volume [veh/h]	151	1306	5	2	878	46	90	1	84	5	2	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	27	0	13	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	46	46	0	38	38	6	7	7	1	2	2
g / C, Green / Cycle	0.12	0.66	0.66	0.00	0.55	0.55	0.08	0.10	0.10	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.09	0.41	0.00	0.00	0.28	0.03	0.06	0.00	0.06	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	190	2106	940	9	1743	778	135	161	137	18	38	32
d1, Uniform Delay [s]	30.10	6.89	4.08	34.78	9.99	7.48	31.21	28.73	30.51	34.46	33.59	33.79
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.28	1.39	0.01	12.36	1.04	0.15	5.60	0.02	4.41	8.43	0.57	5.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

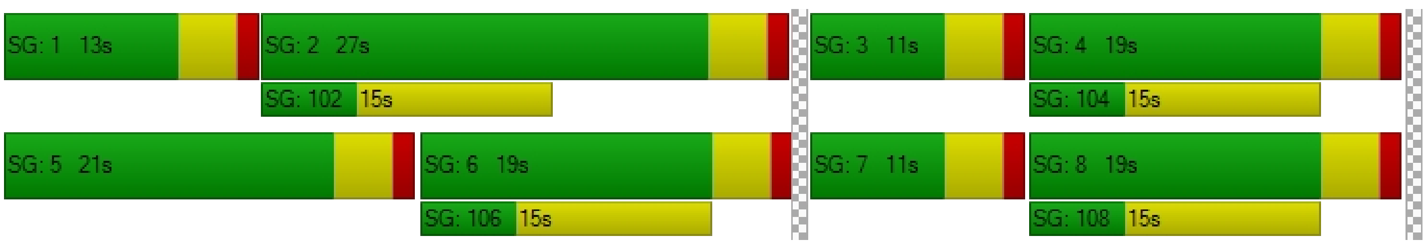
X, volume / capacity	0.79	0.62	0.01	0.23	0.50	0.06	0.67	0.01	0.61	0.28	0.05	0.31
d, Delay for Lane Group [s/veh]	37.38	8.27	4.09	47.14	11.03	7.63	36.81	28.74	34.92	42.89	34.16	39.07
Lane Group LOS	D	A	A	D	B	A	D	C	C	D	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.58	3.24	0.02	0.06	3.15	0.26	1.64	0.02	1.48	0.12	0.04	0.21
50th-Percentile Queue Length [ft]	64.48	81.06	0.39	1.53	78.63	6.46	40.93	0.39	37.09	3.09	0.96	5.26
95th-Percentile Queue Length [veh]	4.64	5.84	0.03	0.11	5.66	0.47	2.95	0.03	2.67	0.22	0.07	0.38
95th-Percentile Queue Length [ft]	116.07	145.91	0.70	2.75	141.53	11.63	73.67	0.69	66.76	5.57	1.73	9.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.38	8.27	4.09	47.14	11.03	7.63	36.81	28.74	34.92	42.89	34.16	39.07
Movement LOS	D	A	A	D	B	A	D	C	C	D	C	D
d_A, Approach Delay [s/veh]	11.26			10.94			35.86			39.62		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	13.00											
Intersection LOS	B											
Intersection V/C	0.614											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	144.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.258

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Peak Hour Factor	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	360	53	7	222	16	20	47	144	45	36	5
Total Analysis Volume [veh/h]	467	1442	214	30	890	65	79	186	578	181	142	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	51	51	4	27	27	7	38	38	11	42
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.06	0.32	0.32	0.09	0.35
(v / s)_i Volume / Saturation Flow Rate	0.29	0.49	0.52	0.02	0.28	0.05	0.05	0.11	0.41	0.11	0.10
s, saturation flow rate [veh/h]	1597	1676	1603	1597	3192	1425	1597	1676	1425	1597	1639
c, Capacity [veh/h]	373	708	677	59	721	322	99	529	450	146	566
d1, Uniform Delay [s]	46.00	34.66	34.66	56.72	46.44	37.66	55.54	31.61	41.06	54.50	28.55
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	134.37	90.87	113.08	6.65	117.06	1.41	13.53	0.40	144.26	151.55	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

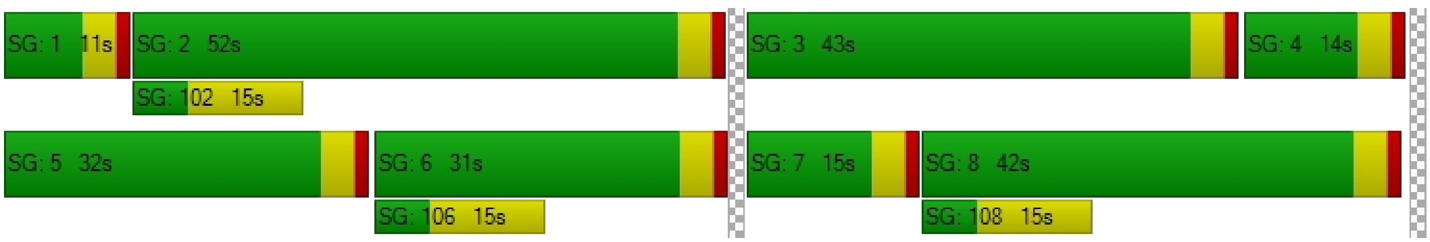
X, volume / capacity	1.25	1.17	1.22	0.51	1.23	0.20	0.80	0.35	1.28	1.24	0.29
d, Delay for Lane Group [s/veh]	180.37	125.53	147.74	63.37	163.50	39.07	69.07	32.00	185.32	206.05	28.83
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.37	36.57	39.15	0.97	21.88	1.61	2.73	4.22	31.11	10.58	3.47
50th-Percentile Queue Length [ft]	609.25	914.25	978.83	24.19	547.09	40.26	68.27	105.60	777.83	264.43	86.71
95th-Percentile Queue Length [veh]	36.52	51.82	56.56	1.74	32.93	2.90	4.92	7.59	46.51	17.13	6.24
95th-Percentile Queue Length [ft]	912.94	1295.61	1414.09	43.53	823.35	72.47	122.89	189.87	1162.64	428.37	156.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	180.37	134.98	147.74	63.37	163.50	39.07	69.07	32.00	185.32	206.05	28.83	28.83
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	146.25			152.24			140.60			122.07		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	144.58											
Intersection LOS	F											
Intersection V/C	1.258											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	86.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.196

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1546	392	314	1216	304	451
Peak Hour Factor	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	417	106	85	328	82	122
Total Analysis Volume [veh/h]	1668	423	339	1312	328	487
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.52	0.30	0.21	0.41	0.11	0.34
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.43	48.95	12.48	34.44	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	100.29	6.10	101.54	1.48	0.26	113.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.69	1.16	0.63	0.37	1.21
d, Delay for Lane Group [s/veh]	134.30	33.53	150.49	13.96	34.70	156.92
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	37.36	9.99	16.60	8.94	3.88	24.61
50th-Percentile Queue Length [ft]	934.03	249.79	415.11	223.50	97.08	615.31
95th-Percentile Queue Length [veh]	53.88	15.18	25.00	13.84	6.99	36.45
95th-Percentile Queue Length [ft]	1347.06	379.39	625.09	346.09	174.74	911.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	134.30	33.53	150.49	13.96	34.70	156.92
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	113.91		41.99		107.73	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	86.75					
Intersection LOS	F					
Intersection V/C	1.196					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	82	4	1	27	5
Peak Hour Factor	0.6720	0.6720	0.6720	0.6720	0.6720	0.6720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	31	1	0	10	2
Total Analysis Volume [veh/h]	3	122	6	1	40	7
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.11	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	9.52	8.79	0.00	0.00	7.29	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.40	0.40	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	9.88	9.88	0.00	0.00	1.91	0.00
d_A, Approach Delay [s/veh]	8.81		0.00		6.20	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.78					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	13.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.081

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	157	33	40	110	37	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	33	40	110	37	122
Peak Hour Factor	0.8260	0.8260	0.8260	0.8260	0.8260	0.8260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	10	12	33	11	37
Total Analysis Volume [veh/h]	190	40	48	133	45	148
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.08	0.18
d_M, Delay for Movement [s/veh]	0.00	0.00	7.79	0.00	13.18	11.02
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.11	0.00	1.04	1.04
95th-Percentile Queue Length [ft]	0.00	0.00	2.79	0.00	25.88	25.88
d_A, Approach Delay [s/veh]	0.00		2.07		11.52	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.30					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	182	128	83	102	82
Peak Hour Factor	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	56	40	26	32	25
Total Analysis Volume [veh/h]	69	226	159	103	126	102
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.42	0.67	0.67	0.82	0.73	0.87	0.53
95th-Percentile Queue Length [ft]	10.40	16.82	16.82	20.51	18.19	21.79	13.25
Approach Delay [s/veh]	9.93			9.87		10.17	
Approach LOS	A			A		B	
Intersection Delay [s/veh]	9.98						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	16.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Peak Hour Factor	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	72	2	1	52	16	23	1	28	1	1	0
Total Analysis Volume [veh/h]	157	288	8	4	207	66	90	5	114	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

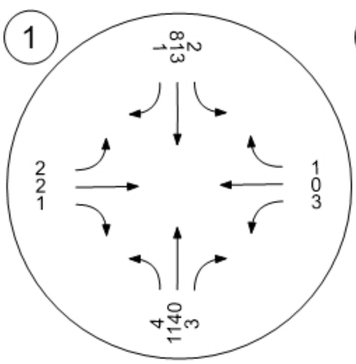
Lanes

Movement, Approach, & Intersection Results

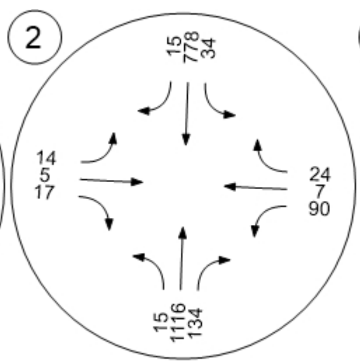
95th-Percentile Queue Length [veh]	5.75	2.18	0.64	0.03	0.68	0.07
95th-Percentile Queue Length [ft]	143.87	54.57	15.93	0.69	16.90	1.68
Approach Delay [s/veh]	20.81	12.84	10.48			10.34
Approach LOS	C	B	B			B
Intersection Delay [s/veh]	16.09					
Intersection LOS	C					

Traffic Volume - Future Total Volume

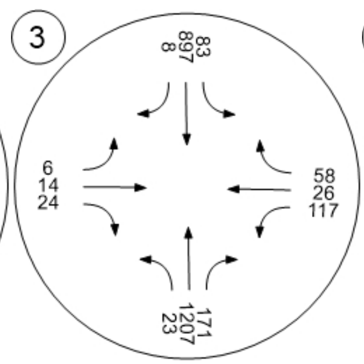
Winchester Road at Keller Ro



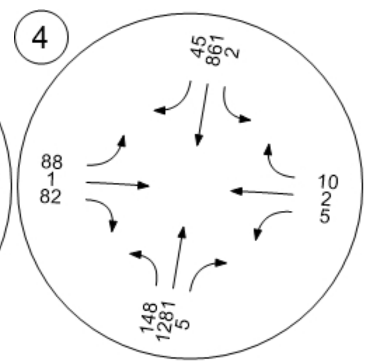
Winchester Road at Pourroy



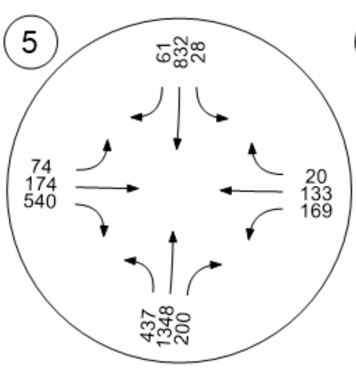
Winchester Road at Whisper



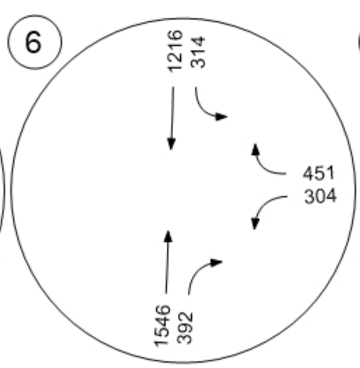
Winchester Road at Jean Nic



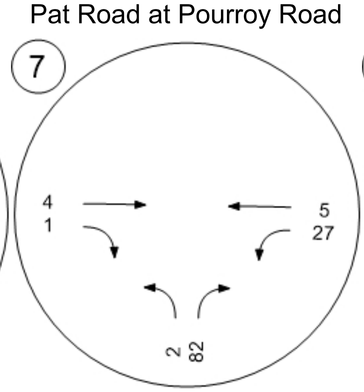
Winchester Road at Max Gilli



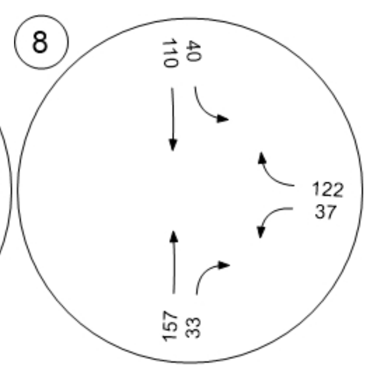
Winchester Road at Benton



Pat Road at Pourroy Road

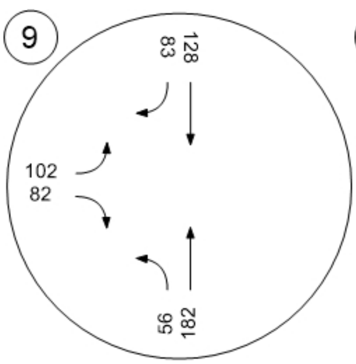


Jean Nicholas Road at Elliot

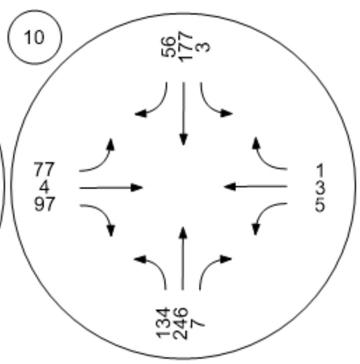


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs.vistro

Report File: Q:\...\Existing AM.pdf

Scenario 1: Existing AM

10/5/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Left	5,215.732	2.8	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	0.639	17.2	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.694	12.8	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.839	14.3	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	EB Right	1.448	180.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	SB Left	0.911	20.8	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.004	10.7	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.000	9.4	A
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.2	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		13.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	2.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5,215.732

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	189	1	0	295	1	0	0	1	2	0	1
Total Analysis Volume [veh/h]	1	756	3	0	1181	3	1	1	4	9	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	27	89	0	11	73	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	106	0	105	105	2	2	2	2
g / C, Green / Cycle	0.00	0.88	0.00	0.88	0.88	0.02	0.02	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.00	0.45	0.00	0.37	0.00	0.03	0.00	4693.71	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	74	1425	0	1425
c, Capacity [veh/h]	6	1475	0	2805	1252	46	28	60	28
d1, Uniform Delay [s]	59.79	1.56	0.00	1.40	0.88	58.37	57.86	60.00	57.82
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.86	1.29	0.00	0.47	0.00	0.38	2.37	5.22	1.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.51	0.00	0.42	0.00	0.04	0.14	0.15	0.11
d, Delay for Lane Group [s/veh]	72.65	2.85	0.00	1.87	0.89	58.75	60.23	65.22	59.53
Lane Group LOS	E	A	A	A	A	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.53	0.00	0.18	0.00	0.07	0.14	0.36	0.10
50th-Percentile Queue Length [ft]	0.62	13.17	0.00	4.54	0.03	1.64	3.44	9.08	2.57
95th-Percentile Queue Length [veh]	0.04	0.95	0.00	0.33	0.00	0.12	0.25	0.65	0.18
95th-Percentile Queue Length [ft]	1.12	23.70	0.00	8.17	0.05	2.96	6.20	16.34	4.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.65	2.85	2.85	0.00	1.87	0.89	58.75	58.75	60.23	65.22	65.22	59.53
Movement LOS	E	A	A	A	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	2.94			1.86			59.74			63.80		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	2.84											
Intersection LOS	A											
Intersection V/C	5215.732											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	166	45	19	264	15	10	4	9	49	3	16
Total Analysis Volume [veh/h]	27	664	179	76	1057	61	42	15	34	194	13	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	21	0	11	21	0	15	19	0	19	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	34	34	5	37	37	4	4	4	10	11	11
g / C, Green / Cycle	0.04	0.49	0.49	0.08	0.52	0.52	0.06	0.06	0.06	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.21	0.13	0.05	0.33	0.04	0.03	0.01	0.02	0.12	0.01	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	67	1546	690	125	1661	742	91	105	89	235	256	217
d1, Uniform Delay [s]	32.74	11.78	10.67	31.28	12.06	8.42	32.03	31.10	31.58	29.04	25.38	26.37
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.86	0.87	0.91	4.72	1.87	0.22	3.62	0.62	2.68	7.29	0.08	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.43	0.26	0.61	0.64	0.08	0.46	0.14	0.38	0.83	0.05	0.29
d, Delay for Lane Group [s/veh]	36.60	12.65	11.58	36.01	13.93	8.64	35.65	31.72	34.25	36.33	25.46	27.12
Lane Group LOS	D	B	B	D	B	A	D	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.46	2.51	1.31	1.24	4.25	0.35	0.76	0.25	0.60	3.36	0.18	0.91
50th-Percentile Queue Length [ft]	11.53	62.70	32.69	30.97	106.19	8.81	18.98	6.27	15.04	83.91	4.38	22.80
95th-Percentile Queue Length [veh]	0.83	4.51	2.35	2.23	7.63	0.63	1.37	0.45	1.08	6.04	0.32	1.64
95th-Percentile Queue Length [ft]	20.76	112.85	58.85	55.75	190.70	15.86	34.16	11.28	27.07	151.05	7.89	41.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.60	12.65	11.58	36.01	13.93	8.64	35.65	31.72	34.25	36.33	25.46	27.12
Movement LOS	D	B	B	D	B	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	13.17			15.06			34.48			33.63		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.19											
Intersection LOS	B											
Intersection V/C	0.639											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	195	21	13	311	3	5	3	3	40	6	21
Total Analysis Volume [veh/h]	24	779	82	51	1243	13	19	11	13	160	22	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	21	13	0	40	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	0.00	0.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	41	41	4	43	43	2	0	0	12	6	6
g / C, Green / Cycle	0.04	0.59	0.59	0.06	0.61	0.61	0.03	0.00	0.00	0.18	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.06	0.02	0.39	0.01	0.01	0.01	0.01	0.13	0.01	0.06
s, saturation flow rate [veh/h]	1258	3192	1425	2443	3192	1425	1597	1676	1425	1258	1676	1425
c, Capacity [veh/h]	124	1868	834	206	1950	870	53	0	0	303	149	127
d1, Uniform Delay [s]	34.59	7.99	6.41	32.90	8.71	5.37	33.25	0.00	0.00	28.47	29.55	30.99
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.75	0.69	0.24	0.62	1.61	0.03	4.12	0.00	0.00	1.43	0.45	5.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

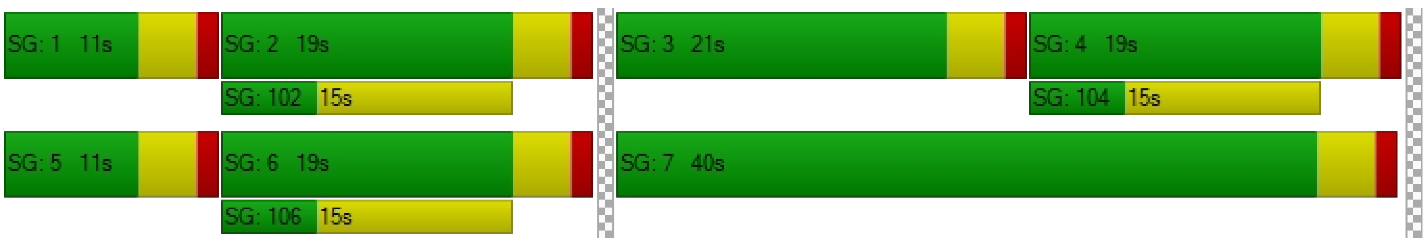
X, volume / capacity	0.19	0.42	0.10	0.25	0.64	0.01	0.36	0.00	0.00	0.53	0.15	0.66
d, Delay for Lane Group [s/veh]	35.34	8.68	6.65	33.52	10.32	5.40	37.36	0.00	0.00	29.90	30.00	36.81
Lane Group LOS	D	A	A	C	B	A	D	A	A	C	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.40	2.25	0.40	0.40	4.01	0.05	0.37	0.00	0.00	2.60	0.35	1.53
50th-Percentile Queue Length [ft]	9.91	56.14	10.09	9.99	100.29	1.34	9.29	0.00	0.00	65.02	8.76	38.33
95th-Percentile Queue Length [veh]	0.71	4.04	0.73	0.72	7.22	0.10	0.67	0.00	0.00	4.68	0.63	2.76
95th-Percentile Queue Length [ft]	17.84	101.05	18.16	17.97	180.52	2.42	16.72	0.00	0.00	117.04	15.77	68.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.34	8.68	6.65	33.52	10.32	5.40	37.36	0.00	0.00	29.90	30.00	36.81
Movement LOS	D	A	A	C	B	A	D	A	A	C	C	D
d_A, Approach Delay [s/veh]		9.22			11.18			16.51			32.09	
Approach LOS		A			B			B			C	
d_I, Intersection Delay [s/veh]	12.80											
Intersection LOS	B											
Intersection V/C	0.694											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	188	1	2	353	26	16	1	34	1	1	2
Total Analysis Volume [veh/h]	98	753	5	7	1410	103	65	5	137	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	33	33	1	28	28	5	7	7	0	3	3
g / C, Green / Cycle	0.10	0.58	0.58	0.01	0.49	0.49	0.08	0.12	0.12	0.01	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.00	0.00	0.44	0.07	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	156	1842	822	21	1572	702	127	204	173	9	80	68
d1, Uniform Delay [s]	24.56	6.63	5.09	27.70	13.07	7.87	25.00	21.92	24.18	28.04	25.77	25.82
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.10	0.15	0.00	8.96	2.07	0.10	3.13	0.05	7.86	18.23	0.33	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.41	0.01	0.33	0.90	0.15	0.51	0.02	0.79	0.32	0.06	0.10
d, Delay for Lane Group [s/veh]	28.67	6.78	5.09	36.66	15.14	7.96	28.13	21.97	32.04	46.27	26.09	26.48
Lane Group LOS	C	A	A	D	B	A	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.24	1.33	0.01	0.13	5.44	0.46	0.89	0.06	2.03	0.09	0.07	0.10
50th-Percentile Queue Length [ft]	30.92	33.22	0.35	3.32	135.94	11.42	22.36	1.44	50.79	2.15	1.69	2.43
95th-Percentile Queue Length [veh]	2.23	2.39	0.02	0.24	9.26	0.82	1.61	0.10	3.66	0.15	0.12	0.18
95th-Percentile Queue Length [ft]	55.65	59.79	0.62	5.98	231.55	20.56	40.24	2.58	91.43	3.87	3.05	4.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.67	6.78	5.09	36.66	15.14	7.96	28.13	21.97	32.04	46.27	26.09	26.48
Movement LOS	C	A	A	D	B	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	9.28			14.75			30.57			30.31		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	14.30											
Intersection LOS	B											
Intersection V/C	0.839											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	180.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.448

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	181	26	6	354	24	18	33	148	58	65	5
Total Analysis Volume [veh/h]	398	726	105	23	1415	97	73	131	594	232	259	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	26	0	39	40	0	44	38	38	17	11	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	53	53	4	36	36	7	34	34	13	40
g / C, Green / Cycle	0.18	0.44	0.44	0.03	0.30	0.30	0.06	0.28	0.28	0.11	0.33
(v / s)_i Volume / Saturation Flow Rate	0.25	0.25	0.25	0.01	0.44	0.07	0.05	0.08	0.42	0.15	0.17
s, saturation flow rate [veh/h]	1597	1676	1603	1597	3192	1425	1597	1676	1425	1597	1656
c, Capacity [veh/h]	279	745	713	50	960	429	92	473	402	173	552
d1, Uniform Delay [s]	49.50	24.78	24.80	57.13	41.95	31.47	55.85	33.52	43.06	53.50	32.05
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	210.55	3.14	3.30	6.47	218.68	1.22	14.23	0.31	227.28	186.98	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

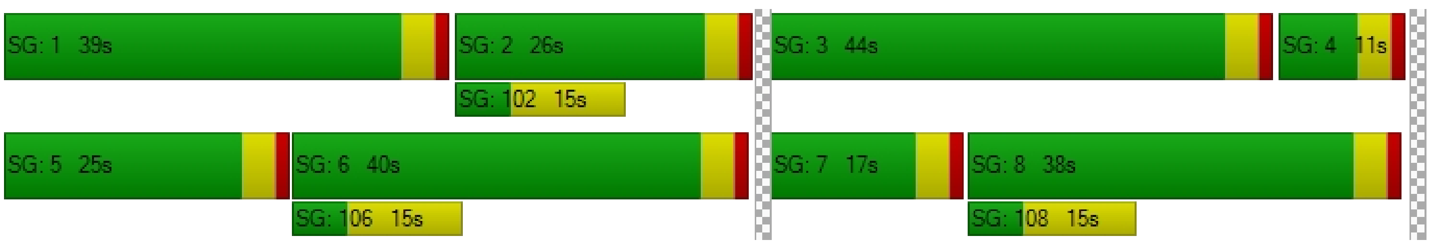
X, volume / capacity	1.42	0.57	0.57	0.46	1.47	0.23	0.80	0.28	1.48	1.34	0.50
d, Delay for Lane Group [s/veh]	260.05	27.91	28.10	63.60	260.62	32.69	70.08	33.83	270.33	240.48	32.76
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.30	8.89	8.56	0.75	42.42	2.15	2.55	3.03	37.20	14.19	6.57
50th-Percentile Queue Length [ft]	607.40	222.14	214.07	18.74	1060.61	53.86	63.64	75.71	929.89	354.85	164.13
95th-Percentile Queue Length [veh]	37.66	13.77	13.36	1.35	64.90	3.88	4.58	5.45	57.37	22.65	10.77
95th-Percentile Queue Length [ft]	941.55	344.36	334.05	33.73	1622.56	96.94	114.56	136.28	1434.25	566.23	269.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	260.05	27.99	28.10	63.60	260.62	32.69	70.08	33.83	270.33	240.48	32.76	32.76
Movement LOS	F	C	C	E	F	C	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	103.15			243.27			213.19			127.25		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	180.55											
Intersection LOS	F											
Intersection V/C	1.448											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.911

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	880	216	311	1696	374	243
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	237	58	84	456	101	65
Total Analysis Volume [veh/h]	946	232	334	1824	402	261
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	26	45	25	25
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	27	17	47	15	15
g / C, Green / Cycle	0.38	0.38	0.24	0.68	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.30	0.16	0.21	0.57	0.13	0.18
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1213	542	379	2154	655	301
d1, Uniform Delay [s]	19.15	16.09	25.78	8.66	25.06	26.70
k, delay calibration	0.50	0.50	0.20	0.50	0.11	0.15
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.00	2.47	11.31	4.35	0.94	10.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

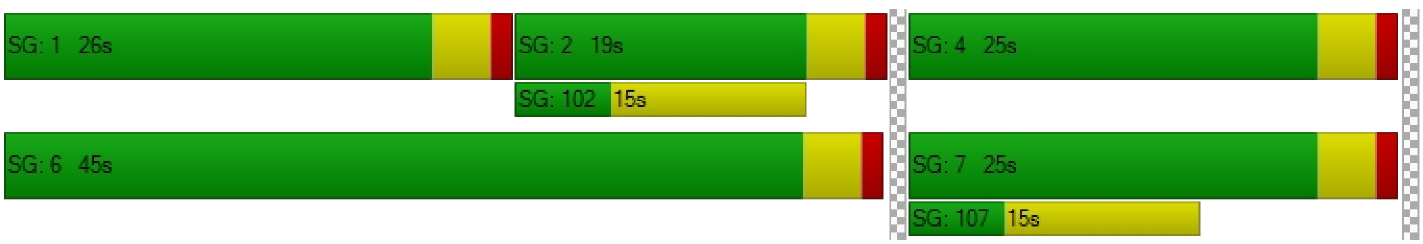
X, volume / capacity	0.78	0.43	0.88	0.85	0.61	0.87
d, Delay for Lane Group [s/veh]	24.14	18.56	37.09	13.01	26.00	36.95
Lane Group LOS	C	B	D	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	6.23	2.59	5.77	6.20	2.97	4.84
50th-Percentile Queue Length [ft]	155.87	64.85	144.15	154.94	74.18	121.09
95th-Percentile Queue Length [veh]	10.33	4.67	9.70	10.28	5.34	8.45
95th-Percentile Queue Length [ft]	258.25	116.74	242.60	257.01	133.52	211.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	24.14	18.56	37.09	13.01	26.00	36.95
Movement LOS	C	B	D	B	C	D
d_A, Approach Delay [s/veh]	23.04		16.74		30.31	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	20.85					
Intersection LOS	C					
Intersection V/C	0.911					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	79	4	3	88	3
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	27	1	1	30	1
Total Analysis Volume [veh/h]	3	108	5	4	120	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.10	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	10.67	8.75	0.00	0.00	7.41	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.35	0.35	0.00	0.00	0.24	0.00
95th-Percentile Queue Length [ft]	8.76	8.76	0.00	0.00	6.03	0.00
d_A, Approach Delay [s/veh]	8.80		0.00		7.18	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.65					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	49	0	0	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	49	0	0	13
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	17	0	0	4
Total Analysis Volume [veh/h]	0	0	66	0	0	18
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	7.31	0.00	9.41	8.37
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.13	0.00	0.05	0.05
95th-Percentile Queue Length [ft]	0.00	0.00	3.18	0.00	1.26	1.26
d_A, Approach Delay [s/veh]	0.00		7.31		8.37	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.54					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	114	147	96	113	94
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	42	55	36	42	35
Total Analysis Volume [veh/h]	115	170	219	143	168	140
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.84	0.53	0.53	1.35	1.19	1.36	0.83
95th-Percentile Queue Length [ft]	20.98	13.30	13.30	33.84	29.80	34.08	20.85
Approach Delay [s/veh]	10.81			11.33		11.44	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.21						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	50	0	0	73	19	13	1	33	2	2	0
Total Analysis Volume [veh/h]	137	200	0	1	293	76	53	4	133	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

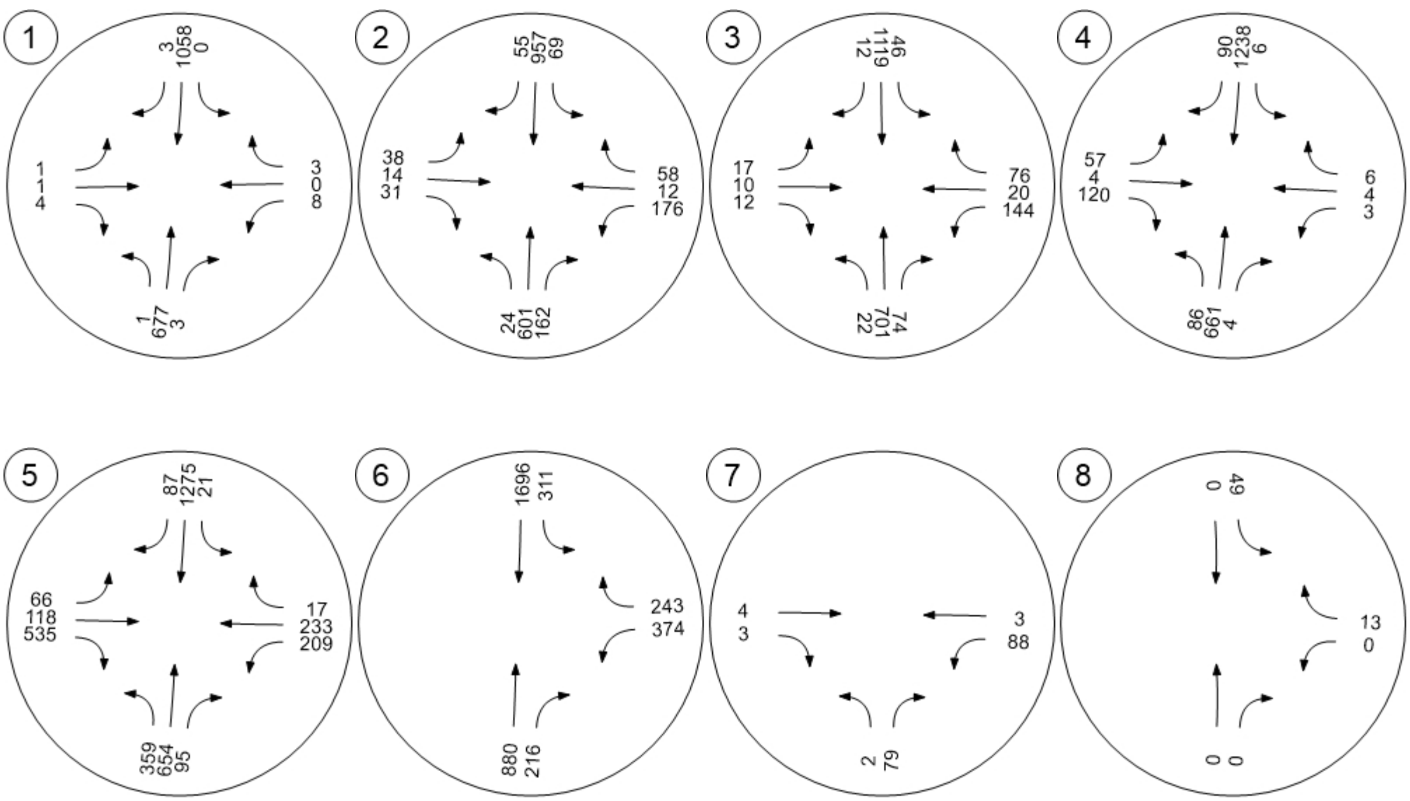
Intersection Settings

Lanes

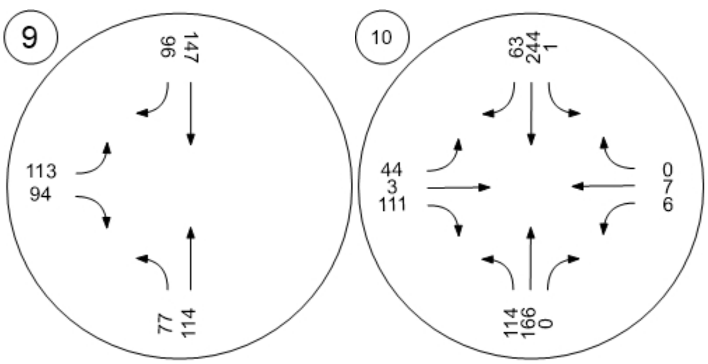
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.12	3.46	0.34	0.02	0.80	0.09
95th-Percentile Queue Length [ft]	77.93	86.50	8.56	0.54	20.09	2.27
Approach Delay [s/veh]	14.84	15.06	10.15			10.28
Approach LOS	B	C	B			B
Intersection Delay [s/veh]	13.88					
Intersection LOS	B					

Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\Existing AM_new.pdf

Scenario 1: Existing AM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Left	0.628	2.8	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	0.639	17.2	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.700	15.2	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.779	15.7	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.448	180.4	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.943	21.0	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.004	10.7	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.182	19.0	C
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.2	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		13.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	2.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	189	1	0	295	1	0	0	1	2	0	1
Total Analysis Volume [veh/h]	1	756	3	0	1181	3	1	1	4	9	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	80	0	11	80	0	0	29	0	0	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	106	0	105	105	2	2	2	2
g / C, Green / Cycle	0.00	0.88	0.00	0.88	0.88	0.02	0.02	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.00	0.45	0.00	0.37	0.00	0.01	0.00	0.11	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	161	1425	80	1425
c, Capacity [veh/h]	7	1474	1	2802	1251	48	28	62	28
d1, Uniform Delay [s]	59.71	1.58	0.00	1.42	0.90	57.88	57.81	59.97	57.77
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.00	1.29	0.00	0.47	0.00	0.35	2.30	1.08	1.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.51	0.00	0.42	0.00	0.04	0.14	0.15	0.11
d, Delay for Lane Group [s/veh]	67.71	2.87	0.00	1.89	0.90	58.23	60.11	61.05	59.43
Lane Group LOS	E	A	A	A	A	E	E	E	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.53	0.00	0.18	0.00	0.06	0.14	0.29	0.10
50th-Percentile Queue Length [ft]	0.57	13.19	0.00	4.54	0.03	1.61	3.44	7.35	2.56
95th-Percentile Queue Length [veh]	0.04	0.95	0.00	0.33	0.00	0.12	0.25	0.53	0.18
95th-Percentile Queue Length [ft]	1.02	23.74	0.00	8.18	0.05	2.90	6.18	13.23	4.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.71	2.87	2.87	0.00	1.89	0.90	58.23	58.23	60.11	61.05	61.05	59.43
Movement LOS	E	A	A	A	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	2.96			1.88			59.49			60.64		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	2.84											
Intersection LOS	A											
Intersection V/C	0.628											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	166	45	19	264	15	10	4	9	49	3	16
Total Analysis Volume [veh/h]	27	664	179	76	1057	61	42	15	34	194	13	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	15	19	0	21	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	34	34	5	37	37	4	4	4	10	11	11
g / C, Green / Cycle	0.04	0.48	0.48	0.08	0.52	0.52	0.06	0.06	0.06	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.21	0.13	0.05	0.33	0.04	0.03	0.01	0.02	0.12	0.01	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	67	1544	689	125	1659	741	91	105	89	236	257	218
d1, Uniform Delay [s]	32.74	11.81	10.70	31.28	12.09	8.45	32.03	31.10	31.57	29.00	25.34	26.33
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.86	0.88	0.91	4.72	1.88	0.22	3.62	0.62	2.67	7.05	0.08	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

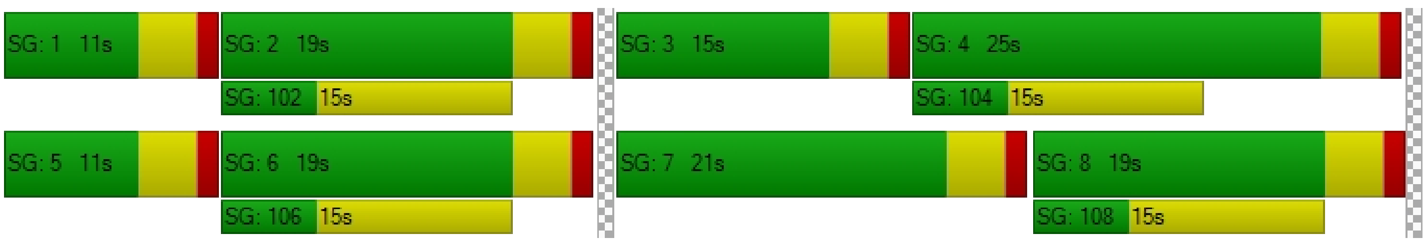
X, volume / capacity	0.40	0.43	0.26	0.61	0.64	0.08	0.46	0.14	0.38	0.82	0.05	0.29
d, Delay for Lane Group [s/veh]	36.60	12.69	11.61	36.01	13.97	8.67	35.65	31.72	34.25	36.05	25.42	27.07
Lane Group LOS	D	B	B	D	B	A	D	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.46	2.51	1.31	1.24	4.26	0.35	0.76	0.25	0.60	3.34	0.18	0.91
50th-Percentile Queue Length [ft]	11.53	62.84	32.77	30.97	106.48	8.83	18.98	6.27	15.04	83.51	4.38	22.77
95th-Percentile Queue Length [veh]	0.83	4.52	2.36	2.23	7.64	0.64	1.37	0.45	1.08	6.01	0.32	1.64
95th-Percentile Queue Length [ft]	20.76	113.11	58.98	55.75	191.10	15.90	34.16	11.28	27.07	150.32	7.88	40.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.60	12.69	11.61	36.01	13.97	8.67	35.65	31.72	34.25	36.05	25.42	27.07
Movement LOS	D	B	B	D	B	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	13.21			15.10			34.48			33.42		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.20											
Intersection LOS	B											
Intersection V/C	0.639											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	195	21	13	311	3	5	3	3	40	6	21
Total Analysis Volume [veh/h]	24	779	82	51	1243	13	19	11	13	160	22	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	11	0	19	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	30	30	4	32	32	2	2	2	8	8	8
g / C, Green / Cycle	0.04	0.50	0.50	0.07	0.53	0.53	0.03	0.04	0.04	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.06	0.02	0.39	0.01	0.01	0.01	0.01	0.10	0.01	0.06
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	64	1595	712	212	1686	752	53	67	57	202	223	190
d1, Uniform Delay [s]	28.15	9.96	7.99	26.54	10.97	6.76	28.46	27.91	27.98	25.51	22.90	24.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.65	1.07	0.33	0.58	2.93	0.04	4.10	1.15	2.03	6.90	0.19	1.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.49	0.12	0.24	0.74	0.02	0.36	0.16	0.23	0.79	0.10	0.44
d, Delay for Lane Group [s/veh]	31.80	11.03	8.32	27.13	13.90	6.80	32.56	29.06	30.01	32.42	23.09	25.64
Lane Group LOS	C	B	A	C	B	A	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.36	2.45	0.44	0.32	4.58	0.06	0.32	0.17	0.21	2.47	0.27	1.12
50th-Percentile Queue Length [ft]	8.93	61.31	10.98	7.91	114.47	1.47	7.98	4.23	5.19	61.72	6.76	28.01
95th-Percentile Queue Length [veh]	0.64	4.41	0.79	0.57	8.09	0.11	0.57	0.30	0.37	4.44	0.49	2.02
95th-Percentile Queue Length [ft]	16.08	110.37	19.76	14.23	202.20	2.65	14.37	7.62	9.33	111.09	12.16	50.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.80	11.03	8.32	27.13	13.90	6.80	32.56	29.06	30.01	32.42	23.09	25.64
Movement LOS	C	B	A	C	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	11.34			14.34			30.89			29.51		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.18											
Intersection LOS	B											
Intersection V/C	0.700											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	188	1	2	353	26	16	1	34	1	1	2
Total Analysis Volume [veh/h]	98	753	5	7	1410	103	65	5	137	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	20	0	11	20	0	20	28	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	44	44	1	39	39	5	8	8	0	4	4
g / C, Green / Cycle	0.09	0.63	0.63	0.01	0.56	0.56	0.07	0.12	0.12	0.01	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.00	0.00	0.44	0.07	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	139	2008	896	23	1777	793	118	203	173	12	92	78
d1, Uniform Delay [s]	31.21	6.33	4.85	34.26	12.36	7.44	31.42	27.21	30.01	34.67	31.47	31.53
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.44	0.54	0.01	7.00	3.74	0.34	4.00	0.05	7.96	10.74	0.24	0.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

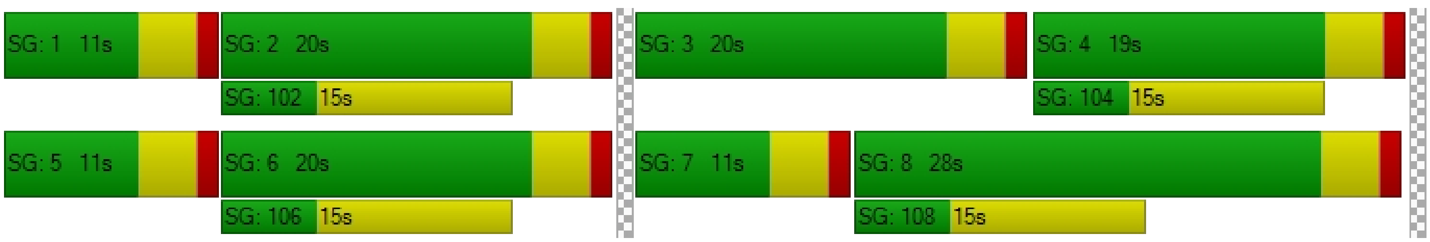
X, volume / capacity	0.71	0.38	0.01	0.30	0.79	0.13	0.55	0.02	0.79	0.25	0.05	0.09
d, Delay for Lane Group [s/veh]	37.65	6.86	4.86	41.27	16.10	7.78	35.42	27.26	37.97	45.42	31.71	32.02
Lane Group LOS	D	A	A	D	B	A	D	C	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.69	1.71	0.02	0.15	6.69	0.58	1.16	0.07	2.54	0.08	0.08	0.12
50th-Percentile Queue Length [ft]	42.18	42.65	0.47	3.80	167.28	14.54	28.98	1.86	63.56	2.12	2.10	3.00
95th-Percentile Queue Length [veh]	3.04	3.07	0.03	0.27	10.93	1.05	2.09	0.13	4.58	0.15	0.15	0.22
95th-Percentile Queue Length [ft]	75.93	76.77	0.84	6.85	273.34	26.18	52.16	3.34	114.41	3.82	3.79	5.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.65	6.86	4.86	41.27	16.10	7.78	35.42	27.26	37.97	45.42	31.71	32.02
Movement LOS	D	A	A	D	B	A	D	C	D	D	C	C
d_A, Approach Delay [s/veh]		10.38			15.65			36.91			34.60	
Approach LOS		B			B			D			C	
d_I, Intersection Delay [s/veh]	15.72											
Intersection LOS	B											
Intersection V/C	0.779											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	180.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.448

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	181	26	6	354	24	18	33	148	58	65	5
Total Analysis Volume [veh/h]	398	726	105	23	1415	97	73	131	594	232	259	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	26	0	39	40	0	37	39	39	16	18	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	53	53	4	36	36	7	35	35	12	40
g / C, Green / Cycle	0.18	0.44	0.44	0.03	0.30	0.30	0.06	0.29	0.29	0.10	0.33
(v / s)_i Volume / Saturation Flow Rate	0.25	0.25	0.25	0.01	0.44	0.07	0.05	0.08	0.42	0.15	0.17
s, saturation flow rate [veh/h]	1597	1676	1603	1597	3192	1425	1597	1676	1425	1597	1656
c, Capacity [veh/h]	279	746	713	50	961	429	92	487	414	160	552
d1, Uniform Delay [s]	49.50	24.75	24.78	57.13	41.93	31.45	55.86	32.77	42.57	54.00	32.07
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	210.55	3.13	3.29	6.47	218.11	1.22	14.34	0.29	209.17	235.00	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

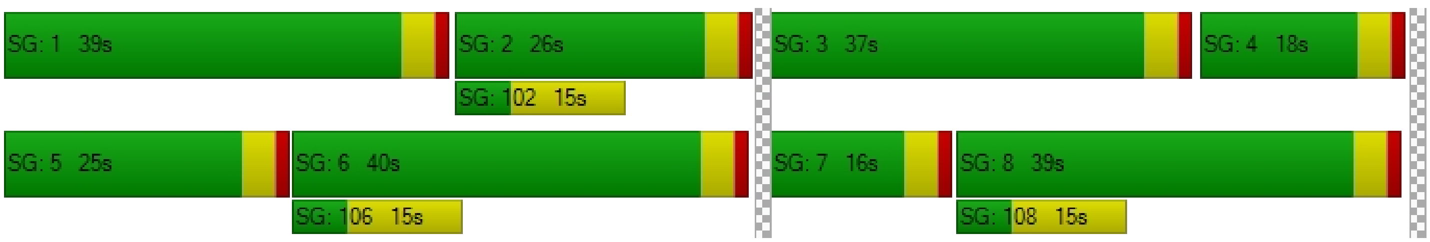
X, volume / capacity	1.42	0.57	0.57	0.46	1.47	0.23	0.80	0.27	1.43	1.45	0.50
d, Delay for Lane Group [s/veh]	260.05	27.89	28.07	63.60	260.04	32.67	70.20	33.06	251.74	289.00	32.78
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.30	8.88	8.56	0.75	42.39	2.15	2.55	2.99	36.16	15.24	6.57
50th-Percentile Queue Length [ft]	607.40	222.06	213.99	18.74	1059.69	53.84	63.70	74.70	903.89	380.96	164.14
95th-Percentile Queue Length [veh]	37.66	13.77	13.36	1.35	64.83	3.88	4.59	5.38	55.46	24.51	10.77
95th-Percentile Queue Length [ft]	941.55	344.25	333.94	33.73	1620.82	96.91	114.66	134.46	1386.55	612.71	269.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	260.05	27.96	28.07	63.60	260.04	32.67	70.20	33.06	251.74	289.00	32.78	32.78
Movement LOS	F	C	C	E	F	C	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	103.13			242.73			199.24			149.34		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	180.38											
Intersection LOS	F											
Intersection V/C	1.448											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.943

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	880	216	311	1696	374	243
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	237	58	84	456	101	65
Total Analysis Volume [veh/h]	946	232	334	1824	402	261
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	22	41	19	19
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	14	39	13	13
g / C, Green / Cycle	0.35	0.35	0.24	0.66	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.30	0.16	0.21	0.57	0.13	0.18
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1108	495	385	2089	659	303
d1, Uniform Delay [s]	18.22	15.31	21.92	8.38	21.44	22.84
k, delay calibration	0.50	0.50	0.21	0.50	0.11	0.22
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.40	3.17	10.92	5.41	0.92	13.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

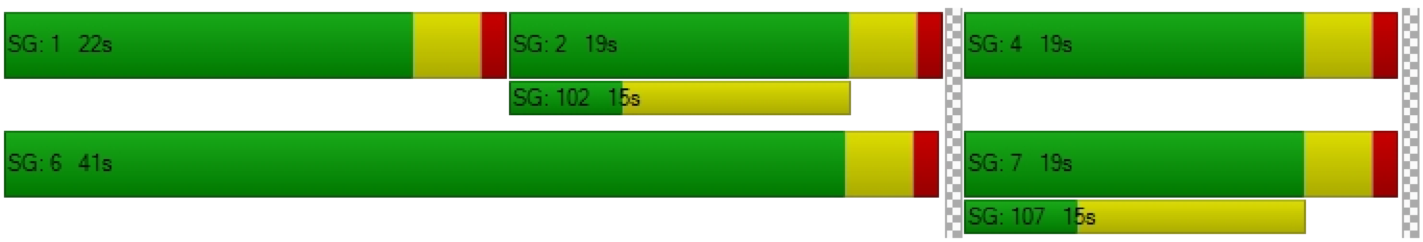
X, volume / capacity	0.85	0.47	0.87	0.87	0.61	0.86
d, Delay for Lane Group [s/veh]	26.62	18.48	32.84	13.79	22.36	36.50
Lane Group LOS	C	B	C	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	5.90	2.33	4.83	5.26	2.46	4.43
50th-Percentile Queue Length [ft]	147.40	58.33	120.65	131.38	61.42	110.79
95th-Percentile Queue Length [veh]	9.88	4.20	8.43	9.02	4.42	7.88
95th-Percentile Queue Length [ft]	246.96	105.00	210.72	225.38	110.56	197.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.62	18.48	32.84	13.79	22.36	36.50
Movement LOS	C	B	C	B	C	D
d_A, Approach Delay [s/veh]	25.02		16.74		27.92	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	21.03					
Intersection LOS	C					
Intersection V/C	0.943					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	79	4	3	88	3
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	27	1	1	30	1
Total Analysis Volume [veh/h]	3	108	5	4	120	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.10	0.00	0.00	0.07	0.00
d_M, Delay for Movement [s/veh]	10.67	8.75	0.00	0.00	7.41	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.35	0.35	0.00	0.00	0.24	0.00
95th-Percentile Queue Length [ft]	8.76	8.76	0.00	0.00	6.03	0.00
d_A, Approach Delay [s/veh]	8.80		0.00		7.18	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.65					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	19.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.182

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	189	13	94	138	49	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	189	13	94	138	49	127
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	4	32	47	17	43
Total Analysis Volume [veh/h]	255	18	127	186	66	172
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.10	0.00	0.18	0.22
d_M, Delay for Movement [s/veh]	0.00	0.00	8.09	0.00	18.97	13.72
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.33	0.00	1.94	1.94
95th-Percentile Queue Length [ft]	0.00	0.00	8.17	0.00	48.60	48.60
d_A, Approach Delay [s/veh]	0.00		3.28		15.17	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	5.63					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	114	147	96	113	94
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	42	55	36	42	35
Total Analysis Volume [veh/h]	115	170	219	143	168	140
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.84	0.53	0.53	1.35	1.19	1.36	0.83
95th-Percentile Queue Length [ft]	20.98	13.30	13.30	33.84	29.80	34.08	20.85
Approach Delay [s/veh]	10.81			11.33		11.44	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.21						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	50	0	0	73	19	13	1	33	2	2	0
Total Analysis Volume [veh/h]	137	200	0	1	293	76	53	4	133	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

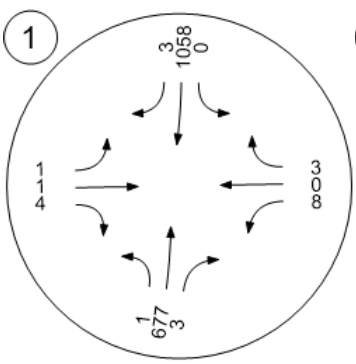
Lanes

Movement, Approach, & Intersection Results

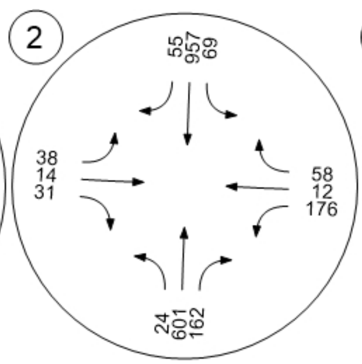
95th-Percentile Queue Length [veh]	3.12	3.46	0.34	0.02	0.80	0.09
95th-Percentile Queue Length [ft]	77.93	86.50	8.56	0.54	20.09	2.27
Approach Delay [s/veh]	14.84	15.06	10.15			10.28
Approach LOS	B	C	B			B
Intersection Delay [s/veh]	13.88					
Intersection LOS	B					

Traffic Volume - Future Total Volume

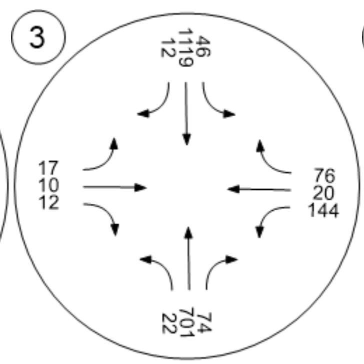
Winchester Road at Keller Ro



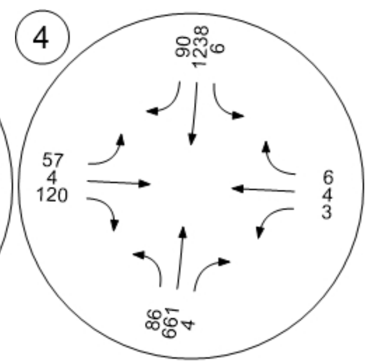
Winchester Road at Pourroy



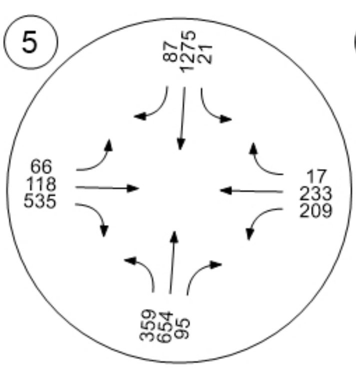
Winchester Road at Whisper



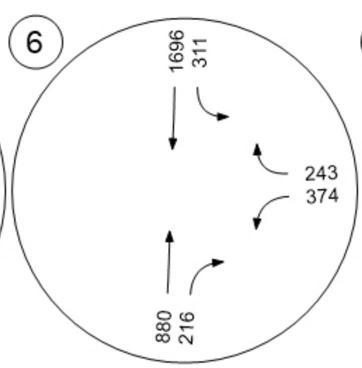
Winchester Road at Jean Nic



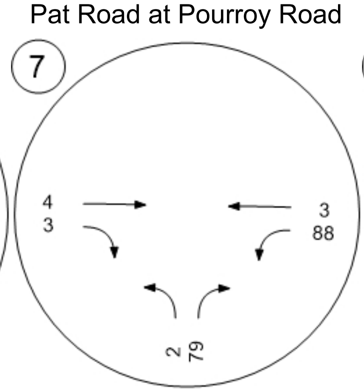
Winchester Road at Max Gilli



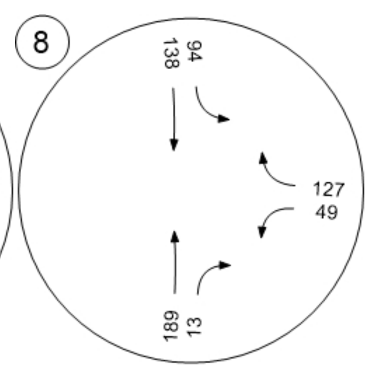
Winchester Road at Benton



Pat Road at Pourroy Road

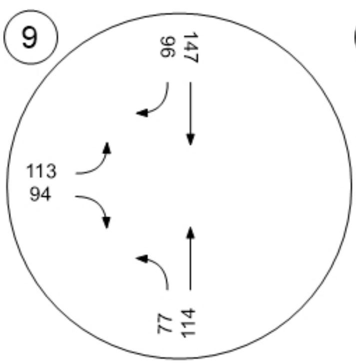


Jean Nicholas Road at Elliot

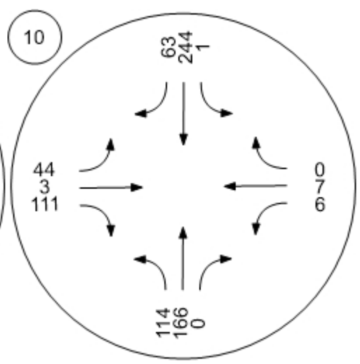


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs.vistro

Report File: Q:\...\Existing PM.pdf

Scenario 2: Existing PM

10/5/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.843	5.5	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	0.484	12.5	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.634	12.8	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.658	8.9	A
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.258	144.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.196	86.8	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.003	9.5	A
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.000	9.2	A
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		10.0	A
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		16.1	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	5.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	301	1	1	214	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1203	3	2	858	1	2	2	1	3	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	89	0	11	89	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.89	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.72	0.00	0.27	0.00	0.04	0.00	0.03	0.00
s, saturation flow rate [veh/h]	3101	1676	1597	3192	1425	105	1425	92	1425
c, Capacity [veh/h]	24	1485	7	2818	1258	46	13	61	13
d1, Uniform Delay [s]	59.13	2.77	59.55	1.13	0.82	59.97	58.90	59.97	58.90
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	4.94	22.54	0.28	0.00	0.80	2.32	0.33	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.81	0.30	0.30	0.00	0.09	0.07	0.05	0.07
d, Delay for Lane Group [s/veh]	62.35	7.71	82.09	1.41	0.83	60.78	61.22	60.30	61.22
Lane Group LOS	E	A	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.07	2.04	0.10	0.11	0.00	0.13	0.04	0.10	0.04
50th-Percentile Queue Length [ft]	1.70	51.00	2.50	2.73	0.01	3.31	0.97	2.43	0.97
95th-Percentile Queue Length [veh]	0.12	3.67	0.18	0.20	0.00	0.24	0.07	0.17	0.07
95th-Percentile Queue Length [ft]	3.06	91.81	4.49	4.92	0.02	5.95	1.75	4.37	1.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	7.71	7.71	82.09	1.41	0.83	60.78	60.78	61.22	60.30	60.30	61.22
Movement LOS	E	A	A	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	7.89			1.59			60.87			60.53		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	5.51											
Intersection LOS	A											
Intersection V/C	0.843											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.484

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Peak Hour Factor	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	288	35	9	201	4	4	1	4	23	2	6
Total Analysis Volume [veh/h]	15	1152	138	35	803	15	14	5	18	93	7	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	7	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	17	22	0	29	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		Yes	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	66	66	4	68	68	2	18	4	10	12	12
g / C, Green / Cycle	0.02	0.66	0.66	0.04	0.68	0.68	0.02	0.18	0.04	0.10	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.36	0.10	0.02	0.25	0.01	0.01	0.01	0.01	0.07	0.00	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1511	1297	1265	1676	1425
c, Capacity [veh/h]	39	2100	937	70	2162	965	26	378	49	169	205	174
d1, Uniform Delay [s]	48.07	9.17	6.49	46.74	6.96	5.26	48.73	33.98	46.97	46.00	38.73	39.26
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.06	1.04	0.33	5.32	0.49	0.03	8.89	0.03	4.51	2.75	0.07	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

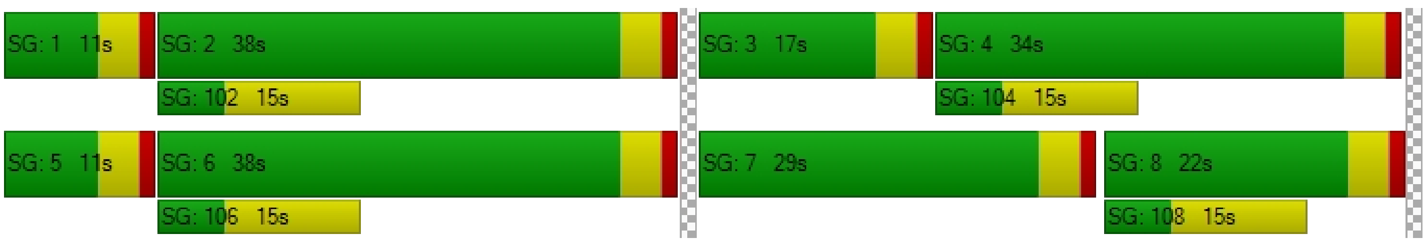
X, volume / capacity	0.38	0.55	0.15	0.50	0.37	0.02	0.38	0.02	0.37	0.55	0.03	0.14
d, Delay for Lane Group [s/veh]	54.13	10.21	6.82	52.06	7.45	5.29	57.62	34.01	51.48	48.75	38.80	39.63
Lane Group LOS	D	B	A	D	A	A	E	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.41	4.82	0.85	0.89	2.54	0.08	0.30	0.19	0.50	2.35	0.15	0.55
50th-Percentile Queue Length [ft]	10.22	120.44	21.29	22.37	63.55	1.89	7.61	4.70	12.43	58.66	3.76	13.71
95th-Percentile Queue Length [veh]	0.74	8.42	1.53	1.61	4.58	0.14	0.55	0.34	0.89	4.22	0.27	0.99
95th-Percentile Queue Length [ft]	18.39	210.43	38.33	40.26	114.38	3.40	13.69	8.46	22.37	105.60	6.77	24.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.13	10.21	6.82	52.06	7.45	5.29	50.32	34.01	51.48	48.75	38.80	39.63
Movement LOS	D	B	A	D	A	A	D	C	D	D	D	D
d_A, Approach Delay [s/veh]	10.35			9.24			48.74			46.37		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	12.50											
Intersection LOS	B											
Intersection V/C	0.484											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.634

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	318	45	22	236	2	2	4	6	31	7	15
Total Analysis Volume [veh/h]	24	1272	180	87	945	8	6	15	25	123	27	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	25	59	0	11	45	0	11	37	0	30	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	0.00	0.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	68	68	7	71	71	1	0	0	14	8	8
g / C, Green / Cycle	0.03	0.68	0.68	0.07	0.71	0.71	0.01	0.00	0.00	0.14	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.02	0.40	0.13	0.04	0.30	0.01	0.00	0.01	0.02	0.10	0.02	0.04
s, saturation flow rate [veh/h]	1253	3192	1425	2434	3192	1425	1597	1676	1425	1253	1676	1425
c, Capacity [veh/h]	90	2161	965	188	2270	1013	17	0	0	214	141	120
d1, Uniform Delay [s]	49.45	8.67	5.97	47.04	5.93	4.20	49.11	0.00	0.00	43.62	42.64	43.83
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.56	1.18	0.43	1.77	0.56	0.01	11.51	0.00	0.00	2.44	0.65	3.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.59	0.19	0.46	0.42	0.01	0.35	0.00	0.00	0.58	0.19	0.51
d, Delay for Lane Group [s/veh]	51.01	9.86	6.40	48.81	6.49	4.21	60.62	0.00	0.00	46.05	43.30	47.16
Lane Group LOS	D	A	A	D	A	A	E	A	A	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.61	5.62	1.14	1.06	2.87	0.04	0.20	0.00	0.00	3.11	0.64	1.55
50th-Percentile Queue Length [ft]	15.26	140.47	28.50	26.45	71.87	0.91	5.12	0.00	0.00	77.74	16.11	38.69
95th-Percentile Queue Length [veh]	1.10	9.51	2.05	1.90	5.17	0.07	0.37	0.00	0.00	5.60	1.16	2.79
95th-Percentile Queue Length [ft]	27.47	237.66	51.31	47.60	129.36	1.63	9.21	0.00	0.00	139.94	29.00	69.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.01	9.86	6.40	48.81	6.49	4.21	60.62	0.00	0.00	46.05	43.30	47.16
Movement LOS	D	A	A	D	A	A	E	A	A	D	D	D
d_A, Approach Delay [s/veh]		10.10			10.02			7.91			46.02	
Approach LOS		B			B			A			D	
d_I, Intersection Delay [s/veh]	12.77											
Intersection LOS	B											
Intersection V/C	0.634											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.658

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Peak Hour Factor	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	326	1	1	219	11	22	0	21	1	1	3
Total Analysis Volume [veh/h]	151	1306	5	2	878	46	90	1	84	5	2	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	75	61	0	14	43	0	45	34	0	11	70	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	0.00	0.00	4.00	4.00	4.00	4.00	0.00	0.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	2.00	0.00	0.00
g_i, Effective Green Time [s]	90	85	85	0	0	0	22	17	17	1	0	0
g / C, Green / Cycle	0.75	0.71	0.71	0.00	0.00	0.00	0.19	0.14	0.14	0.01	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.27	0.41	0.00	0.00	0.28	0.03	0.16	0.00	0.06	0.01	0.00	0.01
s, saturation flow rate [veh/h]	565	3192	1425	1268	3192	1425	565	1676	1425	566	1676	1425
c, Capacity [veh/h]	473	2262	1010	60	0	0	156	243	207	60	0	0
d1, Uniform Delay [s]	5.96	8.62	5.11	60.00	0.00	0.00	49.19	43.87	46.59	60.00	0.00	0.00
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.78	1.08	0.01	0.22	0.00	0.00	3.34	0.01	1.28	0.59	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

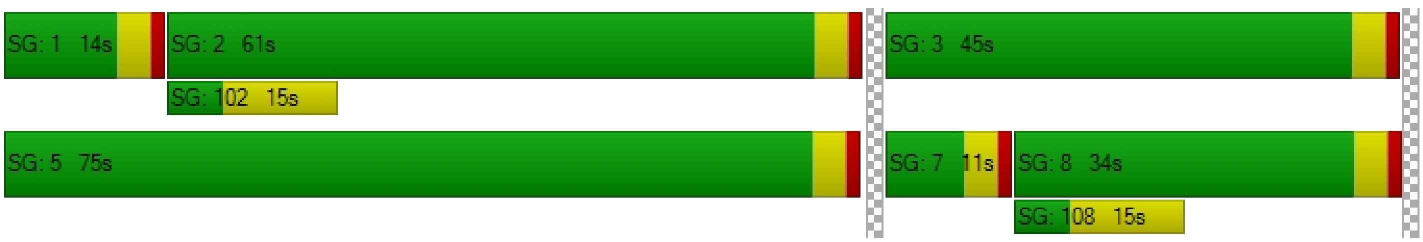
X, volume / capacity	0.32	0.58	0.00	0.03	0.00	0.00	0.58	0.00	0.41	0.08	0.00	0.00
d, Delay for Lane Group [s/veh]	7.74	9.70	5.12	60.22	0.00	0.00	52.53	43.88	47.87	60.59	0.00	0.00
Lane Group LOS	A	A	A	E	A	A	D	D	D	E	A	A
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	No
50th-Percentile Queue Length [veh]	1.26	6.62	0.03	0.06	0.00	0.00	2.80	0.03	2.36	0.16	0.00	0.00
50th-Percentile Queue Length [ft]	31.42	165.46	0.77	1.56	0.00	0.00	69.98	0.65	59.00	4.08	0.00	0.00
95th-Percentile Queue Length [veh]	2.26	10.84	0.06	0.11	0.00	0.00	5.04	0.05	4.25	0.29	0.00	0.00
95th-Percentile Queue Length [ft]	56.56	270.94	1.39	2.81	0.00	0.00	125.96	1.17	106.21	7.35	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.74	9.70	5.12	60.22	0.00	0.00	52.53	43.88	47.87	60.59	0.00	0.00
Movement LOS	A	A	A	E	A	A	D	D	D	E	A	A
d_A, Approach Delay [s/veh]	9.48			0.13			50.24			17.82		
Approach LOS	A			A			D			B		
d_I, Intersection Delay [s/veh]	8.94											
Intersection LOS	A											
Intersection V/C	0.658											

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	144.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.258

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Peak Hour Factor	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	360	53	7	222	16	20	47	144	45	36	5
Total Analysis Volume [veh/h]	467	1442	214	30	890	65	79	186	578	181	142	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	51	51	4	27	27	7	38	38	11	42
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.06	0.32	0.32	0.09	0.35
(v / s)_i Volume / Saturation Flow Rate	0.29	0.49	0.52	0.02	0.28	0.05	0.05	0.11	0.41	0.11	0.10
s, saturation flow rate [veh/h]	1597	1676	1603	1597	3192	1425	1597	1676	1425	1597	1639
c, Capacity [veh/h]	373	708	677	59	721	322	99	529	450	146	566
d1, Uniform Delay [s]	46.00	34.66	34.66	56.72	46.44	37.66	55.54	31.61	41.06	54.50	28.55
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	134.37	90.87	113.08	6.65	117.06	1.41	13.53	0.40	144.26	151.55	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

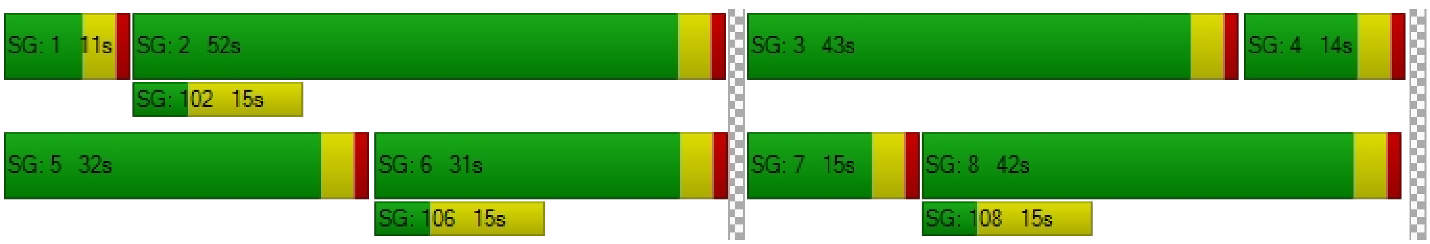
X, volume / capacity	1.25	1.17	1.22	0.51	1.23	0.20	0.80	0.35	1.28	1.24	0.29
d, Delay for Lane Group [s/veh]	180.37	125.53	147.74	63.37	163.50	39.07	69.07	32.00	185.32	206.05	28.83
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.37	36.57	39.15	0.97	21.88	1.61	2.73	4.22	31.11	10.58	3.47
50th-Percentile Queue Length [ft]	609.25	914.25	978.83	24.19	547.09	40.26	68.27	105.60	777.83	264.43	86.71
95th-Percentile Queue Length [veh]	36.52	51.82	56.56	1.74	32.93	2.90	4.92	7.59	46.51	17.13	6.24
95th-Percentile Queue Length [ft]	912.94	1295.61	1414.09	43.53	823.35	72.47	122.89	189.87	1162.64	428.37	156.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	180.37	134.98	147.74	63.37	163.50	39.07	69.07	32.00	185.32	206.05	28.83	28.83
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	146.25			152.24			140.60			122.07		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	144.58											
Intersection LOS	F											
Intersection V/C	1.258											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	86.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.196

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1546	392	314	1216	304	451
Peak Hour Factor	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	417	106	85	328	82	122
Total Analysis Volume [veh/h]	1668	423	339	1312	328	487
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.52	0.30	0.21	0.41	0.11	0.34
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.43	48.95	12.48	34.44	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	100.29	6.10	101.54	1.48	0.26	113.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.69	1.16	0.63	0.37	1.21
d, Delay for Lane Group [s/veh]	134.30	33.53	150.49	13.96	34.70	156.92
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	37.36	9.99	16.60	8.94	3.88	24.61
50th-Percentile Queue Length [ft]	934.03	249.79	415.11	223.50	97.08	615.31
95th-Percentile Queue Length [veh]	53.88	15.18	25.00	13.84	6.99	36.45
95th-Percentile Queue Length [ft]	1347.06	379.39	625.09	346.09	174.74	911.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	134.30	33.53	150.49	13.96	34.70	156.92
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	113.91		41.99		107.73	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	86.75					
Intersection LOS	F					
Intersection V/C	1.196					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	82	4	1	27	5
Peak Hour Factor	0.6720	0.6720	0.6720	0.6720	0.6720	0.6720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	31	1	0	10	2
Total Analysis Volume [veh/h]	3	122	6	1	40	7
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.11	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	9.52	8.79	0.00	0.00	7.29	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.40	0.40	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	9.88	9.88	0.00	0.00	1.91	0.00
d_A, Approach Delay [s/veh]	8.81		0.00		6.20	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.78					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	37	0	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	37	0	0	33
Peak Hour Factor	0.8260	0.8260	0.8260	0.8260	0.8260	0.8260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	11	0	0	10
Total Analysis Volume [veh/h]	0	0	45	0	0	40
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.00	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	7.28	0.00	9.19	8.44
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.09	0.00	0.11	0.11
95th-Percentile Queue Length [ft]	0.00	0.00	2.14	0.00	2.87	2.87
d_A, Approach Delay [s/veh]	0.00		7.28		8.44	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.83					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	182	128	83	102	82
Peak Hour Factor	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	56	40	26	32	25
Total Analysis Volume [veh/h]	69	226	159	103	126	102
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.42	0.67	0.67	0.82	0.73	0.87	0.53
95th-Percentile Queue Length [ft]	10.40	16.82	16.82	20.51	18.19	21.79	13.25
Approach Delay [s/veh]	9.93			9.87		10.17	
Approach LOS	A			A		B	
Intersection Delay [s/veh]	9.98						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	16.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Peak Hour Factor	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	72	2	1	52	16	23	1	28	1	1	0
Total Analysis Volume [veh/h]	157	288	8	4	207	66	90	5	114	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

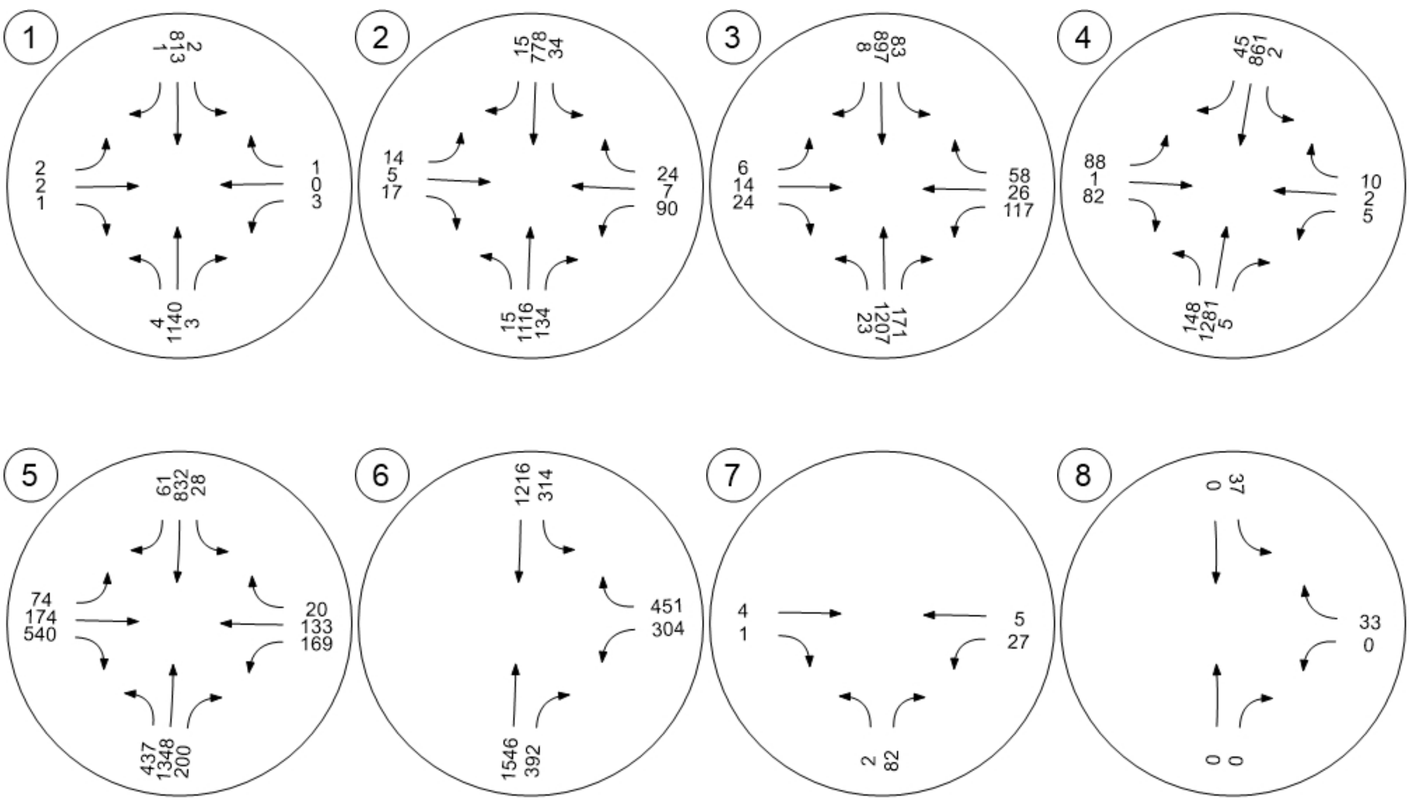
Intersection Settings

Lanes

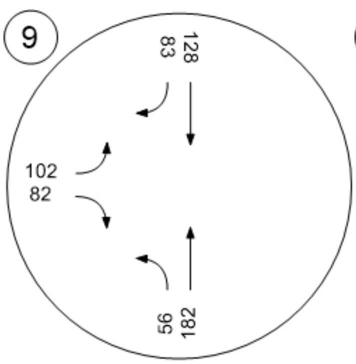
Movement, Approach, & Intersection Results

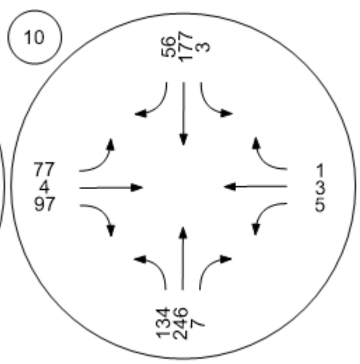
95th-Percentile Queue Length [veh]	5.75	2.18	0.64	0.03	0.68	0.07
95th-Percentile Queue Length [ft]	143.87	54.57	15.93	0.69	16.90	1.68
Approach Delay [s/veh]	20.81	12.84	10.48			10.34
Approach LOS	C	B	B			B
Intersection Delay [s/veh]	16.09					
Intersection LOS	C					

Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume





Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\Existing PM_new.pdf

Scenario 2: Existing PM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.843	5.5	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	0.484	12.5	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.675	15.6	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Left	0.614	13.0	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.258	144.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.196	86.8	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.003	9.5	A
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.081	13.2	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		10.0	A
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		16.1	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	5.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Peak Hour Factor	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	301	1	1	214	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1203	3	2	858	1	2	2	1	3	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	89	0	11	89	0	0	20	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.89	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.72	0.00	0.27	0.00	0.04	0.00	0.03	0.00
s, saturation flow rate [veh/h]	3101	1676	1597	3192	1425	105	1425	92	1425
c, Capacity [veh/h]	24	1485	7	2818	1258	46	13	61	13
d1, Uniform Delay [s]	59.13	2.77	59.55	1.13	0.82	59.97	58.90	59.97	58.90
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	4.94	22.54	0.28	0.00	0.80	2.32	0.33	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.81	0.30	0.30	0.00	0.09	0.07	0.05	0.07
d, Delay for Lane Group [s/veh]	62.35	7.71	82.09	1.41	0.83	60.78	61.22	60.30	61.22
Lane Group LOS	E	A	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh]	0.07	2.04	0.10	0.11	0.00	0.13	0.04	0.10	0.04
50th-Percentile Queue Length [ft]	1.70	51.00	2.50	2.73	0.01	3.31	0.97	2.43	0.97
95th-Percentile Queue Length [veh]	0.12	3.67	0.18	0.20	0.00	0.24	0.07	0.17	0.07
95th-Percentile Queue Length [ft]	3.06	91.81	4.49	4.92	0.02	5.95	1.75	4.37	1.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	7.71	7.71	82.09	1.41	0.83	60.78	60.78	61.22	60.30	60.30	61.22
Movement LOS	E	A	A	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	7.89			1.59			60.87			60.53		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	5.51											
Intersection LOS	A											
Intersection V/C	0.843											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.484

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Peak Hour Factor	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690	0.9690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	288	35	9	201	4	4	1	4	23	2	6
Total Analysis Volume [veh/h]	15	1152	138	35	803	15	14	5	18	93	7	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	7	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	17	22	0	29	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		Yes	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	66	66	4	68	68	2	18	4	10	12	12
g / C, Green / Cycle	0.02	0.66	0.66	0.04	0.68	0.68	0.02	0.18	0.04	0.10	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.36	0.10	0.02	0.25	0.01	0.01	0.01	0.01	0.07	0.00	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1511	1297	1265	1676	1425
c, Capacity [veh/h]	39	2100	937	70	2162	965	26	378	49	169	205	174
d1, Uniform Delay [s]	48.07	9.17	6.49	46.74	6.96	5.26	48.73	33.98	46.97	46.00	38.73	39.26
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.06	1.04	0.33	5.32	0.49	0.03	8.89	0.03	4.51	2.75	0.07	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

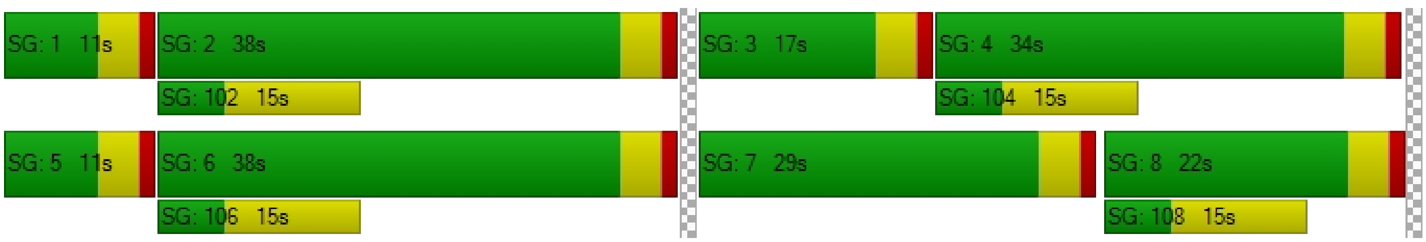
X, volume / capacity	0.38	0.55	0.15	0.50	0.37	0.02	0.38	0.02	0.37	0.55	0.03	0.14
d, Delay for Lane Group [s/veh]	54.13	10.21	6.82	52.06	7.45	5.29	57.62	34.01	51.48	48.75	38.80	39.63
Lane Group LOS	D	B	A	D	A	A	E	C	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.41	4.82	0.85	0.89	2.54	0.08	0.30	0.19	0.50	2.35	0.15	0.55
50th-Percentile Queue Length [ft]	10.22	120.44	21.29	22.37	63.55	1.89	7.61	4.70	12.43	58.66	3.76	13.71
95th-Percentile Queue Length [veh]	0.74	8.42	1.53	1.61	4.58	0.14	0.55	0.34	0.89	4.22	0.27	0.99
95th-Percentile Queue Length [ft]	18.39	210.43	38.33	40.26	114.38	3.40	13.69	8.46	22.37	105.60	6.77	24.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.13	10.21	6.82	52.06	7.45	5.29	50.32	34.01	51.48	48.75	38.80	39.63
Movement LOS	D	B	A	D	A	A	D	C	D	D	D	D
d_A, Approach Delay [s/veh]	10.35			9.24			48.74			46.37		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	12.50											
Intersection LOS	B											
Intersection V/C	0.484											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Peak Hour Factor	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	318	45	22	236	2	2	4	6	31	7	15
Total Analysis Volume [veh/h]	24	1272	180	87	945	8	6	15	25	123	27	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	11	0	29	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	38	38	6	41	41	1	4	4	7	10	10
g / C, Green / Cycle	0.04	0.54	0.54	0.08	0.58	0.58	0.01	0.05	0.05	0.10	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.40	0.13	0.03	0.30	0.01	0.00	0.01	0.02	0.08	0.02	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	61	1710	763	256	1851	826	19	92	79	157	237	202
d1, Uniform Delay [s]	32.92	12.57	8.65	30.37	8.79	6.23	34.36	31.59	31.86	30.88	26.26	26.99
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.02	2.98	0.73	0.78	1.01	0.02	9.07	0.81	2.29	8.20	0.21	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

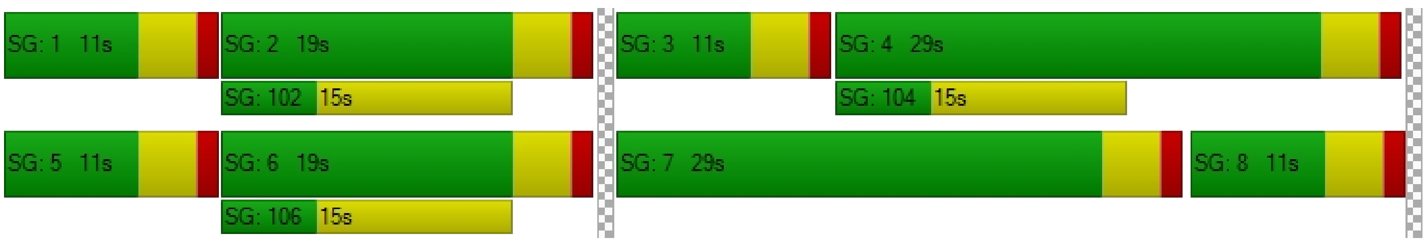
X, volume / capacity	0.39	0.74	0.24	0.34	0.51	0.01	0.31	0.16	0.32	0.78	0.11	0.30
d, Delay for Lane Group [s/veh]	36.94	15.55	9.38	31.15	9.80	6.25	43.43	32.40	34.16	39.08	26.47	27.82
Lane Group LOS	D	B	A	C	A	A	D	C	C	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.43	5.98	1.18	0.65	3.03	0.04	0.15	0.26	0.45	2.31	0.39	0.93
50th-Percentile Queue Length [ft]	10.67	149.58	29.55	16.18	75.78	0.95	3.70	6.48	11.26	57.84	9.84	23.21
95th-Percentile Queue Length [veh]	0.77	9.99	2.13	1.17	5.46	0.07	0.27	0.47	0.81	4.16	0.71	1.67
95th-Percentile Queue Length [ft]	19.20	249.87	53.18	29.13	136.40	1.71	6.66	11.66	20.28	104.12	17.71	41.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.94	15.55	9.38	31.15	9.80	6.25	43.43	32.40	34.16	39.08	26.47	27.82
Movement LOS	D	B	A	C	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	15.14			11.56			34.79			34.21		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.58											
Intersection LOS	B											
Intersection V/C	0.675											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Peak Hour Factor	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810	0.9810
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	326	1	1	219	11	22	0	21	1	1	3
Total Analysis Volume [veh/h]	151	1306	5	2	878	46	90	1	84	5	2	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	27	0	13	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	46	46	0	38	38	6	7	7	1	2	2
g / C, Green / Cycle	0.12	0.66	0.66	0.00	0.55	0.55	0.08	0.10	0.10	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.09	0.41	0.00	0.00	0.28	0.03	0.06	0.00	0.06	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	190	2106	940	9	1743	778	135	161	137	18	38	32
d1, Uniform Delay [s]	30.10	6.89	4.08	34.78	9.99	7.48	31.21	28.73	30.51	34.46	33.59	33.79
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.28	1.39	0.01	12.36	1.04	0.15	5.60	0.02	4.41	8.43	0.57	5.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

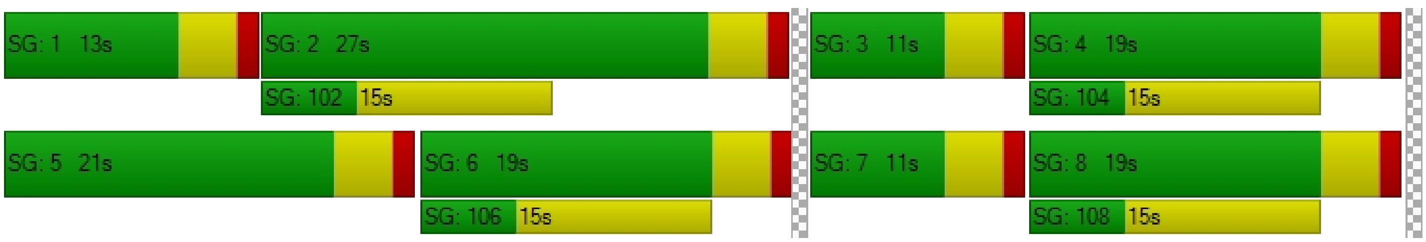
X, volume / capacity	0.79	0.62	0.01	0.23	0.50	0.06	0.67	0.01	0.61	0.28	0.05	0.31
d, Delay for Lane Group [s/veh]	37.38	8.27	4.09	47.14	11.03	7.63	36.81	28.74	34.92	42.89	34.16	39.07
Lane Group LOS	D	A	A	D	B	A	D	C	C	D	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.58	3.24	0.02	0.06	3.15	0.26	1.64	0.02	1.48	0.12	0.04	0.21
50th-Percentile Queue Length [ft]	64.48	81.06	0.39	1.53	78.63	6.46	40.93	0.39	37.09	3.09	0.96	5.26
95th-Percentile Queue Length [veh]	4.64	5.84	0.03	0.11	5.66	0.47	2.95	0.03	2.67	0.22	0.07	0.38
95th-Percentile Queue Length [ft]	116.07	145.91	0.70	2.75	141.53	11.63	73.67	0.69	66.76	5.57	1.73	9.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	37.38	8.27	4.09	47.14	11.03	7.63	36.81	28.74	34.92	42.89	34.16	39.07
Movement LOS	D	A	A	D	B	A	D	C	C	D	C	D
d_A, Approach Delay [s/veh]	11.26			10.94			35.86			39.62		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	13.00											
Intersection LOS	B											
Intersection V/C	0.614											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	144.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.258

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Peak Hour Factor	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	360	53	7	222	16	20	47	144	45	36	5
Total Analysis Volume [veh/h]	467	1442	214	30	890	65	79	186	578	181	142	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	51	51	4	27	27	7	38	38	11	42
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.06	0.32	0.32	0.09	0.35
(v / s)_i Volume / Saturation Flow Rate	0.29	0.49	0.52	0.02	0.28	0.05	0.05	0.11	0.41	0.11	0.10
s, saturation flow rate [veh/h]	1597	1676	1603	1597	3192	1425	1597	1676	1425	1597	1639
c, Capacity [veh/h]	373	708	677	59	721	322	99	529	450	146	566
d1, Uniform Delay [s]	46.00	34.66	34.66	56.72	46.44	37.66	55.54	31.61	41.06	54.50	28.55
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	134.37	90.87	113.08	6.65	117.06	1.41	13.53	0.40	144.26	151.55	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

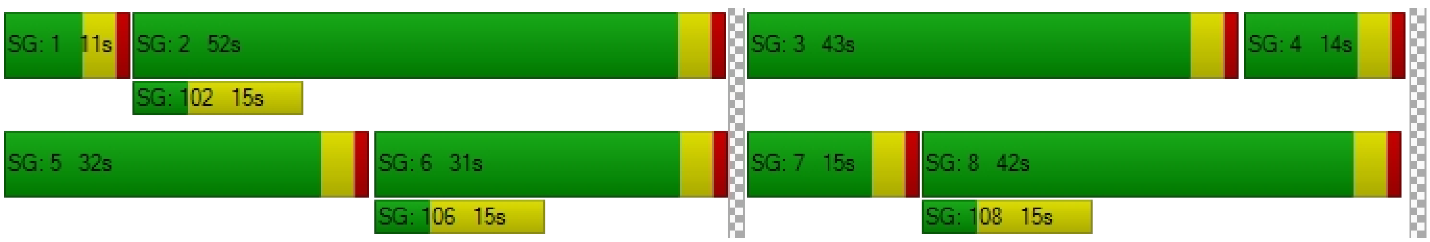
X, volume / capacity	1.25	1.17	1.22	0.51	1.23	0.20	0.80	0.35	1.28	1.24	0.29
d, Delay for Lane Group [s/veh]	180.37	125.53	147.74	63.37	163.50	39.07	69.07	32.00	185.32	206.05	28.83
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.37	36.57	39.15	0.97	21.88	1.61	2.73	4.22	31.11	10.58	3.47
50th-Percentile Queue Length [ft]	609.25	914.25	978.83	24.19	547.09	40.26	68.27	105.60	777.83	264.43	86.71
95th-Percentile Queue Length [veh]	36.52	51.82	56.56	1.74	32.93	2.90	4.92	7.59	46.51	17.13	6.24
95th-Percentile Queue Length [ft]	912.94	1295.61	1414.09	43.53	823.35	72.47	122.89	189.87	1162.64	428.37	156.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	180.37	134.98	147.74	63.37	163.50	39.07	69.07	32.00	185.32	206.05	28.83	28.83
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	146.25			152.24			140.60			122.07		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	144.58											
Intersection LOS	F											
Intersection V/C	1.258											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	86.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.196

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1546	392	314	1216	304	451
Peak Hour Factor	0.9270	0.9270	0.9270	0.9270	0.9270	0.9270
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	417	106	85	328	82	122
Total Analysis Volume [veh/h]	1668	423	339	1312	328	487
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.52	0.30	0.21	0.41	0.11	0.34
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.43	48.95	12.48	34.44	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	100.29	6.10	101.54	1.48	0.26	113.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.69	1.16	0.63	0.37	1.21
d, Delay for Lane Group [s/veh]	134.30	33.53	150.49	13.96	34.70	156.92
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	37.36	9.99	16.60	8.94	3.88	24.61
50th-Percentile Queue Length [ft]	934.03	249.79	415.11	223.50	97.08	615.31
95th-Percentile Queue Length [veh]	53.88	15.18	25.00	13.84	6.99	36.45
95th-Percentile Queue Length [ft]	1347.06	379.39	625.09	346.09	174.74	911.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	134.30	33.53	150.49	13.96	34.70	156.92
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	113.91		41.99		107.73	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	86.75					
Intersection LOS	F					
Intersection V/C	1.196					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	82	4	1	27	5
Peak Hour Factor	0.6720	0.6720	0.6720	0.6720	0.6720	0.6720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	31	1	0	10	2
Total Analysis Volume [veh/h]	3	122	6	1	40	7
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.11	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	9.52	8.79	0.00	0.00	7.29	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.40	0.40	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	9.88	9.88	0.00	0.00	1.91	0.00
d_A, Approach Delay [s/veh]	8.81		0.00		6.20	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.78					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	13.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.081

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	157	33	40	110	37	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	33	40	110	37	122
Peak Hour Factor	0.8260	0.8260	0.8260	0.8260	0.8260	0.8260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	10	12	33	11	37
Total Analysis Volume [veh/h]	190	40	48	133	45	148
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.08	0.18
d_M, Delay for Movement [s/veh]	0.00	0.00	7.79	0.00	13.18	11.02
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.11	0.00	1.04	1.04
95th-Percentile Queue Length [ft]	0.00	0.00	2.79	0.00	25.88	25.88
d_A, Approach Delay [s/veh]	0.00		2.07		11.52	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.30					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	182	128	83	102	82
Peak Hour Factor	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	56	40	26	32	25
Total Analysis Volume [veh/h]	69	226	159	103	126	102
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.42	0.67	0.67	0.82	0.73	0.87	0.53
95th-Percentile Queue Length [ft]	10.40	16.82	16.82	20.51	18.19	21.79	13.25
Approach Delay [s/veh]	9.93			9.87		10.17	
Approach LOS	A			A		B	
Intersection Delay [s/veh]	9.98						
Intersection LOS	A						

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	16.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Peak Hour Factor	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540	0.8540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	72	2	1	52	16	23	1	28	1	1	0
Total Analysis Volume [veh/h]	157	288	8	4	207	66	90	5	114	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

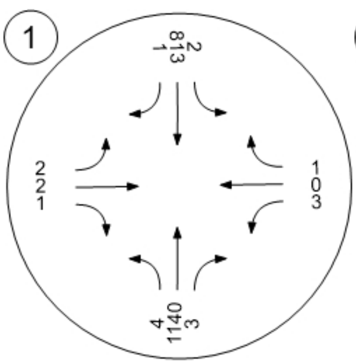
Lanes

Movement, Approach, & Intersection Results

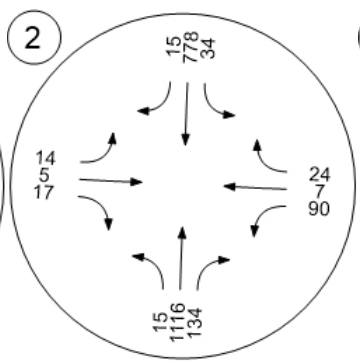
95th-Percentile Queue Length [veh]	5.75	2.18	0.64	0.03	0.68	0.07
95th-Percentile Queue Length [ft]	143.87	54.57	15.93	0.69	16.90	1.68
Approach Delay [s/veh]	20.81	12.84	10.48			10.34
Approach LOS	C	B	B			B
Intersection Delay [s/veh]	16.09					
Intersection LOS	C					

Traffic Volume - Future Total Volume

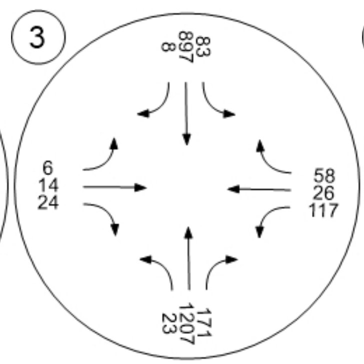
Winchester Road at Keller Ro



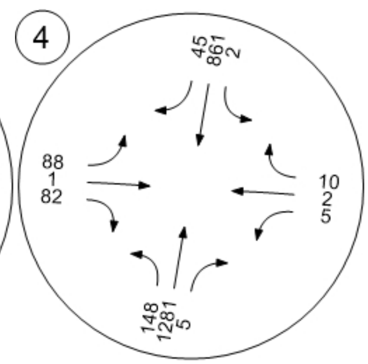
Winchester Road at Pourroy



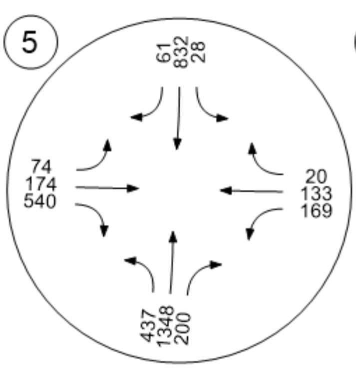
Winchester Road at Whisper



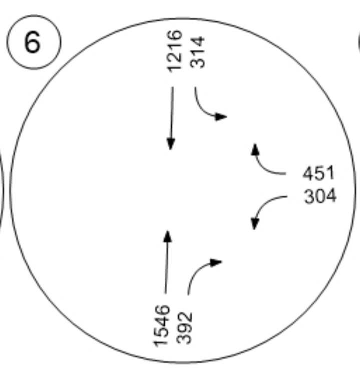
Winchester Road at Jean Nic



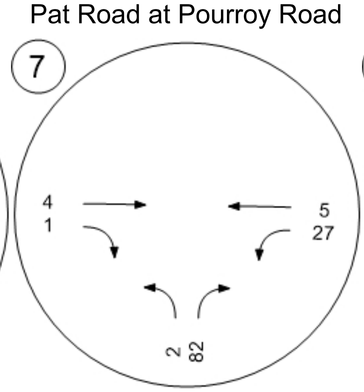
Winchester Road at Max Gilli



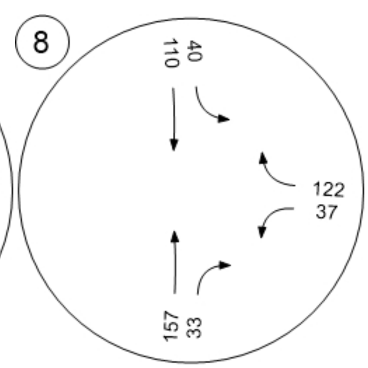
Winchester Road at Benton



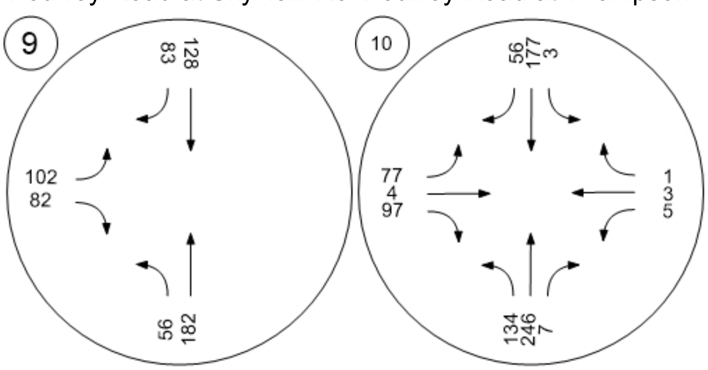
Pat Road at Pourroy Road



Jean Nicholas Road at Elliot



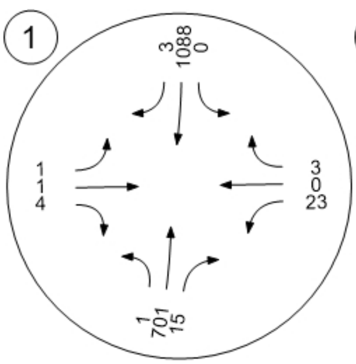
Traffic Volume - Future Total Volume



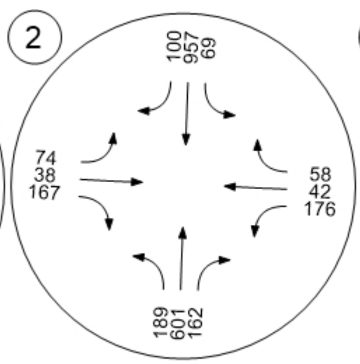
Appendix D. Intersection Volumes, Delay, and LOS Calculation Outputs, Existing Plus Project Conditions

Traffic Volume - Future Total Volume

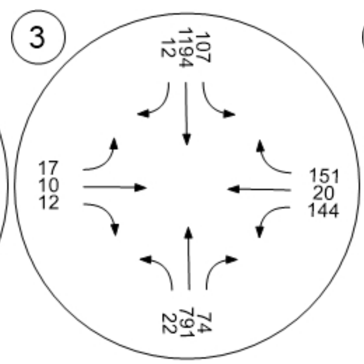
Winchester Road at Keller Ro



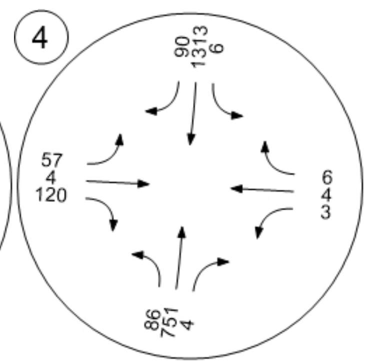
Winchester Road at Pourroy



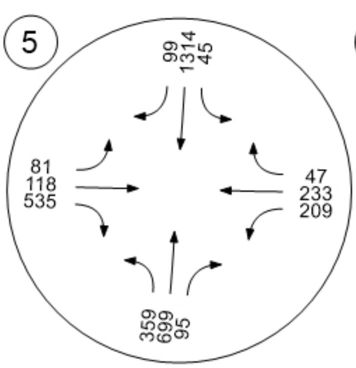
Winchester Road at Whisper



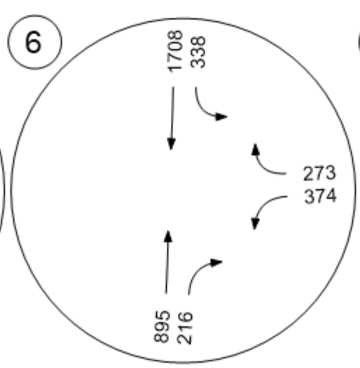
Winchester Road at Jean Nic



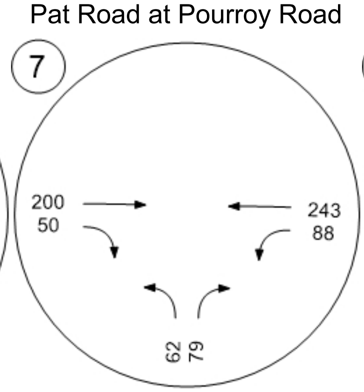
Winchester Road at Max Gilli



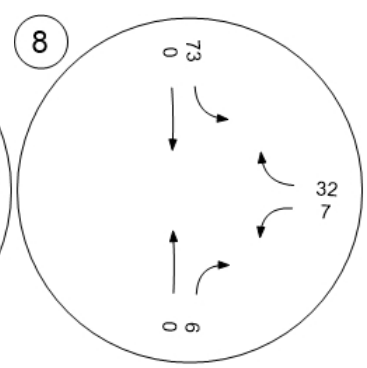
Winchester Road at Benton



Pat Road at Pourroy Road

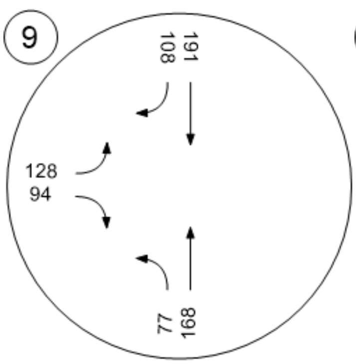


Jean Nicholas Road at Elliot

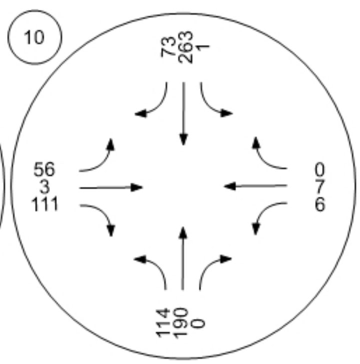


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+P AM_new.pdf

Scenario 3: E+P AM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	WB Left	5,955.496	4.2	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	EB Left	0.849	33.3	C
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.726	18.0	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.784	16.1	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.463	180.4	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.943	24.6	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.292	23.8	C
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.237	22.4	C
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		12.7	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		15.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	4.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5,955.496

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	12	0	30	0	0	0	0	15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	701	15	0	1088	3	1	1	4	23	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	196	4	0	304	1	0	0	1	6	0	1
Total Analysis Volume [veh/h]	1	782	17	0	1214	3	1	1	4	26	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	90	0	11	90	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	0	103	103	4	4	4	4
g / C, Green / Cycle	0.00	0.86	0.00	0.86	0.86	0.04	0.04	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.00	0.48	0.00	0.38	0.00	0.00	0.00	5359.47	0.00
s, saturation flow rate [veh/h]	3101	1670	1597	3192	1425	591	1425	0	1425
c, Capacity [veh/h]	6	1441	0	2748	1227	67	53	60	53
d1, Uniform Delay [s]	59.79	2.17	0.00	1.88	1.16	55.71	55.77	60.00	55.73
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.86	1.54	0.00	0.52	0.00	0.18	0.60	21.18	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.55	0.00	0.44	0.00	0.03	0.08	0.43	0.06
d, Delay for Lane Group [s/veh]	72.65	3.71	0.00	2.39	1.17	55.89	56.36	81.18	56.17
Lane Group LOS	E	A	A	A	A	E	E	F	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.74	0.00	0.34	0.00	0.06	0.13	1.16	0.09
50th-Percentile Queue Length [ft]	0.62	18.48	0.00	8.44	0.04	1.55	3.15	29.04	2.36
95th-Percentile Queue Length [veh]	0.04	1.33	0.00	0.61	0.00	0.11	0.23	2.09	0.17
95th-Percentile Queue Length [ft]	1.12	33.26	0.00	15.19	0.07	2.78	5.67	52.28	4.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.65	3.71	3.71	0.00	2.39	1.17	55.89	55.89	56.36	81.18	81.18	56.17
Movement LOS	E	A	A	A	A	A	E	E	E	F	F	E
d_A, Approach Delay [s/veh]	3.80			2.39			56.21			78.59		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	4.17											
Intersection LOS	A											
Intersection V/C	5955.496											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	165	0	0	0	0	45	36	24	136	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	189	601	162	69	957	100	74	38	167	176	42	58
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	166	45	19	264	28	20	10	46	49	12	16
Total Analysis Volume [veh/h]	209	664	179	76	1057	110	82	42	185	194	46	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	28	0	24	23	0	29	21	0	27	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	49	49	6	40	40	7	15	15	14	23	23
g / C, Green / Cycle	0.15	0.49	0.49	0.06	0.40	0.40	0.07	0.15	0.15	0.14	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.13	0.21	0.13	0.05	0.33	0.08	0.05	0.03	0.13	0.12	0.03	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	242	1546	690	100	1262	564	105	254	216	226	382	324
d1, Uniform Delay [s]	41.48	16.80	15.22	46.20	27.36	19.83	46.08	36.98	41.43	41.98	30.71	31.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.92	0.87	0.91	11.24	6.72	0.77	11.90	0.30	9.44	9.02	0.14	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

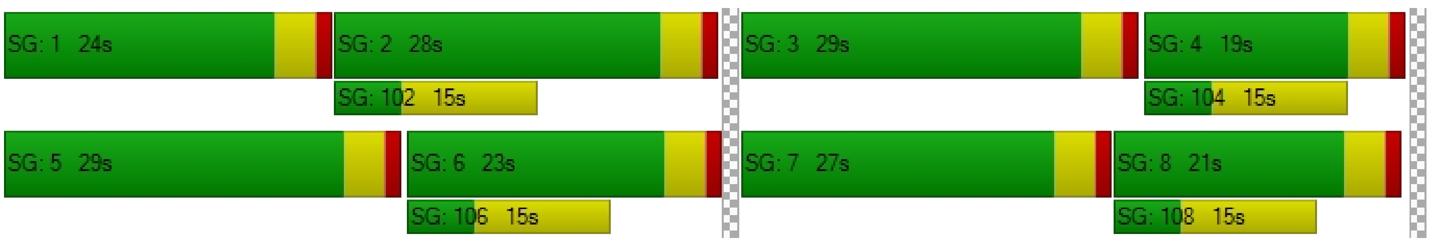
X, volume / capacity	0.86	0.43	0.26	0.76	0.84	0.20	0.78	0.17	0.86	0.86	0.12	0.20
d, Delay for Lane Group [s/veh]	50.40	17.68	16.13	57.44	34.08	20.60	57.98	37.28	50.87	51.00	30.85	31.57
Lane Group LOS	D	B	B	E	C	C	E	D	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	5.20	4.30	2.18	2.03	10.89	1.59	2.34	0.91	4.97	5.05	0.86	1.23
50th-Percentile Queue Length [ft]	129.94	107.61	54.62	50.87	272.32	39.66	58.59	22.84	124.23	126.27	21.55	30.67
95th-Percentile Queue Length [veh]	8.94	7.71	3.93	3.66	16.31	2.86	4.22	1.64	8.63	8.74	1.55	2.21
95th-Percentile Queue Length [ft]	223.42	192.67	98.32	91.57	407.64	71.39	105.46	41.12	215.63	218.41	38.79	55.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.40	17.68	16.13	57.44	34.08	20.60	57.98	37.28	50.87	51.00	30.85	31.57
Movement LOS	D	B	B	E	C	C	E	D	D	D	C	C
d_A, Approach Delay [s/veh]	23.92			34.31			50.91			43.86		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.31											
Intersection LOS	C											
Intersection V/C	0.849											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	61	75	0	0	0	0	0	0	75
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	791	74	107	1194	12	17	10	12	144	20	151
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	220	21	30	332	3	5	3	3	40	6	42
Total Analysis Volume [veh/h]	24	879	82	119	1327	13	19	11	13	160	22	168
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	21	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	35	35	6	39	39	2	4	4	9	10	10
g / C, Green / Cycle	0.04	0.50	0.50	0.09	0.56	0.56	0.03	0.05	0.05	0.12	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.28	0.06	0.04	0.42	0.01	0.01	0.01	0.01	0.10	0.01	0.12
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	61	1604	716	282	1771	791	51	90	77	199	246	209
d1, Uniform Delay [s]	32.92	11.98	9.21	30.14	11.89	7.01	33.25	31.59	31.67	29.87	25.88	28.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.02	1.35	0.32	1.00	2.96	0.04	4.45	0.59	1.03	7.42	0.16	7.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

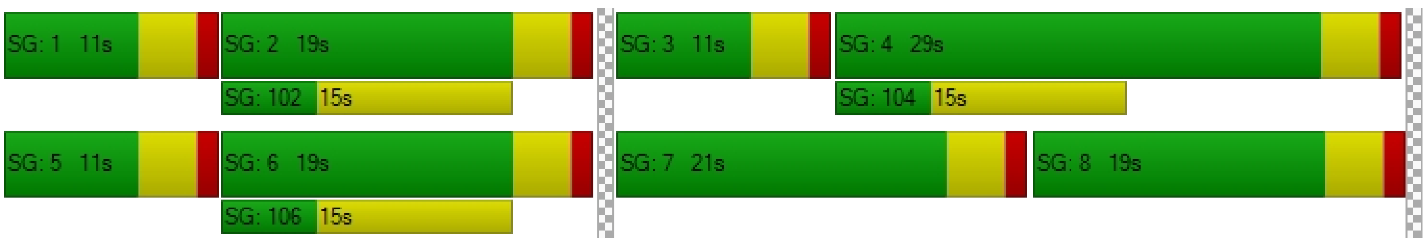
X, volume / capacity	0.39	0.55	0.11	0.42	0.75	0.02	0.37	0.12	0.17	0.80	0.09	0.80
d, Delay for Lane Group [s/veh]	36.94	13.33	9.54	31.14	14.84	7.05	37.70	32.18	32.70	37.29	26.04	36.05
Lane Group LOS	D	B	A	C	B	A	D	C	C	D	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.43	3.72	0.56	0.89	5.97	0.07	0.37	0.19	0.23	2.93	0.32	3.03
50th-Percentile Queue Length [ft]	10.67	93.03	13.88	22.14	149.17	1.72	9.36	4.74	5.72	73.23	7.92	75.70
95th-Percentile Queue Length [veh]	0.77	6.70	1.00	1.59	9.97	0.12	0.67	0.34	0.41	5.27	0.57	5.45
95th-Percentile Queue Length [ft]	19.20	167.45	24.98	39.86	249.32	3.10	16.85	8.53	10.29	131.81	14.26	136.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.94	13.33	9.54	31.14	14.84	7.05	37.70	32.18	32.70	37.29	26.04	36.05
Movement LOS	D	B	A	C	B	A	D	C	C	D	C	D
d_A, Approach Delay [s/veh]	13.59			16.10			34.78			35.99		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	17.97											
Intersection LOS	B											
Intersection V/C	0.726											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	16.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	0	75	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	751	4	6	1313	90	57	4	120	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	214	1	2	374	26	16	1	34	1	1	2
Total Analysis Volume [veh/h]	98	855	5	7	1495	103	65	5	137	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	31	39	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	53	53	1	48	48	5	10	10	1	5	5
g / C, Green / Cycle	0.08	0.66	0.66	0.01	0.60	0.60	0.07	0.12	0.12	0.01	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.06	0.27	0.00	0.00	0.47	0.07	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	126	2105	940	23	1898	847	109	201	171	11	98	83
d1, Uniform Delay [s]	36.25	6.35	4.67	39.15	12.40	7.11	36.29	31.17	34.38	39.61	35.66	35.73
k, delay calibration	0.14	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.76	0.58	0.01	7.48	3.40	0.29	5.09	0.05	8.47	11.65	0.21	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

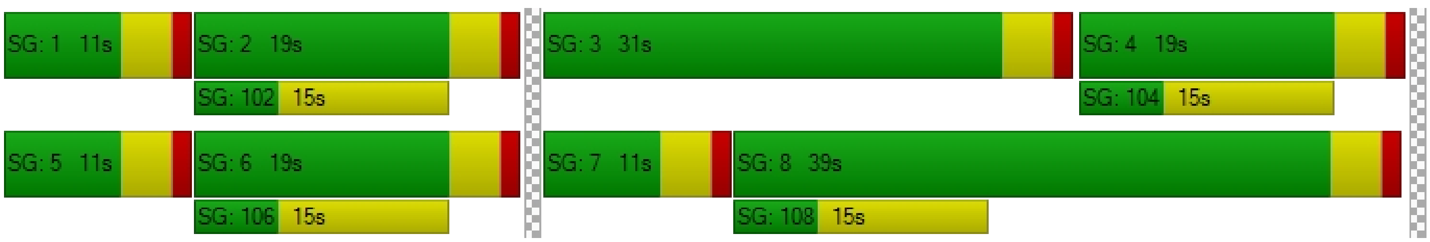
X, volume / capacity	0.78	0.41	0.01	0.31	0.79	0.12	0.60	0.02	0.80	0.26	0.05	0.08
d, Delay for Lane Group [s/veh]	49.01	6.94	4.68	46.63	15.80	7.40	41.38	31.22	42.85	51.26	35.87	36.16
Lane Group LOS	D	A	A	D	B	A	D	C	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	2.17	2.22	0.02	0.17	7.86	0.62	1.36	0.09	2.94	0.09	0.10	0.14
50th-Percentile Queue Length [ft]	54.22	55.53	0.51	4.33	196.61	15.49	34.12	2.17	73.40	2.37	2.41	3.43
95th-Percentile Queue Length [veh]	3.90	4.00	0.04	0.31	12.46	1.11	2.46	0.16	5.28	0.17	0.17	0.25
95th-Percentile Queue Length [ft]	97.60	99.96	0.91	7.79	311.59	27.87	61.42	3.90	132.12	4.27	4.34	6.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.01	6.94	4.68	46.63	15.80	7.40	41.38	31.22	42.85	51.26	35.87	36.16
Movement LOS	D	A	A	D	B	A	D	C	D	D	D	D
d_A, Approach Delay [s/veh]	11.23			15.39			42.11			39.08		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	16.07											
Intersection LOS	B											
Intersection V/C	0.784											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	180.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.463

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	45	0	24	39	12	15	0	0	0	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	699	95	45	1314	99	81	118	535	209	233	47
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	194	26	12	365	27	22	33	148	58	65	13
Total Analysis Volume [veh/h]	398	776	105	50	1458	110	90	131	594	232	259	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	27	0	39	41	0	34	38	38	16	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	52	52	6	37	37	8	34	34	12	38
g / C, Green / Cycle	0.18	0.44	0.44	0.05	0.31	0.31	0.07	0.28	0.28	0.10	0.31
(v / s)_i Volume / Saturation Flow Rate	0.25	0.27	0.27	0.03	0.46	0.08	0.06	0.08	0.42	0.15	0.19
s, saturation flow rate [veh/h]	1597	1676	1608	1597	3192	1425	1597	1676	1425	1597	1628
c, Capacity [veh/h]	279	733	703	76	987	441	112	473	402	160	509
d1, Uniform Delay [s]	49.50	25.97	26.01	56.21	41.44	31.01	55.01	33.53	43.07	54.00	35.07
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	210.55	3.80	4.00	9.45	219.92	1.35	12.67	0.31	227.62	235.00	1.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

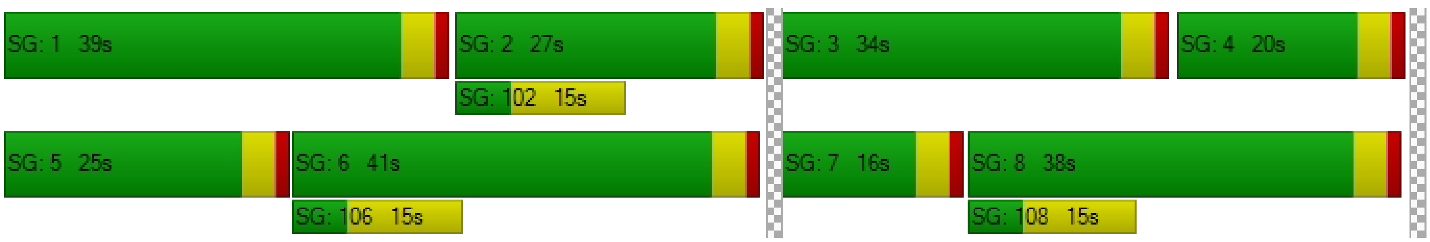
X, volume / capacity	1.42	0.61	0.62	0.66	1.48	0.25	0.81	0.28	1.48	1.45	0.61
d, Delay for Lane Group [s/veh]	260.05	29.77	30.01	65.66	261.36	32.37	67.68	33.84	270.69	289.00	36.93
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.30	9.82	9.51	1.63	43.76	2.43	3.07	3.03	37.21	15.24	7.96
50th-Percentile Queue Length [ft]	607.40	245.56	237.65	40.75	1093.95	60.81	76.87	75.72	930.34	380.96	198.99
95th-Percentile Queue Length [veh]	37.66	14.96	14.56	2.93	66.93	4.38	5.53	5.45	57.40	24.51	12.59
95th-Percentile Queue Length [ft]	941.55	374.06	364.06	73.35	1673.33	109.46	138.37	136.30	1435.11	612.71	314.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	260.05	29.88	30.01	65.66	261.36	32.37	67.68	33.84	270.69	289.00	36.93	36.93
Movement LOS	F	C	C	E	F	C	E	C	F	F	D	D
d_A, Approach Delay [s/veh]	101.51			239.74			210.20			144.63		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	180.40											
Intersection LOS	F											
Intersection V/C	1.463											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.943

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	27	12	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	895	216	338	1708	374	273
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	241	58	91	459	101	73
Total Analysis Volume [veh/h]	962	232	363	1837	402	294
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	28	47	23	23
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	18	46	16	16
g / C, Green / Cycle	0.34	0.34	0.26	0.65	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.30	0.16	0.23	0.58	0.13	0.21
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1086	485	409	2086	721	331
d1, Uniform Delay [s]	21.85	18.23	25.11	9.92	23.73	26.02
k, delay calibration	0.50	0.50	0.20	0.50	0.11	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.65	3.36	11.21	5.76	0.68	16.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

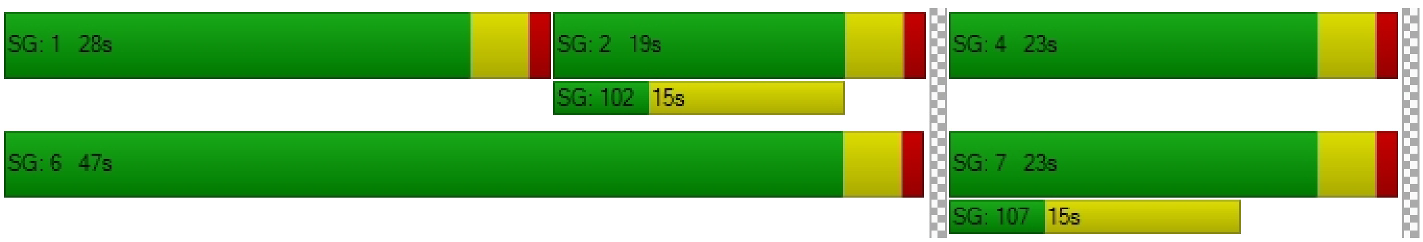
X, volume / capacity	0.89	0.48	0.89	0.88	0.56	0.89
d, Delay for Lane Group [s/veh]	32.49	21.59	36.32	15.68	24.41	42.55
Lane Group LOS	C	C	D	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	7.66	2.89	6.19	7.54	2.85	5.99
50th-Percentile Queue Length [ft]	191.61	72.27	154.77	188.57	71.35	149.75
95th-Percentile Queue Length [veh]	12.20	5.20	10.27	12.05	5.14	10.00
95th-Percentile Queue Length [ft]	305.12	130.08	256.79	301.17	128.43	250.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.49	21.59	36.32	15.68	24.41	42.55
Movement LOS	C	C	D	B	C	D
d_A, Approach Delay [s/veh]	30.38		19.09		32.07	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	24.59					
Intersection LOS	C					
Intersection V/C	0.943					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	23.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.292

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	196	47	0	240
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	79	200	50	88	243
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	27	68	17	30	83
Total Analysis Volume [veh/h]	84	108	272	68	120	331
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.15	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	23.82	16.20	0.00	0.00	8.28	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.19	2.19	0.00	0.00	0.33	0.00
95th-Percentile Queue Length [ft]	54.84	54.84	0.00	0.00	8.17	0.00
d_A, Approach Delay [s/veh]	19.53		0.00		2.20	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.83					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	22.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.237

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	189	13	94	138	49	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	24	0	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	189	22	118	138	56	146
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	7	40	47	19	49
Total Analysis Volume [veh/h]	255	30	159	186	76	197
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.12	0.00	0.24	0.26
d_M, Delay for Movement [s/veh]	0.00	0.00	8.22	0.00	22.36	15.84
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.43	0.00	2.71	2.71
95th-Percentile Queue Length [ft]	0.00	0.00	10.63	0.00	67.68	67.68
d_A, Approach Delay [s/veh]	0.00		3.79		17.65	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	6.78					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	54	44	12	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	168	191	108	128	94
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	63	71	40	48	35
Total Analysis Volume [veh/h]	115	250	285	161	191	140
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.90	0.91	0.91	2.01	1.78	1.82	0.93
95th-Percentile Queue Length [ft]	22.45	22.81	22.81	50.18	44.43	45.43	23.13
Approach Delay [s/veh]	11.80			13.28		12.97	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	12.72						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	15.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	0	19	10	12	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	190	0	1	263	73	56	3	111	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	57	0	0	79	22	17	1	33	2	2	0
Total Analysis Volume [veh/h]	137	228	0	1	316	88	67	4	133	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

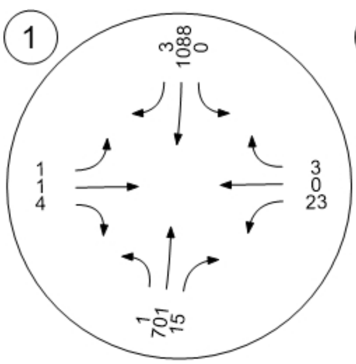
Lanes

Movement, Approach, & Intersection Results

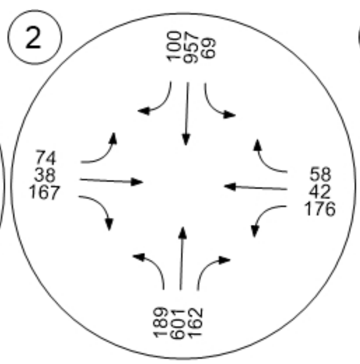
95th-Percentile Queue Length [veh]	3.79	4.34	0.46	0.02	0.84	0.09
95th-Percentile Queue Length [ft]	94.80	108.53	11.49	0.56	20.92	2.36
Approach Delay [s/veh]	16.60	17.24	10.55			10.57
Approach LOS	C	C	B			B
Intersection Delay [s/veh]	15.52					
Intersection LOS	C					

Traffic Volume - Future Total Volume

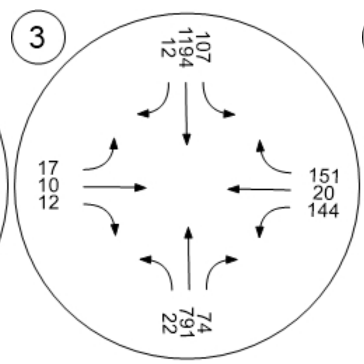
Winchester Road at Keller Ro



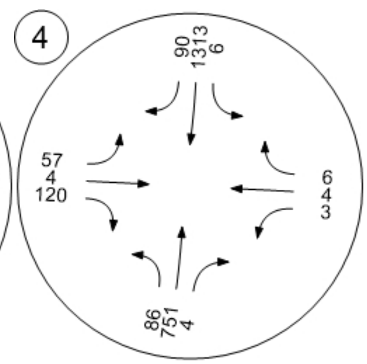
Winchester Road at Pourroy



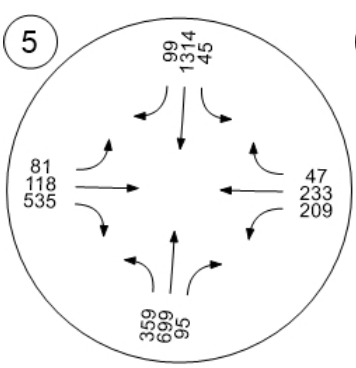
Winchester Road at Whisper



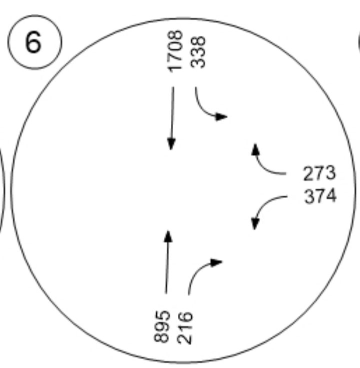
Winchester Road at Jean Nic



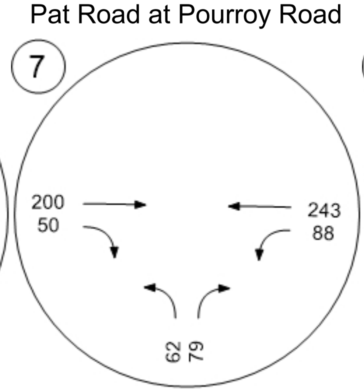
Winchester Road at Max Gilli



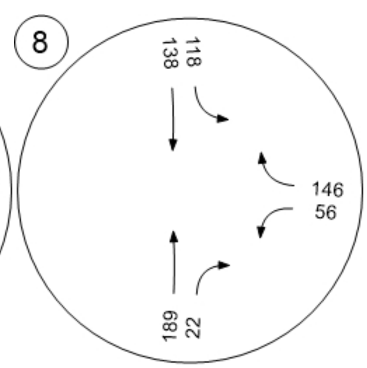
Winchester Road at Benton



Pat Road at Pourroy Road

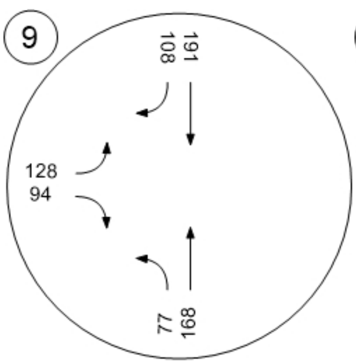


Jean Nicholas Road at Elliot

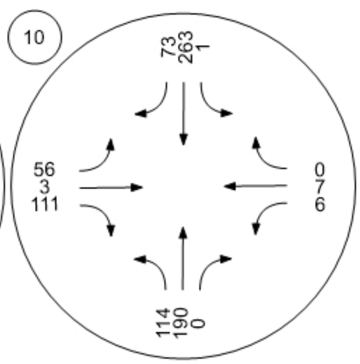


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro

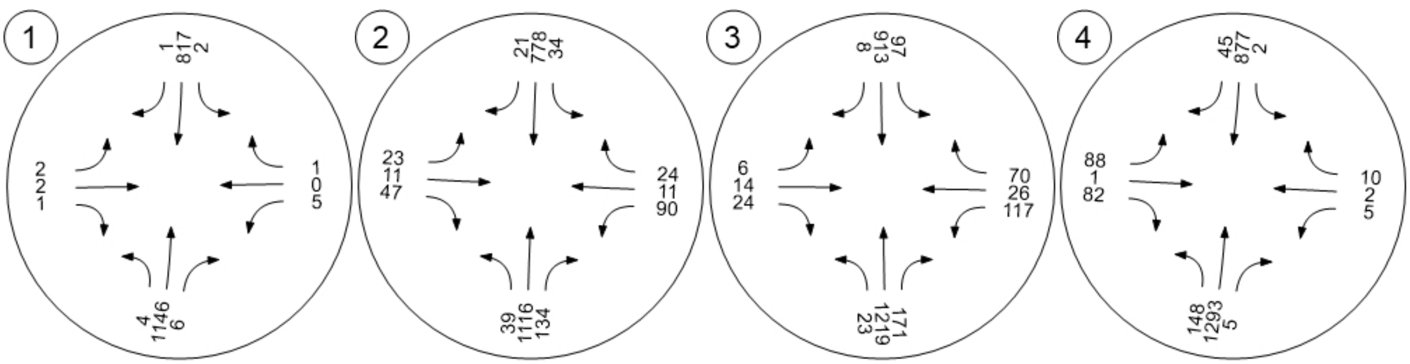


Pourroy Road at Thompson

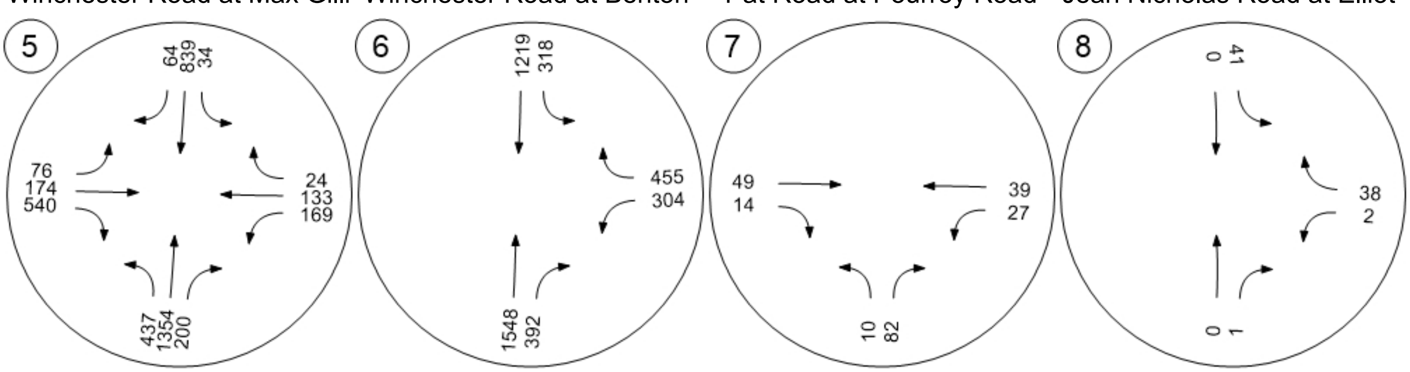


Traffic Volume - Future Total Volume

Winchester Road at Keller Ro Winchester Road at Pourroy Winchester Road at Whisper Winchester Road at Jean Nic

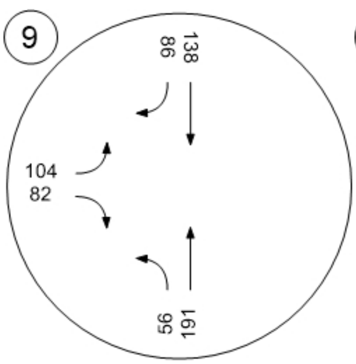


Winchester Road at Max Gilli Winchester Road at Benton Pat Road at Pourroy Road Jean Nicholas Road at Elliot

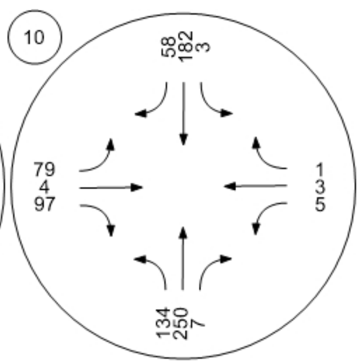


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\E+P PM_new.pdf

Scenario 4: E+P PM
12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.939	7.4	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.659	14.7	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.699	16.9	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Left	0.691	14.4	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.308	165.2	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.199	87.0	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	10.3	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.105	14.5	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.2	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		17.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	7.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.939

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	┐┐├			┐‖├			┤├			┤├		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	3	0	4	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1146	6	2	817	1	2	2	1	5	0	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	320	2	1	228	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1279	7	2	912	1	2	2	1	6	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	88	0	11	88	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.88	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.77	0.00	0.29	0.00	0.05	0.00	0.08	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	84	1425	79	1425
c, Capacity [veh/h]	24	1479	7	2808	1253	46	18	61	18
d1, Uniform Delay [s]	59.13	3.53	59.55	1.22	0.87	59.97	58.52	59.97	58.52
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	7.22	22.54	0.31	0.00	0.80	1.28	0.69	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.87	0.30	0.32	0.00	0.09	0.06	0.10	0.06
d, Delay for Lane Group [s/veh]	62.35	10.74	82.09	1.52	0.87	60.77	59.80	60.67	59.80
Lane Group LOS	E	B	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.07	2.96	0.10	0.12	0.00	0.13	0.04	0.20	0.04
50th-Percentile Queue Length [ft]	1.70	74.12	2.50	3.00	0.01	3.31	0.91	4.88	0.91
95th-Percentile Queue Length [veh]	0.12	5.34	0.18	0.22	0.00	0.24	0.07	0.35	0.07
95th-Percentile Queue Length [ft]	3.06	133.42	4.49	5.41	0.02	5.95	1.64	8.78	1.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	10.74	10.74	82.09	1.52	0.87	60.77	60.77	59.80	60.67	60.67	59.80
Movement LOS	E	B	B	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	10.90			1.70			60.58			60.54		
Approach LOS	B			A			E			E		
d_I, Intersection Delay [s/veh]	7.37											
Intersection LOS	A											
Intersection V/C	0.939											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	0	0	0	6	9	6	30	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1116	134	34	778	21	23	11	47	90	11	24
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	308	37	9	215	6	6	3	13	25	3	7
Total Analysis Volume [veh/h]	43	1233	148	38	860	23	25	12	52	99	12	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	18	19	0	21	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	39	39	4	39	39	3	5	5	6	8	8
g / C, Green / Cycle	0.06	0.56	0.56	0.05	0.56	0.56	0.04	0.07	0.07	0.09	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.39	0.10	0.02	0.27	0.02	0.02	0.01	0.04	0.06	0.01	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	94	1780	795	87	1766	788	65	122	104	139	200	170
d1, Uniform Delay [s]	31.98	11.20	7.67	32.18	9.59	7.12	32.85	30.40	31.33	31.21	27.43	27.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.45	2.24	0.52	3.44	0.96	0.07	3.71	0.35	3.68	6.56	0.12	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

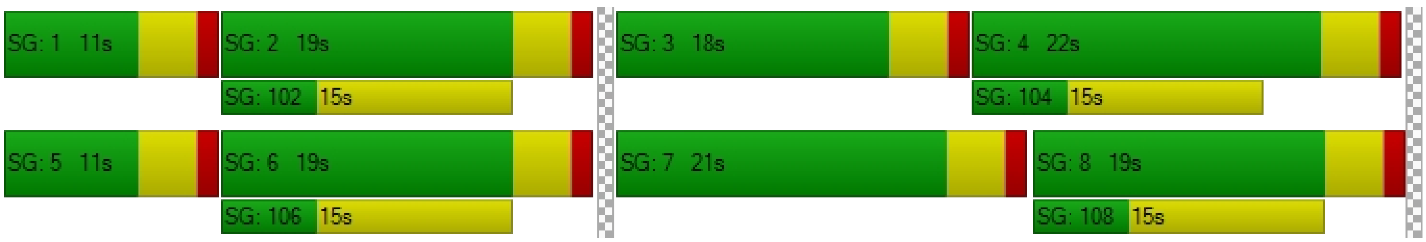
X, volume / capacity	0.46	0.69	0.19	0.44	0.49	0.03	0.39	0.10	0.50	0.71	0.06	0.16
d, Delay for Lane Group [s/veh]	35.44	13.44	8.19	35.62	10.56	7.19	36.56	30.75	35.01	37.77	27.55	28.19
Lane Group LOS	D	B	A	D	B	A	D	C	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.70	4.67	0.79	0.63	2.70	0.11	0.47	0.20	0.93	1.76	0.17	0.39
50th-Percentile Queue Length [ft]	17.58	116.68	19.76	15.66	67.42	2.82	11.72	4.88	23.15	43.89	4.28	9.86
95th-Percentile Queue Length [veh]	1.27	8.21	1.42	1.13	4.85	0.20	0.84	0.35	1.67	3.16	0.31	0.71
95th-Percentile Queue Length [ft]	31.65	205.25	35.57	28.19	121.35	5.07	21.09	8.79	41.67	79.01	7.71	17.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.44	13.44	8.19	35.62	10.56	7.19	36.56	30.75	35.01	37.77	27.55	28.19
Movement LOS	D	B	A	D	B	A	D	C	D	D	C	C
d_A, Approach Delay [s/veh]	13.56			11.51			34.87			35.00		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	14.71											
Intersection LOS	B											
Intersection V/C	0.659											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	14	16	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1219	171	97	913	8	6	14	24	117	26	70
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	339	48	27	254	2	2	4	7	33	7	19
Total Analysis Volume [veh/h]	26	1354	190	108	1014	9	7	16	27	130	29	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	11	11	0	20	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	45	45	6	48	48	1	4	4	8	11	11
g / C, Green / Cycle	0.04	0.56	0.56	0.08	0.60	0.60	0.01	0.05	0.05	0.10	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.42	0.13	0.03	0.32	0.01	0.00	0.01	0.02	0.08	0.02	0.05
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	64	1794	801	251	1924	859	23	93	79	163	240	204
d1, Uniform Delay [s]	37.57	13.35	8.87	35.11	9.27	6.37	39.15	36.14	36.49	35.19	29.95	31.14
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	3.00	0.70	1.17	1.04	0.02	7.48	0.87	2.56	8.49	0.22	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

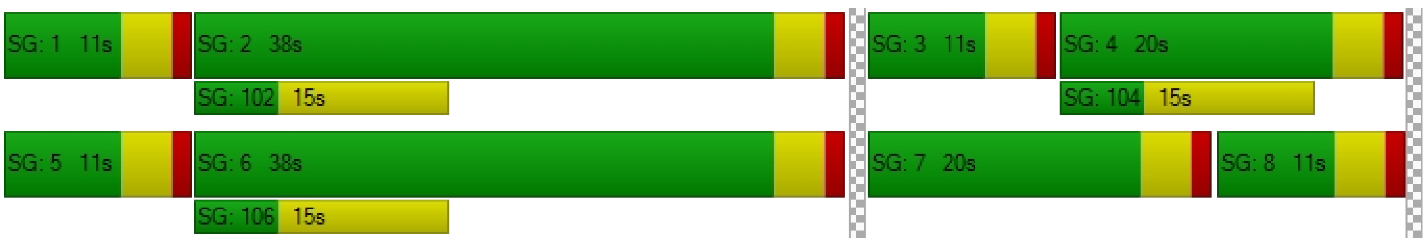
X, volume / capacity	0.41	0.75	0.24	0.43	0.53	0.01	0.31	0.17	0.34	0.80	0.12	0.38
d, Delay for Lane Group [s/veh]	41.65	16.36	9.57	36.28	10.31	6.39	46.63	37.02	39.05	43.67	30.17	32.31
Lane Group LOS	D	B	A	D	B	A	D	D	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.53	7.43	1.40	0.96	3.82	0.05	0.18	0.32	0.56	2.81	0.49	1.40
50th-Percentile Queue Length [ft]	13.29	185.72	35.02	24.02	95.57	1.21	4.57	7.99	14.04	70.17	12.32	35.07
95th-Percentile Queue Length [veh]	0.96	11.90	2.52	1.73	6.88	0.09	0.33	0.57	1.01	5.05	0.89	2.52
95th-Percentile Queue Length [ft]	23.91	297.47	63.04	43.24	172.02	2.18	8.22	14.37	25.28	126.30	22.17	63.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.65	16.36	9.57	36.28	10.31	6.39	46.63	37.02	39.05	43.67	30.17	32.31
Movement LOS	D	B	A	D	B	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	15.95			12.76			39.46			38.28		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	16.91											
Intersection LOS	B											
Intersection V/C	0.699											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.691

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	16	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	1293	5	2	877	45	88	1	82	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	368	1	1	250	13	25	0	23	1	1	3
Total Analysis Volume [veh/h]	169	1473	6	2	999	51	100	1	93	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	27	0	13	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	46	46	0	37	37	6	7	7	1	2	2
g / C, Green / Cycle	0.13	0.66	0.66	0.00	0.53	0.53	0.09	0.10	0.10	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.46	0.00	0.00	0.31	0.04	0.06	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	210	2091	933	9	1688	754	140	166	141	21	41	35
d1, Uniform Delay [s]	29.61	7.76	4.20	34.78	11.35	8.09	31.21	28.55	30.52	34.36	33.49	33.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.99	2.02	0.01	12.36	1.53	0.17	6.70	0.01	5.20	7.64	0.49	5.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

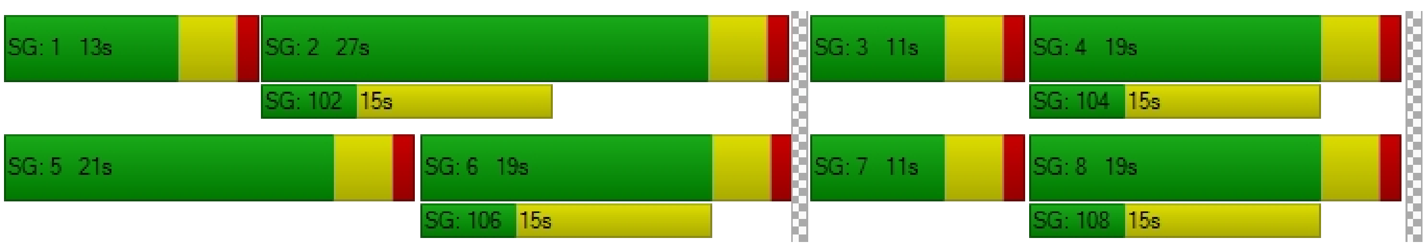
X, volume / capacity	0.80	0.70	0.01	0.23	0.59	0.07	0.72	0.01	0.66	0.29	0.05	0.32
d, Delay for Lane Group [s/veh]	36.60	9.78	4.21	47.14	12.88	8.26	37.91	28.56	35.73	42.00	33.98	38.88
Lane Group LOS	D	A	A	D	B	A	D	C	D	D	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.85	4.22	0.02	0.06	4.08	0.31	1.85	0.02	1.66	0.14	0.04	0.23
50th-Percentile Queue Length [ft]	71.23	105.50	0.48	1.53	101.88	7.67	46.25	0.38	41.62	3.55	0.95	5.71
95th-Percentile Queue Length [veh]	5.13	7.59	0.03	0.11	7.34	0.55	3.33	0.03	3.00	0.26	0.07	0.41
95th-Percentile Queue Length [ft]	128.22	189.72	0.87	2.75	183.39	13.80	83.26	0.69	74.91	6.39	1.71	10.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.60	9.78	4.21	47.14	12.88	8.26	37.91	28.56	35.73	42.00	33.98	38.88
Movement LOS	D	A	A	D	B	A	D	C	D	D	C	D
d_A, Approach Delay [s/veh]	12.51			12.72			36.81			39.35		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	14.38											
Intersection LOS	B											
Intersection V/C	0.691											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	165.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.308

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	6	7	3	2	0	0	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	437	1354	200	34	839	64	76	174	540	169	133	24
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	376	55	9	233	18	21	48	150	47	37	7
Total Analysis Volume [veh/h]	485	1503	222	38	931	71	84	193	599	188	148	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	50	50	5	27	27	8	38	38	11	41
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.07	0.32	0.32	0.09	0.34
(v / s)_i Volume / Saturation Flow Rate	0.30	0.51	0.54	0.02	0.29	0.05	0.05	0.12	0.42	0.12	0.11
s, saturation flow rate [veh/h]	1597	1676	1604	1597	3192	1425	1597	1676	1425	1597	1632
c, Capacity [veh/h]	373	700	669	67	721	322	105	529	450	146	558
d1, Uniform Delay [s]	46.00	34.96	34.96	56.42	46.45	37.84	55.29	31.75	41.06	54.50	29.12
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	154.19	116.95	141.00	7.35	141.21	1.57	13.03	0.42	163.76	169.78	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

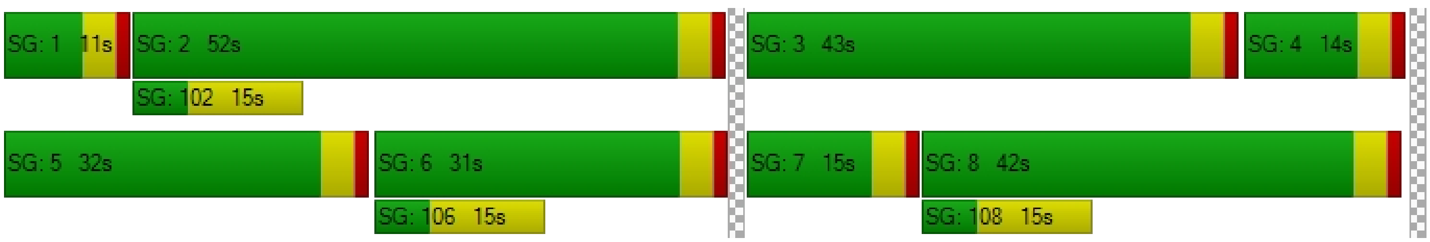
X, volume / capacity	1.30	1.23	1.29	0.57	1.29	0.22	0.80	0.36	1.33	1.28	0.31
d, Delay for Lane Group [s/veh]	200.19	151.91	175.96	63.77	187.65	39.41	68.31	32.17	204.82	224.28	29.44
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	26.42	41.24	43.92	1.22	24.30	1.77	2.89	4.40	33.56	11.32	3.78
50th-Percentile Queue Length [ft]	660.52	1030.99	1098.00	30.58	607.42	44.24	72.13	110.11	838.91	282.96	94.55
95th-Percentile Queue Length [veh]	39.86	59.54	64.54	2.20	36.81	3.19	5.19	7.85	50.57	18.34	6.81
95th-Percentile Queue Length [ft]	996.39	1488.53	1613.55	55.05	920.27	79.63	129.83	196.16	1264.25	458.58	170.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	200.19	162.16	175.96	63.77	187.65	39.41	68.31	32.17	204.82	224.28	29.44	29.44
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	171.89			173.01			153.69			130.35		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	165.24											
Intersection LOS	F											
Intersection V/C	1.308											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	87.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.199

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	4	3	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1548	392	318	1219	304	455
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	416	105	85	328	82	122
Total Analysis Volume [veh/h]	1665	422	342	1311	327	489
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.52	0.30	0.21	0.41	0.11	0.34
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.40	48.95	12.47	34.43	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	99.37	6.06	105.29	1.48	0.26	115.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.68	1.17	0.63	0.37	1.21
d, Delay for Lane Group [s/veh]	133.37	33.46	154.24	13.95	34.69	158.88
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	37.18	9.95	16.91	8.93	3.87	24.83
50th-Percentile Queue Length [ft]	929.59	248.85	422.75	223.20	96.74	620.80
95th-Percentile Queue Length [veh]	53.60	15.13	25.50	13.83	6.97	36.81
95th-Percentile Queue Length [ft]	1339.89	378.21	637.47	345.71	174.14	920.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	133.37	33.46	154.24	13.95	34.69	158.88
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	113.17		42.97		109.11	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	86.98					
Intersection LOS	F					
Intersection V/C	1.199					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	45	13	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	82	49	14	27	39
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	28	17	5	9	13
Total Analysis Volume [veh/h]	14	112	67	19	37	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.11	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	10.27	9.23	0.00	0.00	7.44	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.45	0.45	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	11.36	11.36	0.00	0.00	1.88	0.00
d_A, Approach Delay [s/veh]	9.35		0.00		3.06	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.81					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	14.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.105

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	157	33	40	110	37	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	4	0	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	34	44	110	39	127
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	11	15	37	13	43
Total Analysis Volume [veh/h]	212	46	59	149	53	172
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.00	0.10	0.21
d_M, Delay for Movement [s/veh]	0.00	0.00	7.89	0.00	14.50	11.85
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.14	0.00	1.37	1.37
95th-Percentile Queue Length [ft]	0.00	0.00	3.54	0.00	34.33	34.33
d_A, Approach Delay [s/veh]	0.00		2.24		12.47	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.73					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	10	3	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	191	138	86	104	82
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	71	51	32	39	31
Total Analysis Volume [veh/h]	83	285	206	128	155	122
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.55	0.98	0.98	1.23	1.09	1.25	0.72
95th-Percentile Queue Length [ft]	13.81	24.46	24.46	30.71	27.27	31.19	18.03
Approach Delay [s/veh]	11.01			11.20		11.40	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.18						
Intersection LOS	B						

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	5	2	2	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	250	7	3	182	58	79	4	97	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	75	2	1	55	17	24	1	29	2	1	0
Total Analysis Volume [veh/h]	161	300	8	4	219	70	95	5	117	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

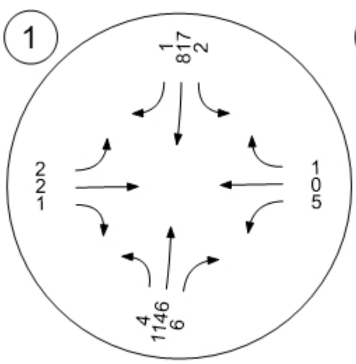
Lanes

Movement, Approach, & Intersection Results

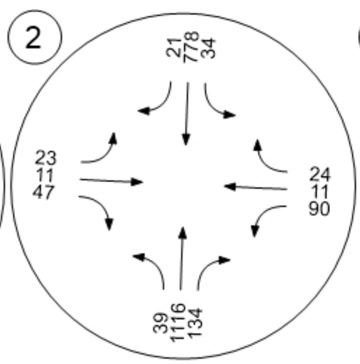
95th-Percentile Queue Length [veh]	6.44	2.45	0.69	0.03	0.71	0.07
95th-Percentile Queue Length [ft]	160.96	61.18	17.29	0.70	17.80	1.71
Approach Delay [s/veh]	22.85	13.51	10.71			10.49
Approach LOS	C	B	B			B
Intersection Delay [s/veh]	17.29					
Intersection LOS	C					

Traffic Volume - Future Total Volume

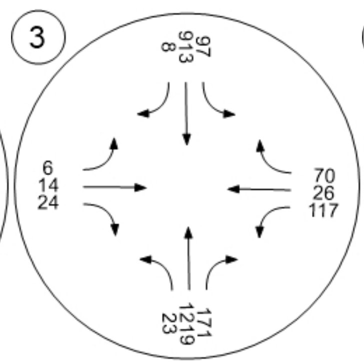
Winchester Road at Keller Ro



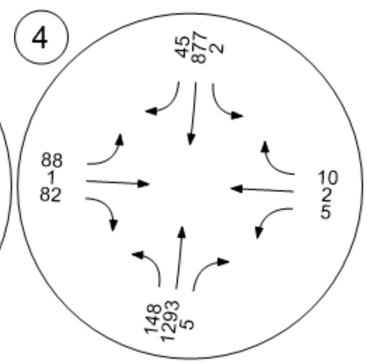
Winchester Road at Pourroy



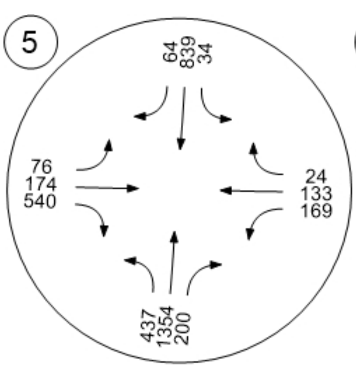
Winchester Road at Whisper



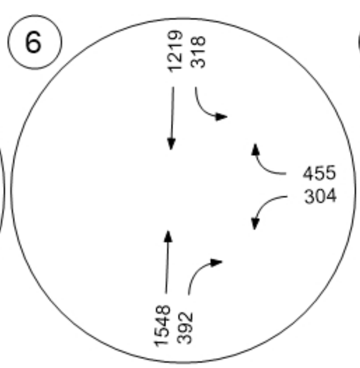
Winchester Road at Jean Nic



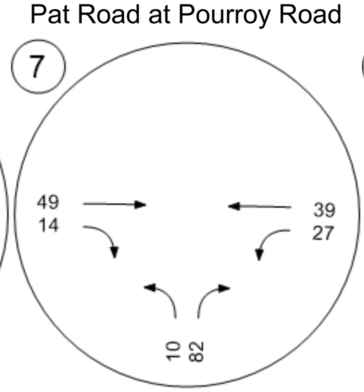
Winchester Road at Max Gilli



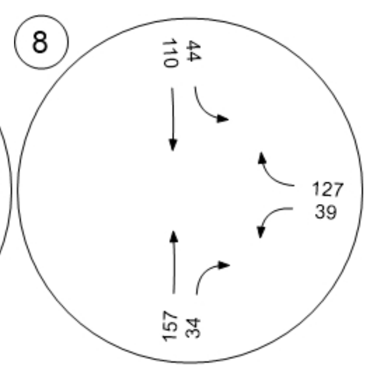
Winchester Road at Benton



Pat Road at Pourroy Road

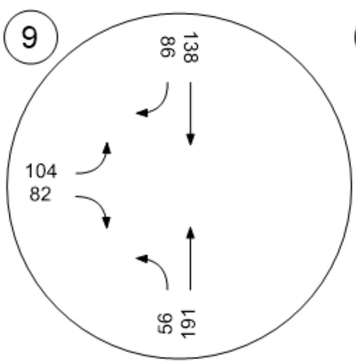


Jean Nicholas Road at Elliot

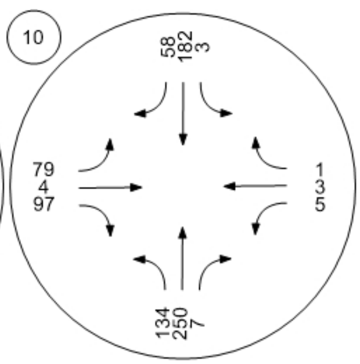


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Vistro File: Q:\...\tvcs1.vistro | Scenario 3: E+P AM
Report File: Q:\...\intersections.pdf | 11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	WB Left	5,955.496	4.2	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	EB Left	0.849	33.3	C
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.726	18.0	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.865	15.0	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.463	180.4	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.943	24.6	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.292	23.8	C
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.012	10.1	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		12.7	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		15.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	4.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5,955.496

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	12	0	30	0	0	0	0	15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	701	15	0	1088	3	1	1	4	23	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	196	4	0	304	1	0	0	1	6	0	1
Total Analysis Volume [veh/h]	1	782	17	0	1214	3	1	1	4	26	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	90	0	11	90	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	0	103	103	4	4	4	4
g / C, Green / Cycle	0.00	0.86	0.00	0.86	0.86	0.04	0.04	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.00	0.48	0.00	0.38	0.00	0.00	0.00	5359.47	0.00
s, saturation flow rate [veh/h]	3101	1670	1597	3192	1425	591	1425	0	1425
c, Capacity [veh/h]	6	1441	0	2748	1227	67	53	60	53
d1, Uniform Delay [s]	59.79	2.17	0.00	1.88	1.16	55.71	55.77	60.00	55.73
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.86	1.54	0.00	0.52	0.00	0.18	0.60	21.18	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.55	0.00	0.44	0.00	0.03	0.08	0.43	0.06
d, Delay for Lane Group [s/veh]	72.65	3.71	0.00	2.39	1.17	55.89	56.36	81.18	56.17
Lane Group LOS	E	A	A	A	A	E	E	F	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.74	0.00	0.34	0.00	0.06	0.13	1.16	0.09
50th-Percentile Queue Length [ft]	0.62	18.48	0.00	8.44	0.04	1.55	3.15	29.04	2.36
95th-Percentile Queue Length [veh]	0.04	1.33	0.00	0.61	0.00	0.11	0.23	2.09	0.17
95th-Percentile Queue Length [ft]	1.12	33.26	0.00	15.19	0.07	2.78	5.67	52.28	4.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.65	3.71	3.71	0.00	2.39	1.17	55.89	55.89	56.36	81.18	81.18	56.17
Movement LOS	E	A	A	A	A	A	E	E	E	F	F	E
d_A, Approach Delay [s/veh]	3.80			2.39			56.21			78.59		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	4.17											
Intersection LOS	A											
Intersection V/C	5955.496											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	165	0	0	0	0	45	36	24	136	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	189	601	162	69	957	100	74	38	167	176	42	58
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	166	45	19	264	28	20	10	46	49	12	16
Total Analysis Volume [veh/h]	209	664	179	76	1057	110	82	42	185	194	46	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	28	0	24	23	0	29	21	0	27	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	49	49	6	40	40	7	15	15	14	23	23
g / C, Green / Cycle	0.15	0.49	0.49	0.06	0.40	0.40	0.07	0.15	0.15	0.14	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.13	0.21	0.13	0.05	0.33	0.08	0.05	0.03	0.13	0.12	0.03	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	242	1546	690	100	1262	564	105	254	216	226	382	324
d1, Uniform Delay [s]	41.48	16.80	15.22	46.20	27.36	19.83	46.08	36.98	41.43	41.98	30.71	31.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.92	0.87	0.91	11.24	6.72	0.77	11.90	0.30	9.44	9.02	0.14	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

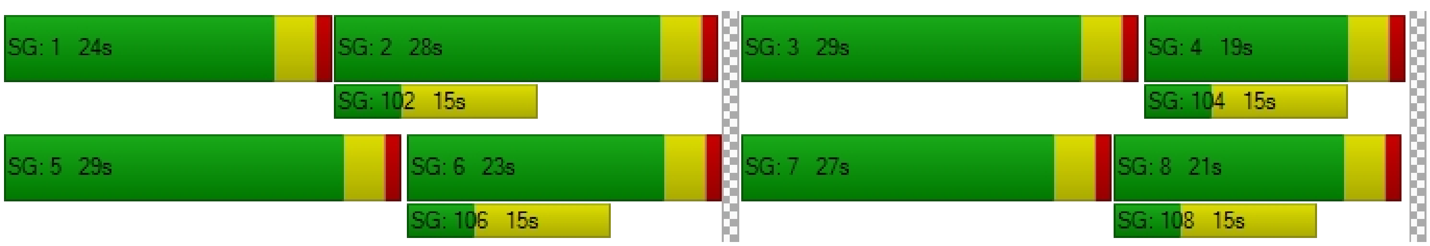
X, volume / capacity	0.86	0.43	0.26	0.76	0.84	0.20	0.78	0.17	0.86	0.86	0.12	0.20
d, Delay for Lane Group [s/veh]	50.40	17.68	16.13	57.44	34.08	20.60	57.98	37.28	50.87	51.00	30.85	31.57
Lane Group LOS	D	B	B	E	C	C	E	D	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	5.20	4.30	2.18	2.03	10.89	1.59	2.34	0.91	4.97	5.05	0.86	1.23
50th-Percentile Queue Length [ft]	129.94	107.61	54.62	50.87	272.32	39.66	58.59	22.84	124.23	126.27	21.55	30.67
95th-Percentile Queue Length [veh]	8.94	7.71	3.93	3.66	16.31	2.86	4.22	1.64	8.63	8.74	1.55	2.21
95th-Percentile Queue Length [ft]	223.42	192.67	98.32	91.57	407.64	71.39	105.46	41.12	215.63	218.41	38.79	55.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.40	17.68	16.13	57.44	34.08	20.60	57.98	37.28	50.87	51.00	30.85	31.57
Movement LOS	D	B	B	E	C	C	E	D	D	D	C	C
d_A, Approach Delay [s/veh]	23.92			34.31			50.91			43.86		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.31											
Intersection LOS	C											
Intersection V/C	0.849											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	61	75	0	0	0	0	0	0	75
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	791	74	107	1194	12	17	10	12	144	20	151
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	220	21	30	332	3	5	3	3	40	6	42
Total Analysis Volume [veh/h]	24	879	82	119	1327	13	19	11	13	160	22	168
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	21	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	35	35	6	39	39	2	4	4	9	10	10
g / C, Green / Cycle	0.04	0.50	0.50	0.09	0.56	0.56	0.03	0.05	0.05	0.12	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.28	0.06	0.04	0.42	0.01	0.01	0.01	0.01	0.10	0.01	0.12
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	61	1604	716	282	1771	791	51	90	77	199	246	209
d1, Uniform Delay [s]	32.92	11.98	9.21	30.14	11.89	7.01	33.25	31.59	31.67	29.87	25.88	28.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.02	1.35	0.32	1.00	2.96	0.04	4.45	0.59	1.03	7.42	0.16	7.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

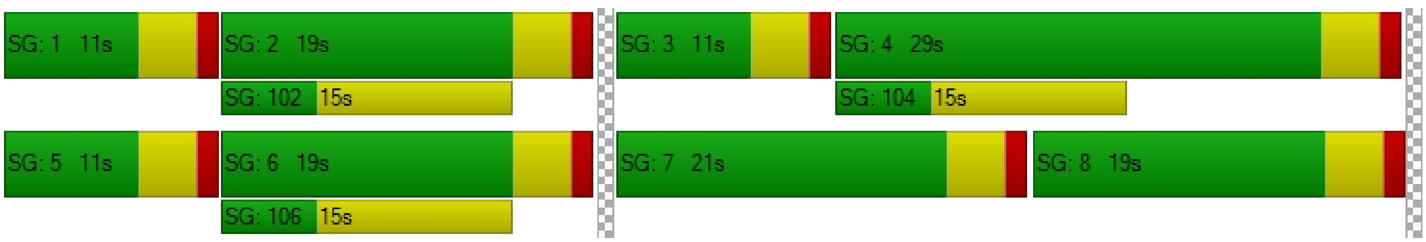
X, volume / capacity	0.39	0.55	0.11	0.42	0.75	0.02	0.37	0.12	0.17	0.80	0.09	0.80
d, Delay for Lane Group [s/veh]	36.94	13.33	9.54	31.14	14.84	7.05	37.70	32.18	32.70	37.29	26.04	36.05
Lane Group LOS	D	B	A	C	B	A	D	C	C	D	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.43	3.72	0.56	0.89	5.97	0.07	0.37	0.19	0.23	2.93	0.32	3.03
50th-Percentile Queue Length [ft]	10.67	93.03	13.88	22.14	149.17	1.72	9.36	4.74	5.72	73.23	7.92	75.70
95th-Percentile Queue Length [veh]	0.77	6.70	1.00	1.59	9.97	0.12	0.67	0.34	0.41	5.27	0.57	5.45
95th-Percentile Queue Length [ft]	19.20	167.45	24.98	39.86	249.32	3.10	16.85	8.53	10.29	131.81	14.26	136.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.94	13.33	9.54	31.14	14.84	7.05	37.70	32.18	32.70	37.29	26.04	36.05
Movement LOS	D	B	A	C	B	A	D	C	C	D	C	D
d_A, Approach Delay [s/veh]	13.59			16.10			34.78			35.99		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	17.97											
Intersection LOS	B											
Intersection V/C	0.726											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.865

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	0	75	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	751	4	6	1313	90	57	4	120	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	214	1	2	374	26	16	1	34	1	1	2
Total Analysis Volume [veh/h]	98	855	5	7	1495	103	65	5	137	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	29	0	11	29	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	34	34	1	29	29	5	7	7	0	3	3
g / C, Green / Cycle	0.10	0.59	0.59	0.01	0.50	0.50	0.08	0.12	0.12	0.01	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.06	0.27	0.00	0.00	0.47	0.07	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	153	1869	835	21	1605	717	126	204	173	10	81	69
d1, Uniform Delay [s]	25.45	6.86	5.04	28.59	13.59	7.79	25.86	22.64	24.97	28.94	26.54	26.60
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.37	0.18	0.00	8.79	3.00	0.09	3.25	0.05	7.88	17.40	0.31	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

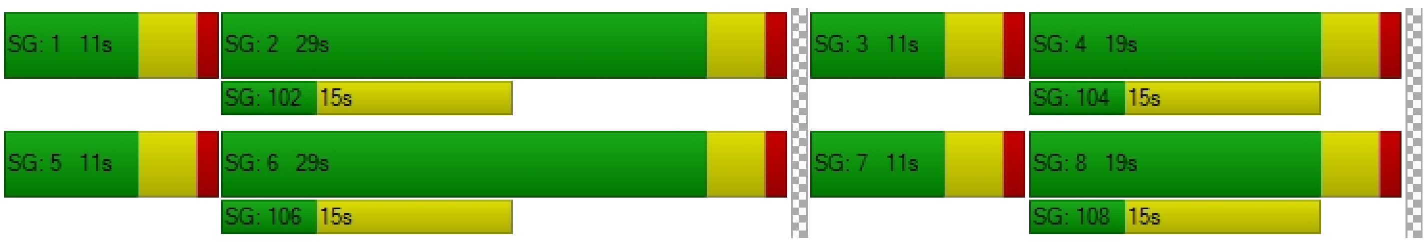
X, volume / capacity	0.64	0.46	0.01	0.33	0.93	0.14	0.52	0.02	0.79	0.31	0.06	0.10
d, Delay for Lane Group [s/veh]	29.82	7.03	5.04	37.38	16.59	7.88	29.11	22.68	32.85	46.34	26.86	27.23
Lane Group LOS	C	A	A	D	B	A	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.30	1.62	0.01	0.14	6.34	0.47	0.93	0.06	2.10	0.09	0.07	0.10
50th-Percentile Queue Length [ft]	32.40	40.43	0.35	3.40	158.49	11.65	23.25	1.49	52.52	2.15	1.75	2.51
95th-Percentile Queue Length [veh]	2.33	2.91	0.03	0.24	10.47	0.84	1.67	0.11	3.78	0.16	0.13	0.18
95th-Percentile Queue Length [ft]	58.32	72.77	0.64	6.12	261.72	20.97	41.84	2.69	94.53	3.88	3.15	4.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.82	7.03	5.04	37.38	16.59	7.88	29.11	22.68	32.85	46.34	26.86	27.23
Movement LOS	C	A	A	D	B	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	9.35			16.12			31.43			30.92		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	15.01											
Intersection LOS	B											
Intersection V/C	0.865											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	180.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.463

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	45	0	24	39	12	15	0	0	0	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	699	95	45	1314	99	81	118	535	209	233	47
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	194	26	12	365	27	22	33	148	58	65	13
Total Analysis Volume [veh/h]	398	776	105	50	1458	110	90	131	594	232	259	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	27	0	39	41	0	34	38	38	16	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	52	52	6	37	37	8	34	34	12	38
g / C, Green / Cycle	0.18	0.44	0.44	0.05	0.31	0.31	0.07	0.28	0.28	0.10	0.31
(v / s)_i Volume / Saturation Flow Rate	0.25	0.27	0.27	0.03	0.46	0.08	0.06	0.08	0.42	0.15	0.19
s, saturation flow rate [veh/h]	1597	1676	1608	1597	3192	1425	1597	1676	1425	1597	1628
c, Capacity [veh/h]	279	733	703	76	987	441	112	473	402	160	509
d1, Uniform Delay [s]	49.50	25.97	26.01	56.21	41.44	31.01	55.01	33.53	43.07	54.00	35.07
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	210.55	3.80	4.00	9.45	219.92	1.35	12.67	0.31	227.62	235.00	1.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.42	0.61	0.62	0.66	1.48	0.25	0.81	0.28	1.48	1.45	0.61
d, Delay for Lane Group [s/veh]	260.05	29.77	30.01	65.66	261.36	32.37	67.68	33.84	270.69	289.00	36.93
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.30	9.82	9.51	1.63	43.76	2.43	3.07	3.03	37.21	15.24	7.96
50th-Percentile Queue Length [ft]	607.40	245.56	237.65	40.75	1093.95	60.81	76.87	75.72	930.34	380.96	198.99
95th-Percentile Queue Length [veh]	37.66	14.96	14.56	2.93	66.93	4.38	5.53	5.45	57.40	24.51	12.59
95th-Percentile Queue Length [ft]	941.55	374.06	364.06	73.35	1673.33	109.46	138.37	136.30	1435.11	612.71	314.67

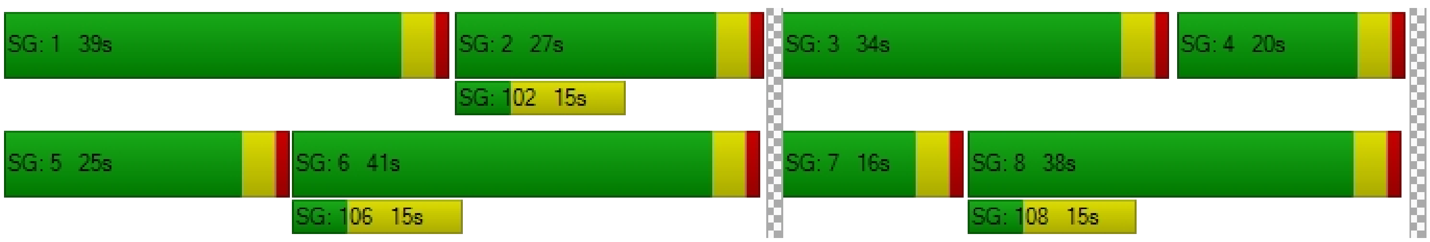
Generated with PTV VISTRO
Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	260.05	29.88	30.01	65.66	261.36	32.37	67.68	33.84	270.69	289.00	36.93	36.93
Movement LOS	F	C	C	E	F	C	E	C	F	F	D	D
d_A, Approach Delay [s/veh]	101.51			239.74			210.20			144.63		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	180.40											
Intersection LOS	F											
Intersection V/C	1.463											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.943

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	27	12	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	895	216	338	1708	374	273
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	241	58	91	459	101	73
Total Analysis Volume [veh/h]	962	232	363	1837	402	294
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	28	47	23	23
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	18	46	16	16
g / C, Green / Cycle	0.34	0.34	0.26	0.65	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.30	0.16	0.23	0.58	0.13	0.21
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1086	485	409	2086	721	331
d1, Uniform Delay [s]	21.85	18.23	25.11	9.92	23.73	26.02
k, delay calibration	0.50	0.50	0.20	0.50	0.11	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.65	3.36	11.21	5.76	0.68	16.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

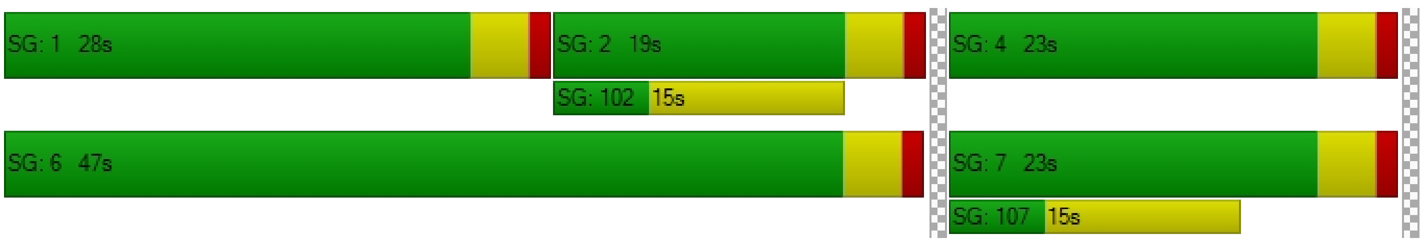
X, volume / capacity	0.89	0.48	0.89	0.88	0.56	0.89
d, Delay for Lane Group [s/veh]	32.49	21.59	36.32	15.68	24.41	42.55
Lane Group LOS	C	C	D	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	7.66	2.89	6.19	7.54	2.85	5.99
50th-Percentile Queue Length [ft]	191.61	72.27	154.77	188.57	71.35	149.75
95th-Percentile Queue Length [veh]	12.20	5.20	10.27	12.05	5.14	10.00
95th-Percentile Queue Length [ft]	305.12	130.08	256.79	301.17	128.43	250.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.49	21.59	36.32	15.68	24.41	42.55
Movement LOS	C	C	D	B	C	D
d_A, Approach Delay [s/veh]	30.38		19.09		32.07	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	24.59					
Intersection LOS	C					
Intersection V/C	0.943					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	23.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.292

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	196	47	0	240
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	79	200	50	88	243
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	27	68	17	30	83
Total Analysis Volume [veh/h]	84	108	272	68	120	331
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.15	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	23.82	16.20	0.00	0.00	8.28	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.19	2.19	0.00	0.00	0.33	0.00
95th-Percentile Queue Length [ft]	54.84	54.84	0.00	0.00	8.17	0.00
d_A, Approach Delay [s/veh]	19.53		0.00		2.20	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.83					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	49	0	0	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	24	0	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	73	0	7	32
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	25	0	2	11
Total Analysis Volume [veh/h]	0	12	99	0	9	43
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.06	0.00	0.01	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	7.39	0.00	10.09	8.54
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.20	0.00	0.16	0.16
95th-Percentile Queue Length [ft]	0.00	0.00	4.92	0.00	4.12	4.12
d_A, Approach Delay [s/veh]	0.00		7.39		8.81	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.30					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	54	44	12	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	168	191	108	128	94
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	63	71	40	48	35
Total Analysis Volume [veh/h]	115	250	285	161	191	140
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.90	0.91	0.91	2.01	1.78	1.82	0.93
95th-Percentile Queue Length [ft]	22.45	22.81	22.81	50.18	44.43	45.43	23.13
Approach Delay [s/veh]	11.80			13.28		12.97	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	12.72						
Intersection LOS	B						

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	15.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	0	19	10	12	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	190	0	1	263	73	56	3	111	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	57	0	0	79	22	17	1	33	2	2	0
Total Analysis Volume [veh/h]	137	228	0	1	316	88	67	4	133	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.79	4.34	0.46	0.02	0.84	0.09
95th-Percentile Queue Length [ft]	94.80	108.53	11.49	0.56	20.92	2.36
Approach Delay [s/veh]	16.60	17.24	10.55			10.57
Approach LOS	C	C	B			B
Intersection Delay [s/veh]	15.52					
Intersection LOS	C					

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 4: E+P PM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.939	7.4	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.659	14.7	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.699	16.9	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Left	0.796	13.8	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.308	165.2	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.199	87.0	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	10.3	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.004	9.4	A
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.2	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		17.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	7.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.939

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	3	0	4	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1146	6	2	817	1	2	2	1	5	0	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	320	2	1	228	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1279	7	2	912	1	2	2	1	6	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	88	0	11	88	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.88	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.77	0.00	0.29	0.00	0.05	0.00	0.08	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	84	1425	79	1425
c, Capacity [veh/h]	24	1479	7	2808	1253	46	18	61	18
d1, Uniform Delay [s]	59.13	3.53	59.55	1.22	0.87	59.97	58.52	59.97	58.52
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	7.22	22.54	0.31	0.00	0.80	1.28	0.69	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.87	0.30	0.32	0.00	0.09	0.06	0.10	0.06
d, Delay for Lane Group [s/veh]	62.35	10.74	82.09	1.52	0.87	60.77	59.80	60.67	59.80
Lane Group LOS	E	B	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.07	2.96	0.10	0.12	0.00	0.13	0.04	0.20	0.04
50th-Percentile Queue Length [ft]	1.70	74.12	2.50	3.00	0.01	3.31	0.91	4.88	0.91
95th-Percentile Queue Length [veh]	0.12	5.34	0.18	0.22	0.00	0.24	0.07	0.35	0.07
95th-Percentile Queue Length [ft]	3.06	133.42	4.49	5.41	0.02	5.95	1.64	8.78	1.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	10.74	10.74	82.09	1.52	0.87	60.77	60.77	59.80	60.67	60.67	59.80
Movement LOS	E	B	B	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	10.90			1.70			60.58			60.54		
Approach LOS	B			A			E			E		
d_I, Intersection Delay [s/veh]	7.37											
Intersection LOS	A											
Intersection V/C	0.939											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	0	0	0	6	9	6	30	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1116	134	34	778	21	23	11	47	90	11	24
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	308	37	9	215	6	6	3	13	25	3	7
Total Analysis Volume [veh/h]	43	1233	148	38	860	23	25	12	52	99	12	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	18	19	0	21	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	39	39	4	39	39	3	5	5	6	8	8
g / C, Green / Cycle	0.06	0.56	0.56	0.05	0.56	0.56	0.04	0.07	0.07	0.09	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.39	0.10	0.02	0.27	0.02	0.02	0.01	0.04	0.06	0.01	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	94	1780	795	87	1766	788	65	122	104	139	200	170
d1, Uniform Delay [s]	31.98	11.20	7.67	32.18	9.59	7.12	32.85	30.40	31.33	31.21	27.43	27.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.45	2.24	0.52	3.44	0.96	0.07	3.71	0.35	3.68	6.56	0.12	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

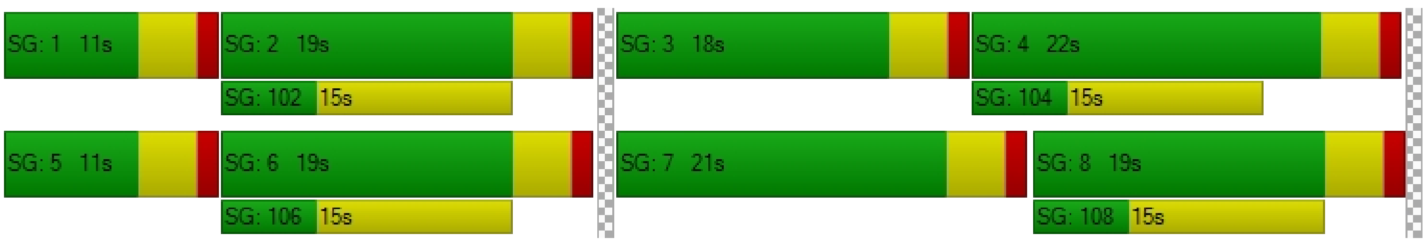
X, volume / capacity	0.46	0.69	0.19	0.44	0.49	0.03	0.39	0.10	0.50	0.71	0.06	0.16
d, Delay for Lane Group [s/veh]	35.44	13.44	8.19	35.62	10.56	7.19	36.56	30.75	35.01	37.77	27.55	28.19
Lane Group LOS	D	B	A	D	B	A	D	C	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.70	4.67	0.79	0.63	2.70	0.11	0.47	0.20	0.93	1.76	0.17	0.39
50th-Percentile Queue Length [ft]	17.58	116.68	19.76	15.66	67.42	2.82	11.72	4.88	23.15	43.89	4.28	9.86
95th-Percentile Queue Length [veh]	1.27	8.21	1.42	1.13	4.85	0.20	0.84	0.35	1.67	3.16	0.31	0.71
95th-Percentile Queue Length [ft]	31.65	205.25	35.57	28.19	121.35	5.07	21.09	8.79	41.67	79.01	7.71	17.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.44	13.44	8.19	35.62	10.56	7.19	36.56	30.75	35.01	37.77	27.55	28.19
Movement LOS	D	B	A	D	B	A	D	C	D	D	C	C
d_A, Approach Delay [s/veh]	13.56			11.51			34.87			35.00		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	14.71											
Intersection LOS	B											
Intersection V/C	0.659											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	14	16	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1219	171	97	913	8	6	14	24	117	26	70
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	339	48	27	254	2	2	4	7	33	7	19
Total Analysis Volume [veh/h]	26	1354	190	108	1014	9	7	16	27	130	29	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	11	11	0	20	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	45	45	6	48	48	1	4	4	8	11	11
g / C, Green / Cycle	0.04	0.56	0.56	0.08	0.60	0.60	0.01	0.05	0.05	0.10	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.42	0.13	0.03	0.32	0.01	0.00	0.01	0.02	0.08	0.02	0.05
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	64	1794	801	251	1924	859	23	93	79	163	240	204
d1, Uniform Delay [s]	37.57	13.35	8.87	35.11	9.27	6.37	39.15	36.14	36.49	35.19	29.95	31.14
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	3.00	0.70	1.17	1.04	0.02	7.48	0.87	2.56	8.49	0.22	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

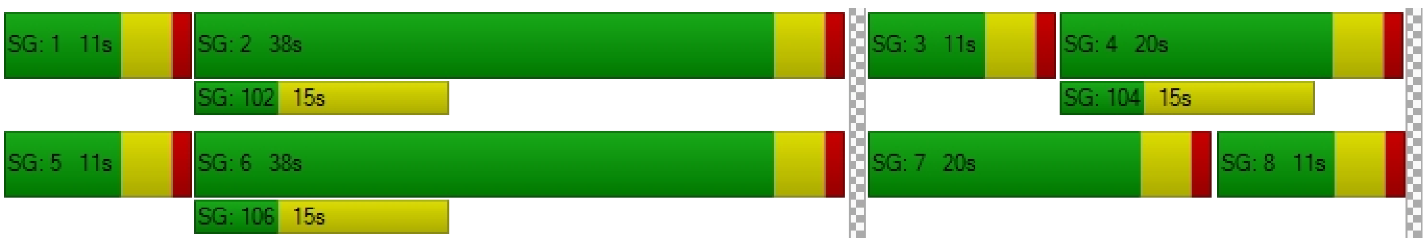
X, volume / capacity	0.41	0.75	0.24	0.43	0.53	0.01	0.31	0.17	0.34	0.80	0.12	0.38
d, Delay for Lane Group [s/veh]	41.65	16.36	9.57	36.28	10.31	6.39	46.63	37.02	39.05	43.67	30.17	32.31
Lane Group LOS	D	B	A	D	B	A	D	D	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.53	7.43	1.40	0.96	3.82	0.05	0.18	0.32	0.56	2.81	0.49	1.40
50th-Percentile Queue Length [ft]	13.29	185.72	35.02	24.02	95.57	1.21	4.57	7.99	14.04	70.17	12.32	35.07
95th-Percentile Queue Length [veh]	0.96	11.90	2.52	1.73	6.88	0.09	0.33	0.57	1.01	5.05	0.89	2.52
95th-Percentile Queue Length [ft]	23.91	297.47	63.04	43.24	172.02	2.18	8.22	14.37	25.28	126.30	22.17	63.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.65	16.36	9.57	36.28	10.31	6.39	46.63	37.02	39.05	43.67	30.17	32.31
Movement LOS	D	B	A	D	B	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	15.95			12.76			39.46			38.28		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	16.91											
Intersection LOS	B											
Intersection V/C	0.699											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.796

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	16	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	1293	5	2	877	45	88	1	82	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	368	1	1	250	13	25	0	23	1	1	3
Total Analysis Volume [veh/h]	169	1473	6	2	999	51	100	1	93	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	29	0	11	21	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	26	26	0	20	20	5	6	6	1	1	1
g / C, Green / Cycle	0.14	0.54	0.54	0.00	0.40	0.40	0.11	0.12	0.12	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.46	0.00	0.00	0.31	0.04	0.06	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	219	1709	763	6	1285	574	172	201	171	18	40	34
d1, Uniform Delay [s]	20.26	9.74	5.27	24.15	12.64	9.00	20.66	18.85	20.15	23.85	23.21	23.36
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.72	1.39	0.00	24.75	1.05	0.07	3.09	0.01	2.68	9.81	0.52	5.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

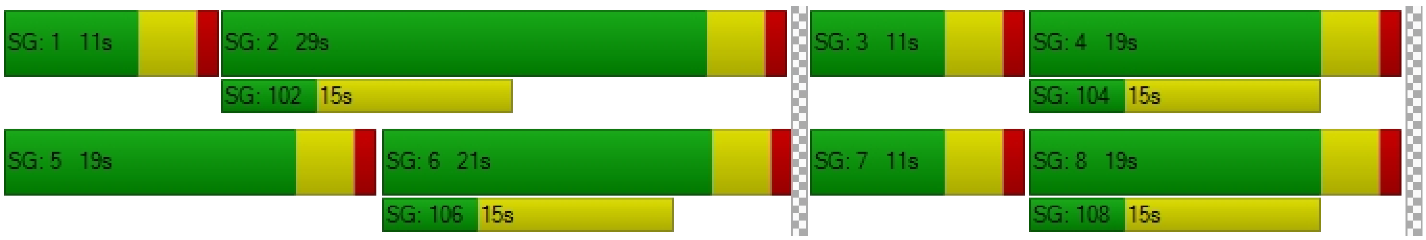
X, volume / capacity	0.77	0.86	0.01	0.31	0.78	0.09	0.58	0.00	0.54	0.32	0.05	0.32
d, Delay for Lane Group [s/veh]	25.97	11.13	5.27	48.90	13.68	9.07	23.75	18.86	22.84	33.66	23.72	28.79
Lane Group LOS	C	B	A	D	B	A	C	B	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.79	3.40	0.01	0.06	3.11	0.22	1.12	0.01	1.02	0.11	0.03	0.16
50th-Percentile Queue Length [ft]	44.66	84.90	0.36	1.59	77.83	5.59	28.06	0.24	25.51	2.83	0.66	4.12
95th-Percentile Queue Length [veh]	3.22	6.11	0.03	0.11	5.60	0.40	2.02	0.02	1.84	0.20	0.05	0.30
95th-Percentile Queue Length [ft]	80.39	152.81	0.65	2.85	140.10	10.06	50.51	0.43	45.92	5.09	1.18	7.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.97	11.13	5.27	48.90	13.68	9.07	23.75	18.86	22.84	33.66	23.72	28.79
Movement LOS	C	B	A	D	B	A	C	B	C	C	C	C
d_A, Approach Delay [s/veh]	12.63			13.53			23.28			29.80		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	13.78											
Intersection LOS	B											
Intersection V/C	0.796											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	165.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.308

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	6	7	3	2	0	0	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	437	1354	200	34	839	64	76	174	540	169	133	24
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	376	55	9	233	18	21	48	150	47	37	7
Total Analysis Volume [veh/h]	485	1503	222	38	931	71	84	193	599	188	148	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	50	50	5	27	27	8	38	38	11	41
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.07	0.32	0.32	0.09	0.34
(v / s)_i Volume / Saturation Flow Rate	0.30	0.51	0.54	0.02	0.29	0.05	0.05	0.12	0.42	0.12	0.11
s, saturation flow rate [veh/h]	1597	1676	1604	1597	3192	1425	1597	1676	1425	1597	1632
c, Capacity [veh/h]	373	700	669	67	721	322	105	529	450	146	558
d1, Uniform Delay [s]	46.00	34.96	34.96	56.42	46.45	37.84	55.29	31.75	41.06	54.50	29.12
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	154.19	116.95	141.00	7.35	141.21	1.57	13.03	0.42	163.76	169.78	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

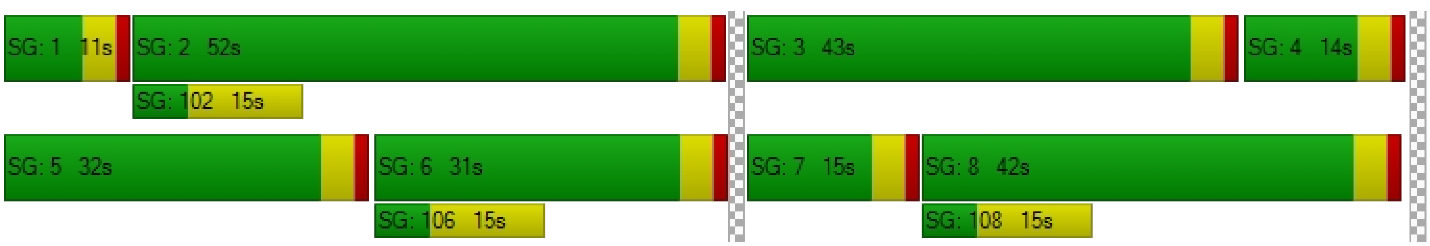
X, volume / capacity	1.30	1.23	1.29	0.57	1.29	0.22	0.80	0.36	1.33	1.28	0.31
d, Delay for Lane Group [s/veh]	200.19	151.91	175.96	63.77	187.65	39.41	68.31	32.17	204.82	224.28	29.44
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	26.42	41.24	43.92	1.22	24.30	1.77	2.89	4.40	33.56	11.32	3.78
50th-Percentile Queue Length [ft]	660.52	1030.99	1098.00	30.58	607.42	44.24	72.13	110.11	838.91	282.96	94.55
95th-Percentile Queue Length [veh]	39.86	59.54	64.54	2.20	36.81	3.19	5.19	7.85	50.57	18.34	6.81
95th-Percentile Queue Length [ft]	996.39	1488.53	1613.55	55.05	920.27	79.63	129.83	196.16	1264.25	458.58	170.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	200.19	162.16	175.96	63.77	187.65	39.41	68.31	32.17	204.82	224.28	29.44	29.44
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	171.89			173.01			153.69			130.35		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	165.24											
Intersection LOS	F											
Intersection V/C	1.308											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	87.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.199

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	4	3	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1548	392	318	1219	304	455
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	416	105	85	328	82	122
Total Analysis Volume [veh/h]	1665	422	342	1311	327	489
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.52	0.30	0.21	0.41	0.11	0.34
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.40	48.95	12.47	34.43	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	99.37	6.06	105.29	1.48	0.26	115.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.68	1.17	0.63	0.37	1.21
d, Delay for Lane Group [s/veh]	133.37	33.46	154.24	13.95	34.69	158.88
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	37.18	9.95	16.91	8.93	3.87	24.83
50th-Percentile Queue Length [ft]	929.59	248.85	422.75	223.20	96.74	620.80
95th-Percentile Queue Length [veh]	53.60	15.13	25.50	13.83	6.97	36.81
95th-Percentile Queue Length [ft]	1339.89	378.21	637.47	345.71	174.14	920.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	133.37	33.46	154.24	13.95	34.69	158.88
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	113.17		42.97		109.11	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	86.98					
Intersection LOS	F					
Intersection V/C	1.199					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	45	13	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	82	49	14	27	39
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	28	17	5	9	13
Total Analysis Volume [veh/h]	14	112	67	19	37	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.11	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	10.27	9.23	0.00	0.00	7.44	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.45	0.45	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	11.36	11.36	0.00	0.00	1.88	0.00
d_A, Approach Delay [s/veh]	9.35		0.00		3.06	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.81					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	37	0	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	4	0	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1	41	0	2	38
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	14	0	1	13
Total Analysis Volume [veh/h]	0	1	55	0	3	51
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.00	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	7.30	0.00	9.38	8.50
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.11	0.00	0.16	0.16
95th-Percentile Queue Length [ft]	0.00	0.00	2.63	0.00	3.99	3.99
d_A, Approach Delay [s/veh]	0.00		7.30		8.55	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.85					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	10	3	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	191	138	86	104	82
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	71	51	32	39	31
Total Analysis Volume [veh/h]	83	285	206	128	155	122
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.55	0.98	0.98	1.23	1.09	1.25	0.72
95th-Percentile Queue Length [ft]	13.81	24.46	24.46	30.71	27.27	31.19	18.03
Approach Delay [s/veh]	11.01			11.20		11.40	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.18						
Intersection LOS	B						

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	5	2	2	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	250	7	3	182	58	79	4	97	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	75	2	1	55	17	24	1	29	2	1	0
Total Analysis Volume [veh/h]	161	300	8	4	219	70	95	5	117	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

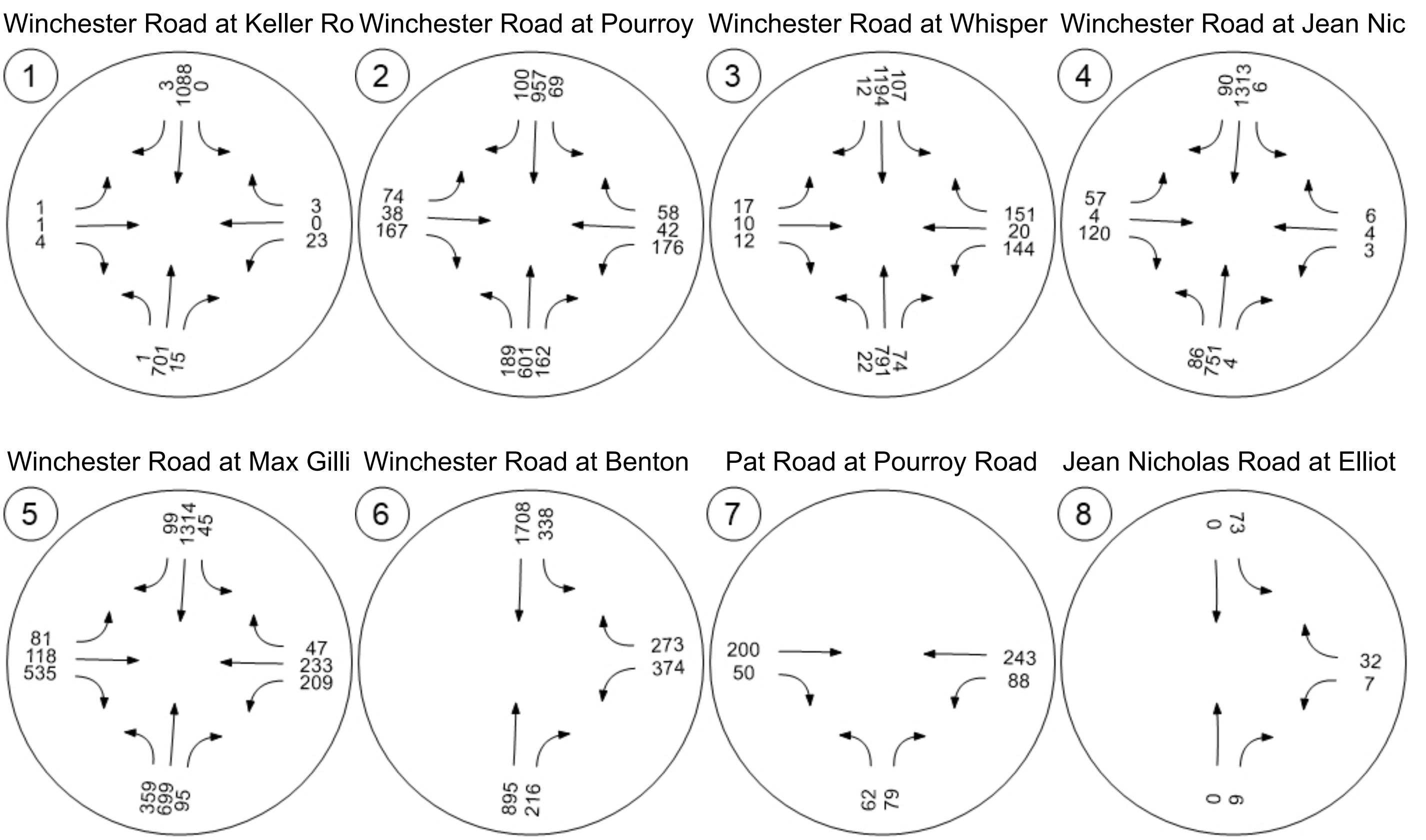
Intersection Settings

Lanes

Movement, Approach, & Intersection Results

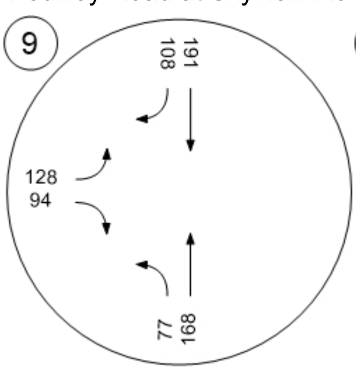
95th-Percentile Queue Length [veh]	6.44	2.45	0.69	0.03	0.71	0.07
95th-Percentile Queue Length [ft]	160.96	61.18	17.29	0.70	17.80	1.71
Approach Delay [s/veh]	22.85	13.51	10.71			10.49
Approach LOS	C	B	B			B
Intersection Delay [s/veh]	17.29					
Intersection LOS	C					

Traffic Volume - Future Total Volume

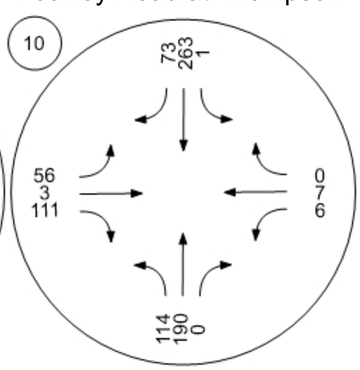


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\E+P AM_new.pdf

Scenario 3: E+P AM
12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	WB Left	5,955.496	4.2	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	EB Left	0.849	33.3	C
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.726	18.0	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.784	16.1	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.463	180.4	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.943	24.6	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.292	23.8	C
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.237	22.4	C
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		12.7	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		15.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	4.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5,955.496

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	12	0	30	0	0	0	0	15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	701	15	0	1088	3	1	1	4	23	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	196	4	0	304	1	0	0	1	6	0	1
Total Analysis Volume [veh/h]	1	782	17	0	1214	3	1	1	4	26	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	90	0	11	90	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	0	103	103	4	4	4	4
g / C, Green / Cycle	0.00	0.86	0.00	0.86	0.86	0.04	0.04	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.00	0.48	0.00	0.38	0.00	0.00	0.00	5359.47	0.00
s, saturation flow rate [veh/h]	3101	1670	1597	3192	1425	591	1425	0	1425
c, Capacity [veh/h]	6	1441	0	2748	1227	67	53	60	53
d1, Uniform Delay [s]	59.79	2.17	0.00	1.88	1.16	55.71	55.77	60.00	55.73
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.86	1.54	0.00	0.52	0.00	0.18	0.60	21.18	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.55	0.00	0.44	0.00	0.03	0.08	0.43	0.06
d, Delay for Lane Group [s/veh]	72.65	3.71	0.00	2.39	1.17	55.89	56.36	81.18	56.17
Lane Group LOS	E	A	A	A	A	E	E	F	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.74	0.00	0.34	0.00	0.06	0.13	1.16	0.09
50th-Percentile Queue Length [ft]	0.62	18.48	0.00	8.44	0.04	1.55	3.15	29.04	2.36
95th-Percentile Queue Length [veh]	0.04	1.33	0.00	0.61	0.00	0.11	0.23	2.09	0.17
95th-Percentile Queue Length [ft]	1.12	33.26	0.00	15.19	0.07	2.78	5.67	52.28	4.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.65	3.71	3.71	0.00	2.39	1.17	55.89	55.89	56.36	81.18	81.18	56.17
Movement LOS	E	A	A	A	A	A	E	E	E	F	F	E
d_A, Approach Delay [s/veh]	3.80			2.39			56.21			78.59		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	4.17											
Intersection LOS	A											
Intersection V/C	5955.496											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	165	0	0	0	0	45	36	24	136	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	189	601	162	69	957	100	74	38	167	176	42	58
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	166	45	19	264	28	20	10	46	49	12	16
Total Analysis Volume [veh/h]	209	664	179	76	1057	110	82	42	185	194	46	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	28	0	24	23	0	29	21	0	27	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	49	49	6	40	40	7	15	15	14	23	23
g / C, Green / Cycle	0.15	0.49	0.49	0.06	0.40	0.40	0.07	0.15	0.15	0.14	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.13	0.21	0.13	0.05	0.33	0.08	0.05	0.03	0.13	0.12	0.03	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	242	1546	690	100	1262	564	105	254	216	226	382	324
d1, Uniform Delay [s]	41.48	16.80	15.22	46.20	27.36	19.83	46.08	36.98	41.43	41.98	30.71	31.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.92	0.87	0.91	11.24	6.72	0.77	11.90	0.30	9.44	9.02	0.14	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

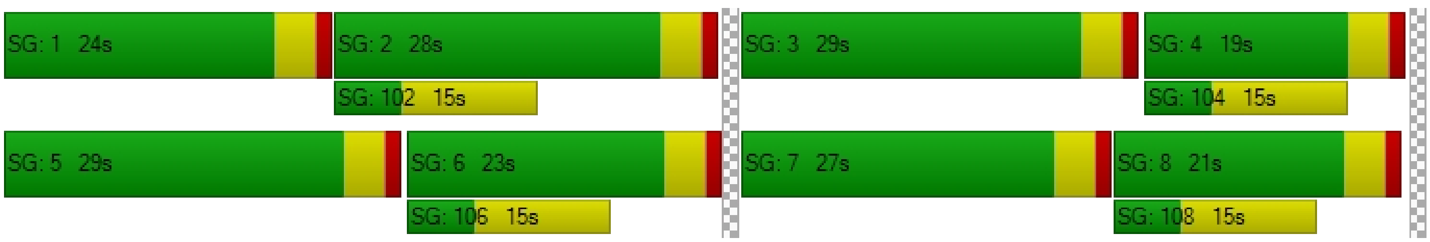
X, volume / capacity	0.86	0.43	0.26	0.76	0.84	0.20	0.78	0.17	0.86	0.86	0.12	0.20
d, Delay for Lane Group [s/veh]	50.40	17.68	16.13	57.44	34.08	20.60	57.98	37.28	50.87	51.00	30.85	31.57
Lane Group LOS	D	B	B	E	C	C	E	D	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	5.20	4.30	2.18	2.03	10.89	1.59	2.34	0.91	4.97	5.05	0.86	1.23
50th-Percentile Queue Length [ft]	129.94	107.61	54.62	50.87	272.32	39.66	58.59	22.84	124.23	126.27	21.55	30.67
95th-Percentile Queue Length [veh]	8.94	7.71	3.93	3.66	16.31	2.86	4.22	1.64	8.63	8.74	1.55	2.21
95th-Percentile Queue Length [ft]	223.42	192.67	98.32	91.57	407.64	71.39	105.46	41.12	215.63	218.41	38.79	55.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.40	17.68	16.13	57.44	34.08	20.60	57.98	37.28	50.87	51.00	30.85	31.57
Movement LOS	D	B	B	E	C	C	E	D	D	D	C	C
d_A, Approach Delay [s/veh]	23.92			34.31			50.91			43.86		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.31											
Intersection LOS	C											
Intersection V/C	0.849											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	61	75	0	0	0	0	0	0	75
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	791	74	107	1194	12	17	10	12	144	20	151
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	220	21	30	332	3	5	3	3	40	6	42
Total Analysis Volume [veh/h]	24	879	82	119	1327	13	19	11	13	160	22	168
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	21	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	35	35	6	39	39	2	4	4	9	10	10
g / C, Green / Cycle	0.04	0.50	0.50	0.09	0.56	0.56	0.03	0.05	0.05	0.12	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.28	0.06	0.04	0.42	0.01	0.01	0.01	0.01	0.10	0.01	0.12
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	61	1604	716	282	1771	791	51	90	77	199	246	209
d1, Uniform Delay [s]	32.92	11.98	9.21	30.14	11.89	7.01	33.25	31.59	31.67	29.87	25.88	28.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.02	1.35	0.32	1.00	2.96	0.04	4.45	0.59	1.03	7.42	0.16	7.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

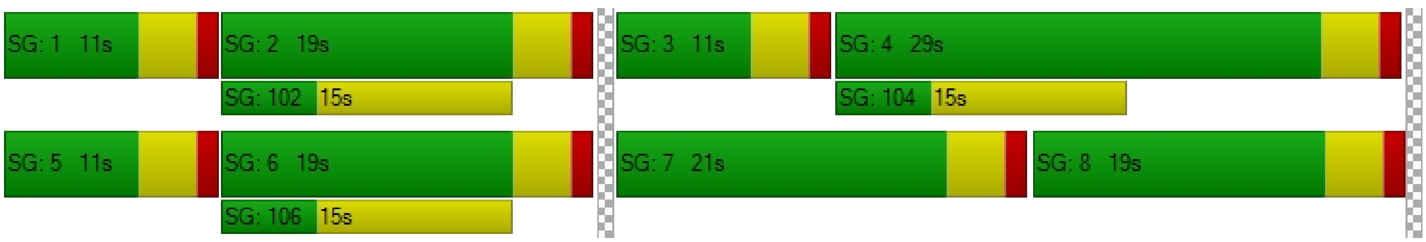
X, volume / capacity	0.39	0.55	0.11	0.42	0.75	0.02	0.37	0.12	0.17	0.80	0.09	0.80
d, Delay for Lane Group [s/veh]	36.94	13.33	9.54	31.14	14.84	7.05	37.70	32.18	32.70	37.29	26.04	36.05
Lane Group LOS	D	B	A	C	B	A	D	C	C	D	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.43	3.72	0.56	0.89	5.97	0.07	0.37	0.19	0.23	2.93	0.32	3.03
50th-Percentile Queue Length [ft]	10.67	93.03	13.88	22.14	149.17	1.72	9.36	4.74	5.72	73.23	7.92	75.70
95th-Percentile Queue Length [veh]	0.77	6.70	1.00	1.59	9.97	0.12	0.67	0.34	0.41	5.27	0.57	5.45
95th-Percentile Queue Length [ft]	19.20	167.45	24.98	39.86	249.32	3.10	16.85	8.53	10.29	131.81	14.26	136.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.94	13.33	9.54	31.14	14.84	7.05	37.70	32.18	32.70	37.29	26.04	36.05
Movement LOS	D	B	A	C	B	A	D	C	C	D	C	D
d_A, Approach Delay [s/veh]	13.59			16.10			34.78			35.99		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	17.97											
Intersection LOS	B											
Intersection V/C	0.726											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	16.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	0	75	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	751	4	6	1313	90	57	4	120	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	214	1	2	374	26	16	1	34	1	1	2
Total Analysis Volume [veh/h]	98	855	5	7	1495	103	65	5	137	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	31	39	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	53	53	1	48	48	5	10	10	1	5	5
g / C, Green / Cycle	0.08	0.66	0.66	0.01	0.60	0.60	0.07	0.12	0.12	0.01	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.06	0.27	0.00	0.00	0.47	0.07	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	126	2105	940	23	1898	847	109	201	171	11	98	83
d1, Uniform Delay [s]	36.25	6.35	4.67	39.15	12.40	7.11	36.29	31.17	34.38	39.61	35.66	35.73
k, delay calibration	0.14	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.76	0.58	0.01	7.48	3.40	0.29	5.09	0.05	8.47	11.65	0.21	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

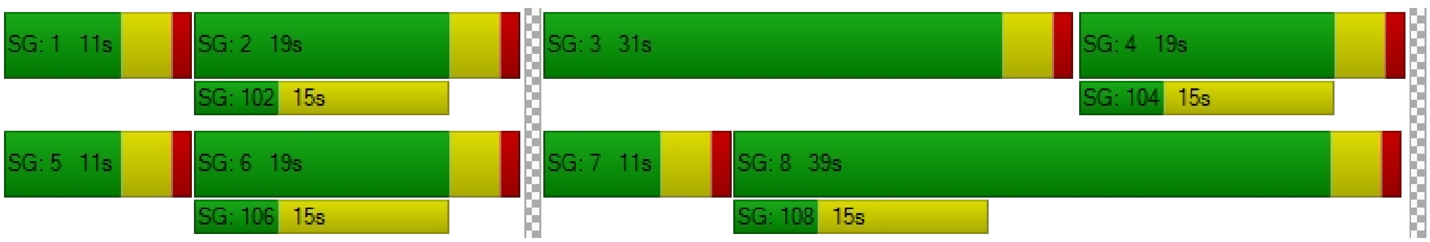
X, volume / capacity	0.78	0.41	0.01	0.31	0.79	0.12	0.60	0.02	0.80	0.26	0.05	0.08
d, Delay for Lane Group [s/veh]	49.01	6.94	4.68	46.63	15.80	7.40	41.38	31.22	42.85	51.26	35.87	36.16
Lane Group LOS	D	A	A	D	B	A	D	C	D	D	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	2.17	2.22	0.02	0.17	7.86	0.62	1.36	0.09	2.94	0.09	0.10	0.14
50th-Percentile Queue Length [ft]	54.22	55.53	0.51	4.33	196.61	15.49	34.12	2.17	73.40	2.37	2.41	3.43
95th-Percentile Queue Length [veh]	3.90	4.00	0.04	0.31	12.46	1.11	2.46	0.16	5.28	0.17	0.17	0.25
95th-Percentile Queue Length [ft]	97.60	99.96	0.91	7.79	311.59	27.87	61.42	3.90	132.12	4.27	4.34	6.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.01	6.94	4.68	46.63	15.80	7.40	41.38	31.22	42.85	51.26	35.87	36.16
Movement LOS	D	A	A	D	B	A	D	C	D	D	D	D
d_A, Approach Delay [s/veh]	11.23			15.39			42.11			39.08		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	16.07											
Intersection LOS	B											
Intersection V/C	0.784											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	180.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.463

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	45	0	24	39	12	15	0	0	0	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	699	95	45	1314	99	81	118	535	209	233	47
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	194	26	12	365	27	22	33	148	58	65	13
Total Analysis Volume [veh/h]	398	776	105	50	1458	110	90	131	594	232	259	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	27	0	39	41	0	34	38	38	16	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	52	52	6	37	37	8	34	34	12	38
g / C, Green / Cycle	0.18	0.44	0.44	0.05	0.31	0.31	0.07	0.28	0.28	0.10	0.31
(v / s)_i Volume / Saturation Flow Rate	0.25	0.27	0.27	0.03	0.46	0.08	0.06	0.08	0.42	0.15	0.19
s, saturation flow rate [veh/h]	1597	1676	1608	1597	3192	1425	1597	1676	1425	1597	1628
c, Capacity [veh/h]	279	733	703	76	987	441	112	473	402	160	509
d1, Uniform Delay [s]	49.50	25.97	26.01	56.21	41.44	31.01	55.01	33.53	43.07	54.00	35.07
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	210.55	3.80	4.00	9.45	219.92	1.35	12.67	0.31	227.62	235.00	1.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

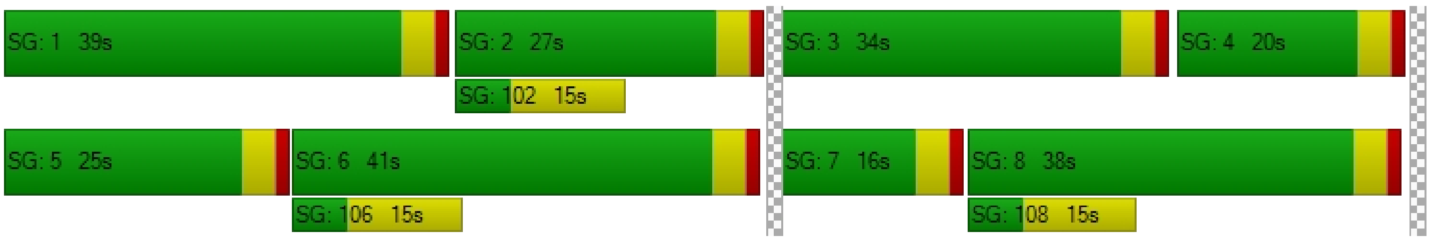
X, volume / capacity	1.42	0.61	0.62	0.66	1.48	0.25	0.81	0.28	1.48	1.45	0.61
d, Delay for Lane Group [s/veh]	260.05	29.77	30.01	65.66	261.36	32.37	67.68	33.84	270.69	289.00	36.93
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.30	9.82	9.51	1.63	43.76	2.43	3.07	3.03	37.21	15.24	7.96
50th-Percentile Queue Length [ft]	607.40	245.56	237.65	40.75	1093.95	60.81	76.87	75.72	930.34	380.96	198.99
95th-Percentile Queue Length [veh]	37.66	14.96	14.56	2.93	66.93	4.38	5.53	5.45	57.40	24.51	12.59
95th-Percentile Queue Length [ft]	941.55	374.06	364.06	73.35	1673.33	109.46	138.37	136.30	1435.11	612.71	314.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	260.05	29.88	30.01	65.66	261.36	32.37	67.68	33.84	270.69	289.00	36.93	36.93
Movement LOS	F	C	C	E	F	C	E	C	F	F	D	D
d_A, Approach Delay [s/veh]		101.51			239.74			210.20			144.63	
Approach LOS		F			F			F			F	
d_I, Intersection Delay [s/veh]	180.40											
Intersection LOS	F											
Intersection V/C	1.463											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.943

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	27	12	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	895	216	338	1708	374	273
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	241	58	91	459	101	73
Total Analysis Volume [veh/h]	962	232	363	1837	402	294
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	28	47	23	23
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	18	46	16	16
g / C, Green / Cycle	0.34	0.34	0.26	0.65	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.30	0.16	0.23	0.58	0.13	0.21
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1086	485	409	2086	721	331
d1, Uniform Delay [s]	21.85	18.23	25.11	9.92	23.73	26.02
k, delay calibration	0.50	0.50	0.20	0.50	0.11	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.65	3.36	11.21	5.76	0.68	16.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

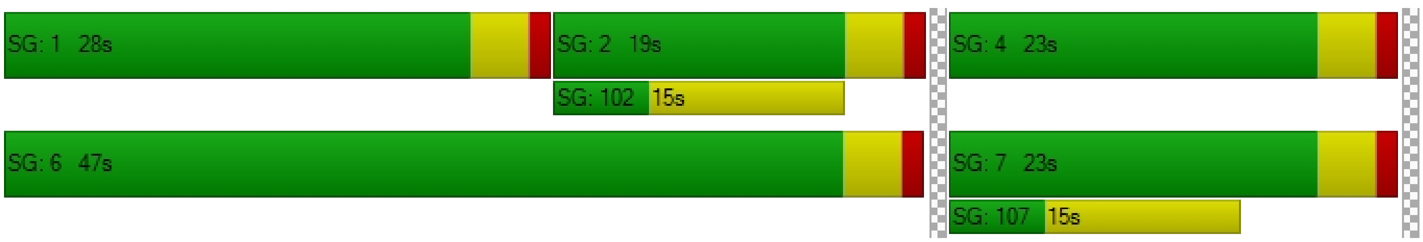
X, volume / capacity	0.89	0.48	0.89	0.88	0.56	0.89
d, Delay for Lane Group [s/veh]	32.49	21.59	36.32	15.68	24.41	42.55
Lane Group LOS	C	C	D	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	7.66	2.89	6.19	7.54	2.85	5.99
50th-Percentile Queue Length [ft]	191.61	72.27	154.77	188.57	71.35	149.75
95th-Percentile Queue Length [veh]	12.20	5.20	10.27	12.05	5.14	10.00
95th-Percentile Queue Length [ft]	305.12	130.08	256.79	301.17	128.43	250.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.49	21.59	36.32	15.68	24.41	42.55
Movement LOS	C	C	D	B	C	D
d_A, Approach Delay [s/veh]	30.38		19.09		32.07	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	24.59					
Intersection LOS	C					
Intersection V/C	0.943					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	23.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.292

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	196	47	0	240
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	79	200	50	88	243
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	27	68	17	30	83
Total Analysis Volume [veh/h]	84	108	272	68	120	331
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.15	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	23.82	16.20	0.00	0.00	8.28	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.19	2.19	0.00	0.00	0.33	0.00
95th-Percentile Queue Length [ft]	54.84	54.84	0.00	0.00	8.17	0.00
d_A, Approach Delay [s/veh]	19.53		0.00		2.20	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.83					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	22.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.237

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	189	13	94	138	49	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	24	0	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	189	22	118	138	56	146
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	7	40	47	19	49
Total Analysis Volume [veh/h]	255	30	159	186	76	197
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.12	0.00	0.24	0.26
d_M, Delay for Movement [s/veh]	0.00	0.00	8.22	0.00	22.36	15.84
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.43	0.00	2.71	2.71
95th-Percentile Queue Length [ft]	0.00	0.00	10.63	0.00	67.68	67.68
d_A, Approach Delay [s/veh]	0.00		3.79		17.65	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	6.78					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	54	44	12	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	168	191	108	128	94
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	63	71	40	48	35
Total Analysis Volume [veh/h]	115	250	285	161	191	140
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.90	0.91	0.91	2.01	1.78	1.82	0.93
95th-Percentile Queue Length [ft]	22.45	22.81	22.81	50.18	44.43	45.43	23.13
Approach Delay [s/veh]	11.80			13.28		12.97	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	12.72						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	15.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	0	19	10	12	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	190	0	1	263	73	56	3	111	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	57	0	0	79	22	17	1	33	2	2	0
Total Analysis Volume [veh/h]	137	228	0	1	316	88	67	4	133	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

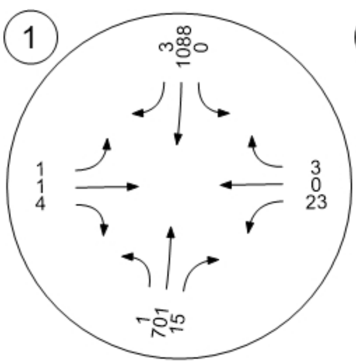
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.79	4.34	0.46	0.02	0.84	0.09
95th-Percentile Queue Length [ft]	94.80	108.53	11.49	0.56	20.92	2.36
Approach Delay [s/veh]	16.60	17.24	10.55			10.57
Approach LOS	C	C	B			B
Intersection Delay [s/veh]	15.52					
Intersection LOS	C					

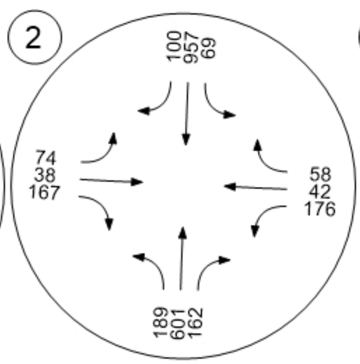
Scenario 3: 3: E+P AM

Traffic Volume - Future Total Volume

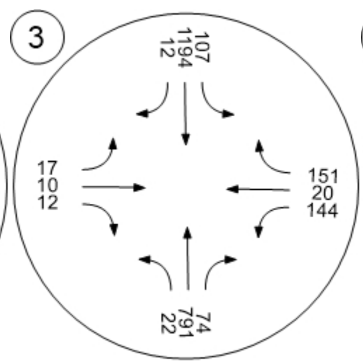
Winchester Road at Keller Ro



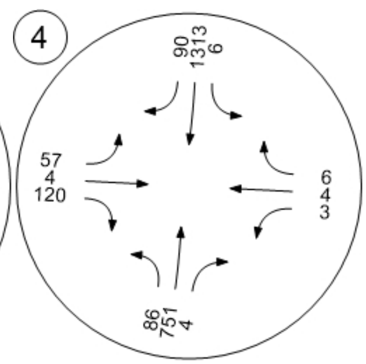
Winchester Road at Pourroy



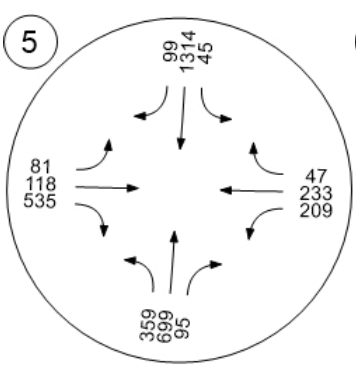
Winchester Road at Whisper



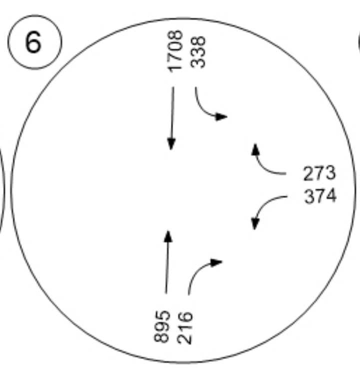
Winchester Road at Jean Nic



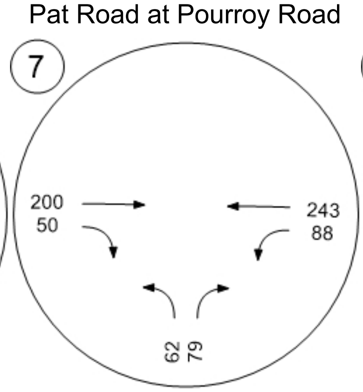
Winchester Road at Max Gilli



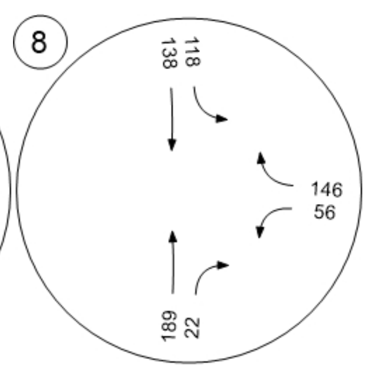
Winchester Road at Benton



Pat Road at Pourroy Road

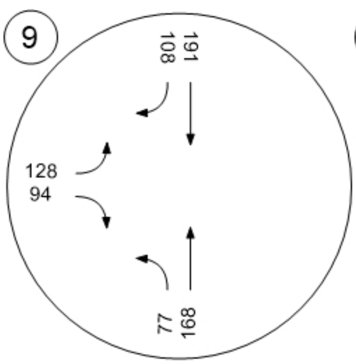


Jean Nicholas Road at Elliot

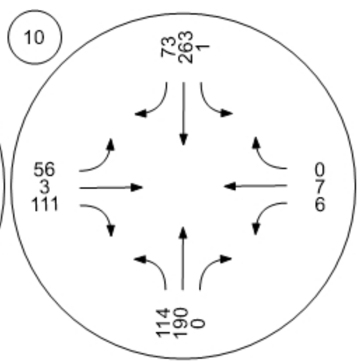


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro

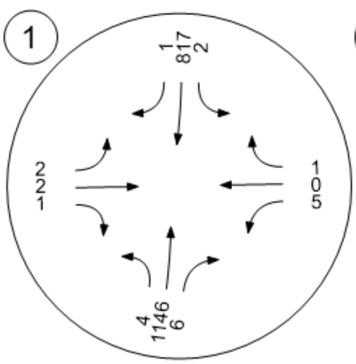


Pourroy Road at Thompson

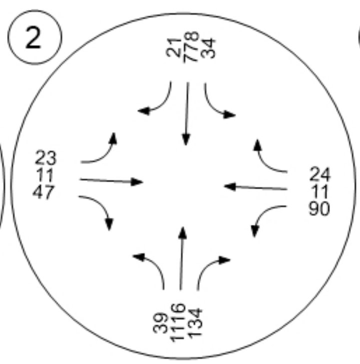


Traffic Volume - Future Total Volume

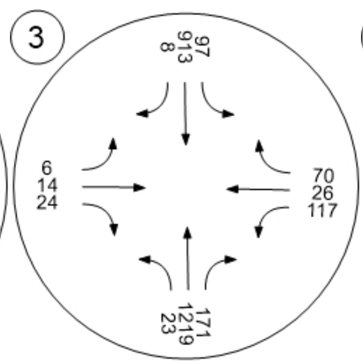
Winchester Road at Keller Ro



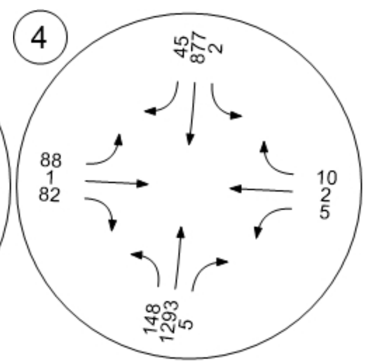
Winchester Road at Pourroy



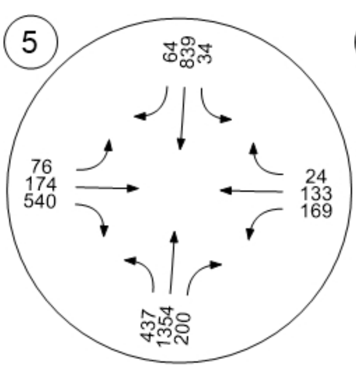
Winchester Road at Whisper



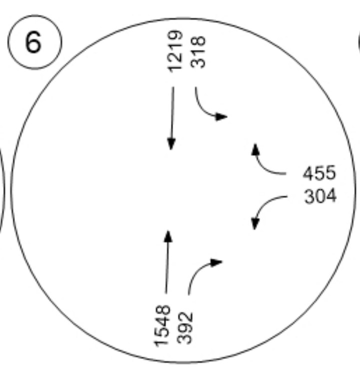
Winchester Road at Jean Nic



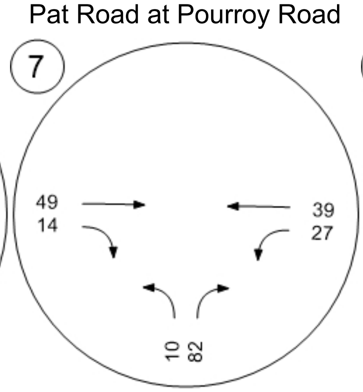
Winchester Road at Max Gilli



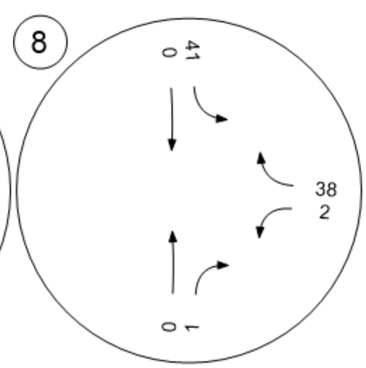
Winchester Road at Benton



Pat Road at Pourroy Road

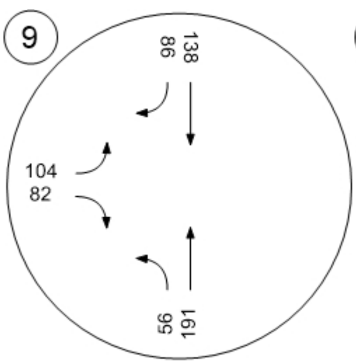


Jean Nicholas Road at Elliot

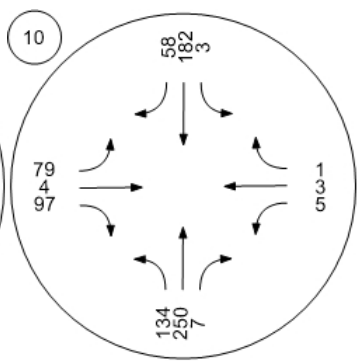


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+P PM_new.pdf

Scenario 4: E+P PM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.939	7.4	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.659	14.7	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.699	16.9	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Left	0.691	14.4	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.308	165.2	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.199	87.0	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	10.3	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.105	14.5	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.2	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		17.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	7.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.939

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	3	0	4	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1146	6	2	817	1	2	2	1	5	0	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	320	2	1	228	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1279	7	2	912	1	2	2	1	6	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	88	0	11	88	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.88	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.77	0.00	0.29	0.00	0.05	0.00	0.08	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	84	1425	79	1425
c, Capacity [veh/h]	24	1479	7	2808	1253	46	18	61	18
d1, Uniform Delay [s]	59.13	3.53	59.55	1.22	0.87	59.97	58.52	59.97	58.52
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	7.22	22.54	0.31	0.00	0.80	1.28	0.69	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.87	0.30	0.32	0.00	0.09	0.06	0.10	0.06
d, Delay for Lane Group [s/veh]	62.35	10.74	82.09	1.52	0.87	60.77	59.80	60.67	59.80
Lane Group LOS	E	B	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.07	2.96	0.10	0.12	0.00	0.13	0.04	0.20	0.04
50th-Percentile Queue Length [ft]	1.70	74.12	2.50	3.00	0.01	3.31	0.91	4.88	0.91
95th-Percentile Queue Length [veh]	0.12	5.34	0.18	0.22	0.00	0.24	0.07	0.35	0.07
95th-Percentile Queue Length [ft]	3.06	133.42	4.49	5.41	0.02	5.95	1.64	8.78	1.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	10.74	10.74	82.09	1.52	0.87	60.77	60.77	59.80	60.67	60.67	59.80
Movement LOS	E	B	B	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	10.90			1.70			60.58			60.54		
Approach LOS	B			A			E			E		
d_I, Intersection Delay [s/veh]	7.37											
Intersection LOS	A											
Intersection V/C	0.939											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	0	0	0	6	9	6	30	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1116	134	34	778	21	23	11	47	90	11	24
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	308	37	9	215	6	6	3	13	25	3	7
Total Analysis Volume [veh/h]	43	1233	148	38	860	23	25	12	52	99	12	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	18	19	0	21	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	39	39	4	39	39	3	5	5	6	8	8
g / C, Green / Cycle	0.06	0.56	0.56	0.05	0.56	0.56	0.04	0.07	0.07	0.09	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.39	0.10	0.02	0.27	0.02	0.02	0.01	0.04	0.06	0.01	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	94	1780	795	87	1766	788	65	122	104	139	200	170
d1, Uniform Delay [s]	31.98	11.20	7.67	32.18	9.59	7.12	32.85	30.40	31.33	31.21	27.43	27.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.45	2.24	0.52	3.44	0.96	0.07	3.71	0.35	3.68	6.56	0.12	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

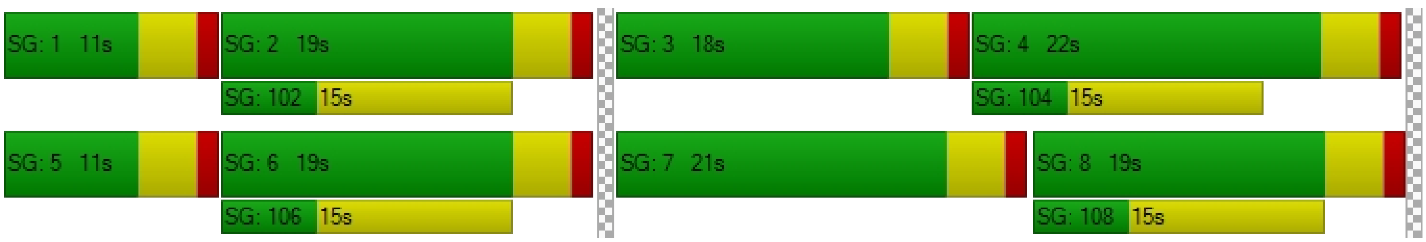
X, volume / capacity	0.46	0.69	0.19	0.44	0.49	0.03	0.39	0.10	0.50	0.71	0.06	0.16
d, Delay for Lane Group [s/veh]	35.44	13.44	8.19	35.62	10.56	7.19	36.56	30.75	35.01	37.77	27.55	28.19
Lane Group LOS	D	B	A	D	B	A	D	C	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.70	4.67	0.79	0.63	2.70	0.11	0.47	0.20	0.93	1.76	0.17	0.39
50th-Percentile Queue Length [ft]	17.58	116.68	19.76	15.66	67.42	2.82	11.72	4.88	23.15	43.89	4.28	9.86
95th-Percentile Queue Length [veh]	1.27	8.21	1.42	1.13	4.85	0.20	0.84	0.35	1.67	3.16	0.31	0.71
95th-Percentile Queue Length [ft]	31.65	205.25	35.57	28.19	121.35	5.07	21.09	8.79	41.67	79.01	7.71	17.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.44	13.44	8.19	35.62	10.56	7.19	36.56	30.75	35.01	37.77	27.55	28.19
Movement LOS	D	B	A	D	B	A	D	C	D	D	C	C
d_A, Approach Delay [s/veh]	13.56			11.51			34.87			35.00		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	14.71											
Intersection LOS	B											
Intersection V/C	0.659											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	14	16	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1219	171	97	913	8	6	14	24	117	26	70
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	339	48	27	254	2	2	4	7	33	7	19
Total Analysis Volume [veh/h]	26	1354	190	108	1014	9	7	16	27	130	29	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	11	11	0	20	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	45	45	6	48	48	1	4	4	8	11	11
g / C, Green / Cycle	0.04	0.56	0.56	0.08	0.60	0.60	0.01	0.05	0.05	0.10	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.42	0.13	0.03	0.32	0.01	0.00	0.01	0.02	0.08	0.02	0.05
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	64	1794	801	251	1924	859	23	93	79	163	240	204
d1, Uniform Delay [s]	37.57	13.35	8.87	35.11	9.27	6.37	39.15	36.14	36.49	35.19	29.95	31.14
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	3.00	0.70	1.17	1.04	0.02	7.48	0.87	2.56	8.49	0.22	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

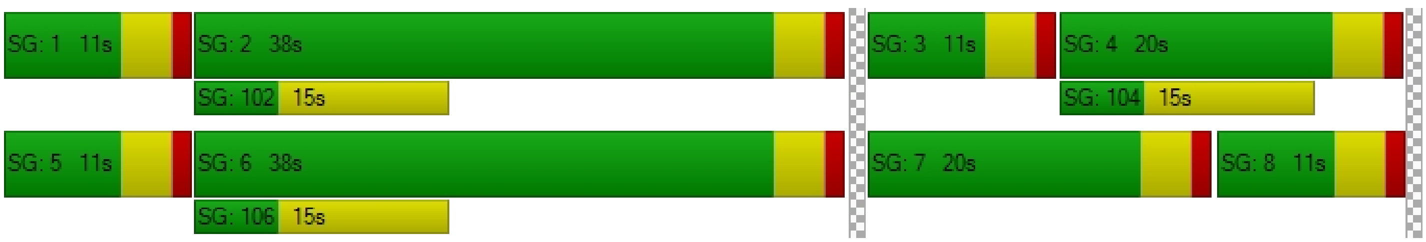
X, volume / capacity	0.41	0.75	0.24	0.43	0.53	0.01	0.31	0.17	0.34	0.80	0.12	0.38
d, Delay for Lane Group [s/veh]	41.65	16.36	9.57	36.28	10.31	6.39	46.63	37.02	39.05	43.67	30.17	32.31
Lane Group LOS	D	B	A	D	B	A	D	D	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.53	7.43	1.40	0.96	3.82	0.05	0.18	0.32	0.56	2.81	0.49	1.40
50th-Percentile Queue Length [ft]	13.29	185.72	35.02	24.02	95.57	1.21	4.57	7.99	14.04	70.17	12.32	35.07
95th-Percentile Queue Length [veh]	0.96	11.90	2.52	1.73	6.88	0.09	0.33	0.57	1.01	5.05	0.89	2.52
95th-Percentile Queue Length [ft]	23.91	297.47	63.04	43.24	172.02	2.18	8.22	14.37	25.28	126.30	22.17	63.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.65	16.36	9.57	36.28	10.31	6.39	46.63	37.02	39.05	43.67	30.17	32.31
Movement LOS	D	B	A	D	B	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	15.95			12.76			39.46			38.28		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	16.91											
Intersection LOS	B											
Intersection V/C	0.699											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.691

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	16	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	1293	5	2	877	45	88	1	82	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	368	1	1	250	13	25	0	23	1	1	3
Total Analysis Volume [veh/h]	169	1473	6	2	999	51	100	1	93	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	27	0	13	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	46	46	0	37	37	6	7	7	1	2	2
g / C, Green / Cycle	0.13	0.66	0.66	0.00	0.53	0.53	0.09	0.10	0.10	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.46	0.00	0.00	0.31	0.04	0.06	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	210	2091	933	9	1688	754	140	166	141	21	41	35
d1, Uniform Delay [s]	29.61	7.76	4.20	34.78	11.35	8.09	31.21	28.55	30.52	34.36	33.49	33.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.99	2.02	0.01	12.36	1.53	0.17	6.70	0.01	5.20	7.64	0.49	5.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

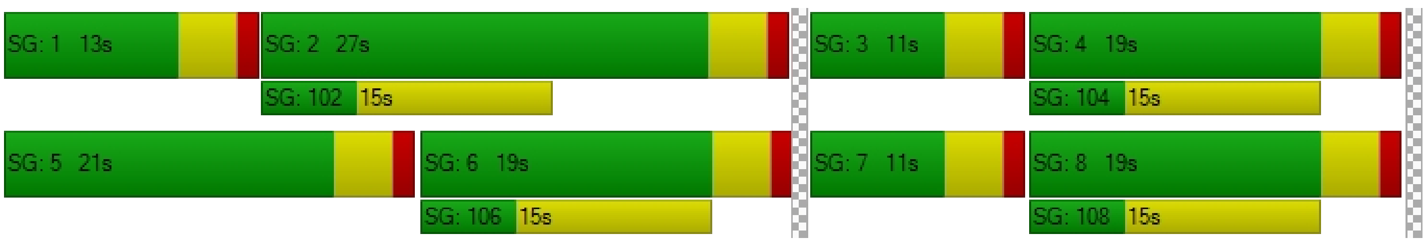
X, volume / capacity	0.80	0.70	0.01	0.23	0.59	0.07	0.72	0.01	0.66	0.29	0.05	0.32
d, Delay for Lane Group [s/veh]	36.60	9.78	4.21	47.14	12.88	8.26	37.91	28.56	35.73	42.00	33.98	38.88
Lane Group LOS	D	A	A	D	B	A	D	C	D	D	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.85	4.22	0.02	0.06	4.08	0.31	1.85	0.02	1.66	0.14	0.04	0.23
50th-Percentile Queue Length [ft]	71.23	105.50	0.48	1.53	101.88	7.67	46.25	0.38	41.62	3.55	0.95	5.71
95th-Percentile Queue Length [veh]	5.13	7.59	0.03	0.11	7.34	0.55	3.33	0.03	3.00	0.26	0.07	0.41
95th-Percentile Queue Length [ft]	128.22	189.72	0.87	2.75	183.39	13.80	83.26	0.69	74.91	6.39	1.71	10.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.60	9.78	4.21	47.14	12.88	8.26	37.91	28.56	35.73	42.00	33.98	38.88
Movement LOS	D	A	A	D	B	A	D	C	D	D	C	D
d_A, Approach Delay [s/veh]	12.51			12.72			36.81			39.35		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	14.38											
Intersection LOS	B											
Intersection V/C	0.691											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	165.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.308

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	6	7	3	2	0	0	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	437	1354	200	34	839	64	76	174	540	169	133	24
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	376	55	9	233	18	21	48	150	47	37	7
Total Analysis Volume [veh/h]	485	1503	222	38	931	71	84	193	599	188	148	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	50	50	5	27	27	8	38	38	11	41
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.07	0.32	0.32	0.09	0.34
(v / s)_i Volume / Saturation Flow Rate	0.30	0.51	0.54	0.02	0.29	0.05	0.05	0.12	0.42	0.12	0.11
s, saturation flow rate [veh/h]	1597	1676	1604	1597	3192	1425	1597	1676	1425	1597	1632
c, Capacity [veh/h]	373	700	669	67	721	322	105	529	450	146	558
d1, Uniform Delay [s]	46.00	34.96	34.96	56.42	46.45	37.84	55.29	31.75	41.06	54.50	29.12
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	154.19	116.95	141.00	7.35	141.21	1.57	13.03	0.42	163.76	169.78	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

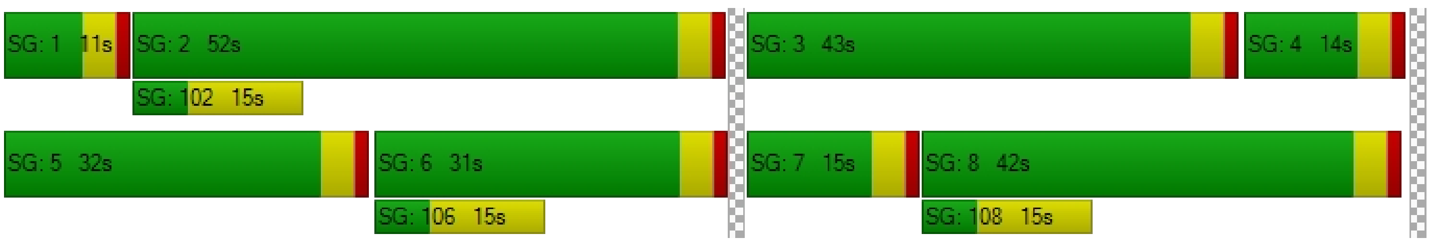
X, volume / capacity	1.30	1.23	1.29	0.57	1.29	0.22	0.80	0.36	1.33	1.28	0.31
d, Delay for Lane Group [s/veh]	200.19	151.91	175.96	63.77	187.65	39.41	68.31	32.17	204.82	224.28	29.44
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	26.42	41.24	43.92	1.22	24.30	1.77	2.89	4.40	33.56	11.32	3.78
50th-Percentile Queue Length [ft]	660.52	1030.99	1098.00	30.58	607.42	44.24	72.13	110.11	838.91	282.96	94.55
95th-Percentile Queue Length [veh]	39.86	59.54	64.54	2.20	36.81	3.19	5.19	7.85	50.57	18.34	6.81
95th-Percentile Queue Length [ft]	996.39	1488.53	1613.55	55.05	920.27	79.63	129.83	196.16	1264.25	458.58	170.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	200.19	162.16	175.96	63.77	187.65	39.41	68.31	32.17	204.82	224.28	29.44	29.44
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	171.89			173.01			153.69			130.35		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	165.24											
Intersection LOS	F											
Intersection V/C	1.308											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	87.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.199

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	4	3	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1548	392	318	1219	304	455
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	416	105	85	328	82	122
Total Analysis Volume [veh/h]	1665	422	342	1311	327	489
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.52	0.30	0.21	0.41	0.11	0.34
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.40	48.95	12.47	34.43	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	99.37	6.06	105.29	1.48	0.26	115.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.68	1.17	0.63	0.37	1.21
d, Delay for Lane Group [s/veh]	133.37	33.46	154.24	13.95	34.69	158.88
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	37.18	9.95	16.91	8.93	3.87	24.83
50th-Percentile Queue Length [ft]	929.59	248.85	422.75	223.20	96.74	620.80
95th-Percentile Queue Length [veh]	53.60	15.13	25.50	13.83	6.97	36.81
95th-Percentile Queue Length [ft]	1339.89	378.21	637.47	345.71	174.14	920.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	133.37	33.46	154.24	13.95	34.69	158.88
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	113.17		42.97		109.11	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	86.98					
Intersection LOS	F					
Intersection V/C	1.199					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	45	13	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	82	49	14	27	39
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	28	17	5	9	13
Total Analysis Volume [veh/h]	14	112	67	19	37	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.11	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	10.27	9.23	0.00	0.00	7.44	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.45	0.45	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	11.36	11.36	0.00	0.00	1.88	0.00
d_A, Approach Delay [s/veh]	9.35		0.00		3.06	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.81					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	14.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.105

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	157	33	40	110	37	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	4	0	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	157	34	44	110	39	127
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	11	15	37	13	43
Total Analysis Volume [veh/h]	212	46	59	149	53	172
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.00	0.10	0.21
d_M, Delay for Movement [s/veh]	0.00	0.00	7.89	0.00	14.50	11.85
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.14	0.00	1.37	1.37
95th-Percentile Queue Length [ft]	0.00	0.00	3.54	0.00	34.33	34.33
d_A, Approach Delay [s/veh]	0.00		2.24		12.47	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.73					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	10	3	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	191	138	86	104	82
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	71	51	32	39	31
Total Analysis Volume [veh/h]	83	285	206	128	155	122
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.55	0.98	0.98	1.23	1.09	1.25	0.72
95th-Percentile Queue Length [ft]	13.81	24.46	24.46	30.71	27.27	31.19	18.03
Approach Delay [s/veh]	11.01			11.20		11.40	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.18						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	5	2	2	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	250	7	3	182	58	79	4	97	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	75	2	1	55	17	24	1	29	2	1	0
Total Analysis Volume [veh/h]	161	300	8	4	219	70	95	5	117	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

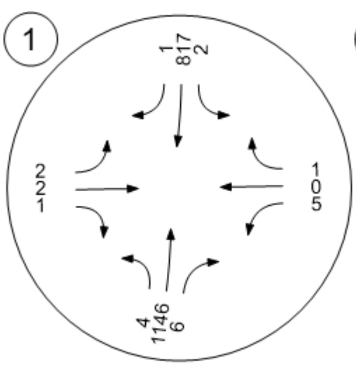
Lanes

Movement, Approach, & Intersection Results

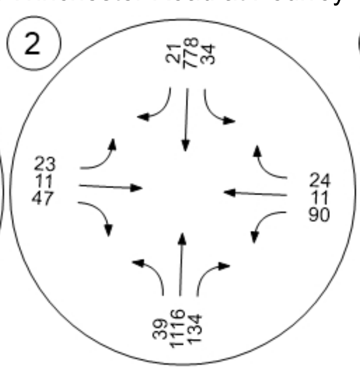
95th-Percentile Queue Length [veh]	6.44	2.45	0.69	0.03	0.71	0.07
95th-Percentile Queue Length [ft]	160.96	61.18	17.29	0.70	17.80	1.71
Approach Delay [s/veh]	22.85	13.51	10.71			10.49
Approach LOS	C	B	B			B
Intersection Delay [s/veh]	17.29					
Intersection LOS	C					

Traffic Volume - Future Total Volume

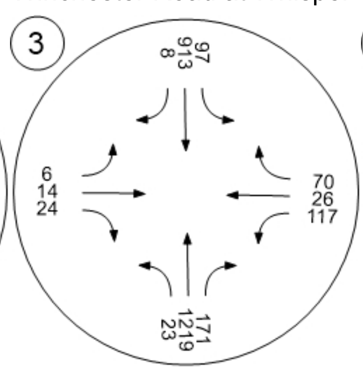
Winchester Road at Keller Ro



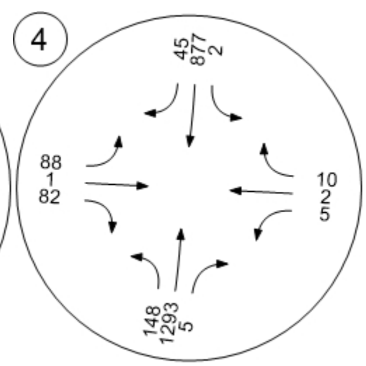
Winchester Road at Pourroy



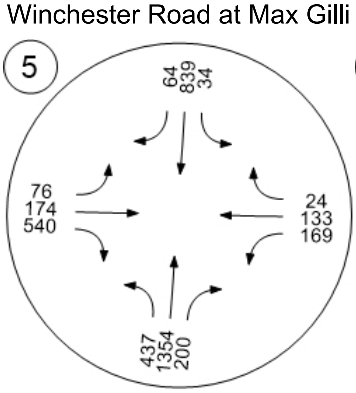
Winchester Road at Whisper



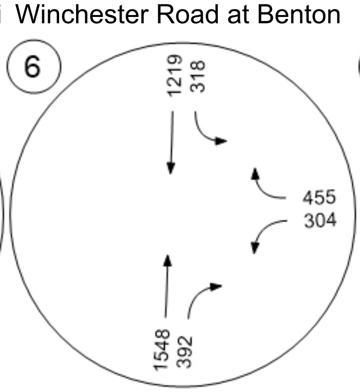
Winchester Road at Jean Nic



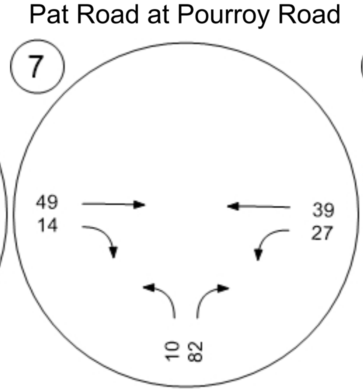
Winchester Road at Max Gilli



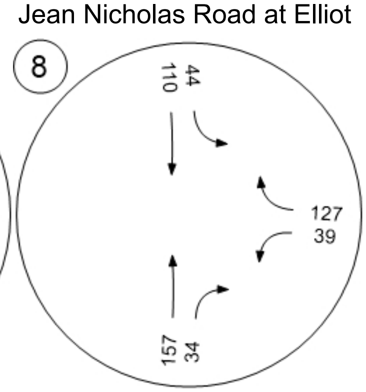
Winchester Road at Benton



Pat Road at Pourroy Road

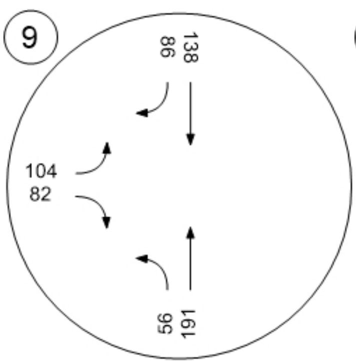


Jean Nicholas Road at Elliot

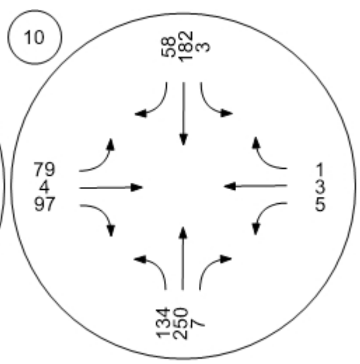


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 3: E+P AM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	WB Left	5,955.496	4.2	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	EB Left	0.849	33.3	C
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.726	18.0	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.865	15.0	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.463	180.4	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.943	24.6	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.292	23.8	C
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.012	10.1	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		12.7	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		15.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	4.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5,955.496

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	12	0	30	0	0	0	0	15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	701	15	0	1088	3	1	1	4	23	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	196	4	0	304	1	0	0	1	6	0	1
Total Analysis Volume [veh/h]	1	782	17	0	1214	3	1	1	4	26	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	90	0	11	90	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	0	103	103	4	4	4	4
g / C, Green / Cycle	0.00	0.86	0.00	0.86	0.86	0.04	0.04	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.00	0.48	0.00	0.38	0.00	0.00	0.00	5359.47	0.00
s, saturation flow rate [veh/h]	3101	1670	1597	3192	1425	591	1425	0	1425
c, Capacity [veh/h]	6	1441	0	2748	1227	67	53	60	53
d1, Uniform Delay [s]	59.79	2.17	0.00	1.88	1.16	55.71	55.77	60.00	55.73
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.86	1.54	0.00	0.52	0.00	0.18	0.60	21.18	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.55	0.00	0.44	0.00	0.03	0.08	0.43	0.06
d, Delay for Lane Group [s/veh]	72.65	3.71	0.00	2.39	1.17	55.89	56.36	81.18	56.17
Lane Group LOS	E	A	A	A	A	E	E	F	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.74	0.00	0.34	0.00	0.06	0.13	1.16	0.09
50th-Percentile Queue Length [ft]	0.62	18.48	0.00	8.44	0.04	1.55	3.15	29.04	2.36
95th-Percentile Queue Length [veh]	0.04	1.33	0.00	0.61	0.00	0.11	0.23	2.09	0.17
95th-Percentile Queue Length [ft]	1.12	33.26	0.00	15.19	0.07	2.78	5.67	52.28	4.24

Generated with PTV VISTRO
Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.65	3.71	3.71	0.00	2.39	1.17	55.89	55.89	56.36	81.18	81.18	56.17
Movement LOS	E	A	A	A	A	A	E	E	E	F	F	E
d_A, Approach Delay [s/veh]	3.80			2.39			56.21			78.59		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	4.17											
Intersection LOS	A											
Intersection V/C	5955.496											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	165	0	0	0	0	45	36	24	136	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	189	601	162	69	957	100	74	38	167	176	42	58
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	166	45	19	264	28	20	10	46	49	12	16
Total Analysis Volume [veh/h]	209	664	179	76	1057	110	82	42	185	194	46	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	28	0	24	23	0	29	21	0	27	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	49	49	6	40	40	7	15	15	14	23	23
g / C, Green / Cycle	0.15	0.49	0.49	0.06	0.40	0.40	0.07	0.15	0.15	0.14	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.13	0.21	0.13	0.05	0.33	0.08	0.05	0.03	0.13	0.12	0.03	0.04
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	242	1546	690	100	1262	564	105	254	216	226	382	324
d1, Uniform Delay [s]	41.48	16.80	15.22	46.20	27.36	19.83	46.08	36.98	41.43	41.98	30.71	31.28
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.92	0.87	0.91	11.24	6.72	0.77	11.90	0.30	9.44	9.02	0.14	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

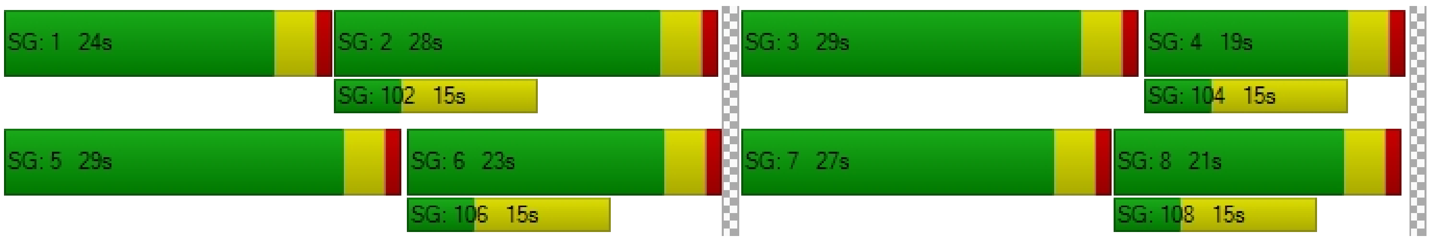
X, volume / capacity	0.86	0.43	0.26	0.76	0.84	0.20	0.78	0.17	0.86	0.86	0.12	0.20
d, Delay for Lane Group [s/veh]	50.40	17.68	16.13	57.44	34.08	20.60	57.98	37.28	50.87	51.00	30.85	31.57
Lane Group LOS	D	B	B	E	C	C	E	D	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	5.20	4.30	2.18	2.03	10.89	1.59	2.34	0.91	4.97	5.05	0.86	1.23
50th-Percentile Queue Length [ft]	129.94	107.61	54.62	50.87	272.32	39.66	58.59	22.84	124.23	126.27	21.55	30.67
95th-Percentile Queue Length [veh]	8.94	7.71	3.93	3.66	16.31	2.86	4.22	1.64	8.63	8.74	1.55	2.21
95th-Percentile Queue Length [ft]	223.42	192.67	98.32	91.57	407.64	71.39	105.46	41.12	215.63	218.41	38.79	55.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.40	17.68	16.13	57.44	34.08	20.60	57.98	37.28	50.87	51.00	30.85	31.57
Movement LOS	D	B	B	E	C	C	E	D	D	D	C	C
d_A, Approach Delay [s/veh]	23.92			34.31			50.91			43.86		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.31											
Intersection LOS	C											
Intersection V/C	0.849											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	61	75	0	0	0	0	0	0	75
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	791	74	107	1194	12	17	10	12	144	20	151
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	220	21	30	332	3	5	3	3	40	6	42
Total Analysis Volume [veh/h]	24	879	82	119	1327	13	19	11	13	160	22	168
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	21	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO
Version 4.00-03

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	35	35	6	39	39	2	4	4	9	10	10
g / C, Green / Cycle	0.04	0.50	0.50	0.09	0.56	0.56	0.03	0.05	0.05	0.12	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.28	0.06	0.04	0.42	0.01	0.01	0.01	0.01	0.10	0.01	0.12
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	61	1604	716	282	1771	791	51	90	77	199	246	209
d1, Uniform Delay [s]	32.92	11.98	9.21	30.14	11.89	7.01	33.25	31.59	31.67	29.87	25.88	28.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.02	1.35	0.32	1.00	2.96	0.04	4.45	0.59	1.03	7.42	0.16	7.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

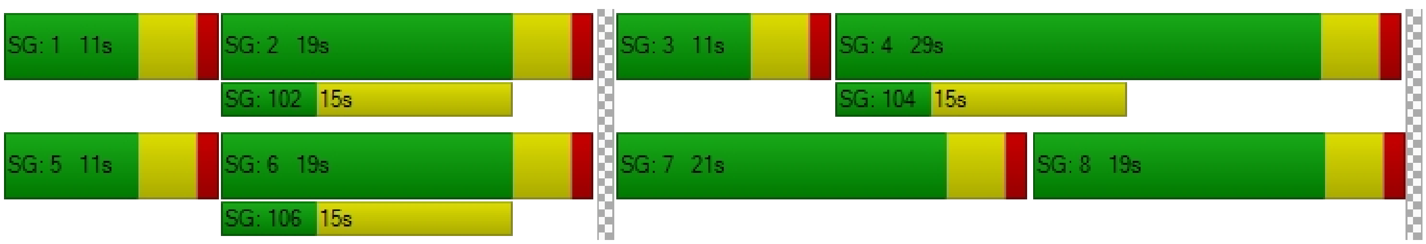
X, volume / capacity	0.39	0.55	0.11	0.42	0.75	0.02	0.37	0.12	0.17	0.80	0.09	0.80
d, Delay for Lane Group [s/veh]	36.94	13.33	9.54	31.14	14.84	7.05	37.70	32.18	32.70	37.29	26.04	36.05
Lane Group LOS	D	B	A	C	B	A	D	C	C	D	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.43	3.72	0.56	0.89	5.97	0.07	0.37	0.19	0.23	2.93	0.32	3.03
50th-Percentile Queue Length [ft]	10.67	93.03	13.88	22.14	149.17	1.72	9.36	4.74	5.72	73.23	7.92	75.70
95th-Percentile Queue Length [veh]	0.77	6.70	1.00	1.59	9.97	0.12	0.67	0.34	0.41	5.27	0.57	5.45
95th-Percentile Queue Length [ft]	19.20	167.45	24.98	39.86	249.32	3.10	16.85	8.53	10.29	131.81	14.26	136.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.94	13.33	9.54	31.14	14.84	7.05	37.70	32.18	32.70	37.29	26.04	36.05
Movement LOS	D	B	A	C	B	A	D	C	C	D	C	D
d_A, Approach Delay [s/veh]	13.59			16.10			34.78			35.99		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	17.97											
Intersection LOS	B											
Intersection V/C	0.726											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.865

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	0	75	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	751	4	6	1313	90	57	4	120	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	214	1	2	374	26	16	1	34	1	1	2
Total Analysis Volume [veh/h]	98	855	5	7	1495	103	65	5	137	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	29	0	11	29	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	34	34	1	29	29	5	7	7	0	3	3
g / C, Green / Cycle	0.10	0.59	0.59	0.01	0.50	0.50	0.08	0.12	0.12	0.01	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.06	0.27	0.00	0.00	0.47	0.07	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	153	1869	835	21	1605	717	126	204	173	10	81	69
d1, Uniform Delay [s]	25.45	6.86	5.04	28.59	13.59	7.79	25.86	22.64	24.97	28.94	26.54	26.60
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.37	0.18	0.00	8.79	3.00	0.09	3.25	0.05	7.88	17.40	0.31	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

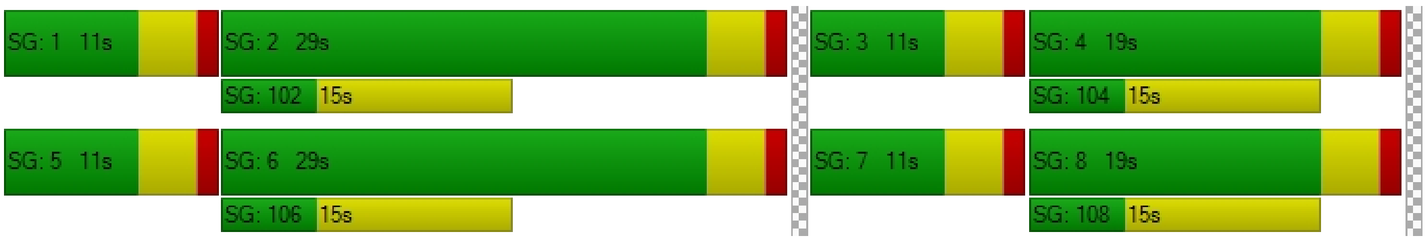
X, volume / capacity	0.64	0.46	0.01	0.33	0.93	0.14	0.52	0.02	0.79	0.31	0.06	0.10
d, Delay for Lane Group [s/veh]	29.82	7.03	5.04	37.38	16.59	7.88	29.11	22.68	32.85	46.34	26.86	27.23
Lane Group LOS	C	A	A	D	B	A	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.30	1.62	0.01	0.14	6.34	0.47	0.93	0.06	2.10	0.09	0.07	0.10
50th-Percentile Queue Length [ft]	32.40	40.43	0.35	3.40	158.49	11.65	23.25	1.49	52.52	2.15	1.75	2.51
95th-Percentile Queue Length [veh]	2.33	2.91	0.03	0.24	10.47	0.84	1.67	0.11	3.78	0.16	0.13	0.18
95th-Percentile Queue Length [ft]	58.32	72.77	0.64	6.12	261.72	20.97	41.84	2.69	94.53	3.88	3.15	4.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.82	7.03	5.04	37.38	16.59	7.88	29.11	22.68	32.85	46.34	26.86	27.23
Movement LOS	C	A	A	D	B	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	9.35			16.12			31.43			30.92		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	15.01											
Intersection LOS	B											
Intersection V/C	0.865											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	180.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.463

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	45	0	24	39	12	15	0	0	0	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	699	95	45	1314	99	81	118	535	209	233	47
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	194	26	12	365	27	22	33	148	58	65	13
Total Analysis Volume [veh/h]	398	776	105	50	1458	110	90	131	594	232	259	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	27	0	39	41	0	34	38	38	16	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	52	52	6	37	37	8	34	34	12	38
g / C, Green / Cycle	0.18	0.44	0.44	0.05	0.31	0.31	0.07	0.28	0.28	0.10	0.31
(v / s)_i Volume / Saturation Flow Rate	0.25	0.27	0.27	0.03	0.46	0.08	0.06	0.08	0.42	0.15	0.19
s, saturation flow rate [veh/h]	1597	1676	1608	1597	3192	1425	1597	1676	1425	1597	1628
c, Capacity [veh/h]	279	733	703	76	987	441	112	473	402	160	509
d1, Uniform Delay [s]	49.50	25.97	26.01	56.21	41.44	31.01	55.01	33.53	43.07	54.00	35.07
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.17
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	210.55	3.80	4.00	9.45	219.92	1.35	12.67	0.31	227.62	235.00	1.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

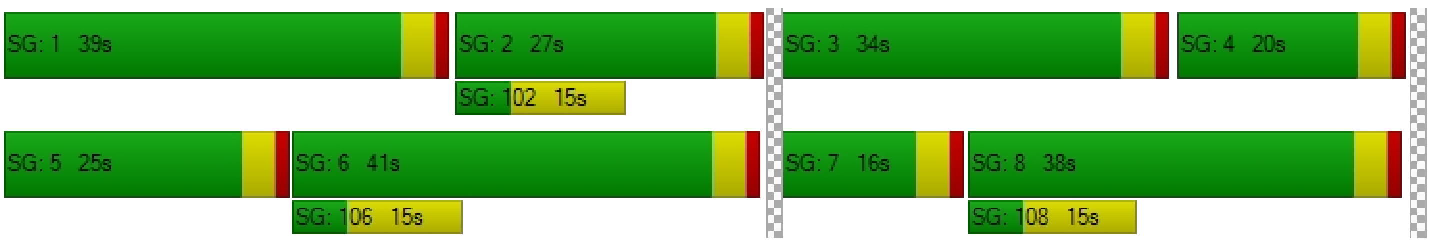
X, volume / capacity	1.42	0.61	0.62	0.66	1.48	0.25	0.81	0.28	1.48	1.45	0.61
d, Delay for Lane Group [s/veh]	260.05	29.77	30.01	65.66	261.36	32.37	67.68	33.84	270.69	289.00	36.93
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	24.30	9.82	9.51	1.63	43.76	2.43	3.07	3.03	37.21	15.24	7.96
50th-Percentile Queue Length [ft]	607.40	245.56	237.65	40.75	1093.95	60.81	76.87	75.72	930.34	380.96	198.99
95th-Percentile Queue Length [veh]	37.66	14.96	14.56	2.93	66.93	4.38	5.53	5.45	57.40	24.51	12.59
95th-Percentile Queue Length [ft]	941.55	374.06	364.06	73.35	1673.33	109.46	138.37	136.30	1435.11	612.71	314.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	260.05	29.88	30.01	65.66	261.36	32.37	67.68	33.84	270.69	289.00	36.93	36.93
Movement LOS	F	C	C	E	F	C	E	C	F	F	D	D
d_A, Approach Delay [s/veh]	101.51			239.74			210.20			144.63		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	180.40											
Intersection LOS	F											
Intersection V/C	1.463											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.943

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	27	12	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	895	216	338	1708	374	273
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	241	58	91	459	101	73
Total Analysis Volume [veh/h]	962	232	363	1837	402	294
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	28	47	23	23
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO

Version 4.00-03

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	18	46	16	16
g / C, Green / Cycle	0.34	0.34	0.26	0.65	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.30	0.16	0.23	0.58	0.13	0.21
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1086	485	409	2086	721	331
d1, Uniform Delay [s]	21.85	18.23	25.11	9.92	23.73	26.02
k, delay calibration	0.50	0.50	0.20	0.50	0.11	0.26
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.65	3.36	11.21	5.76	0.68	16.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

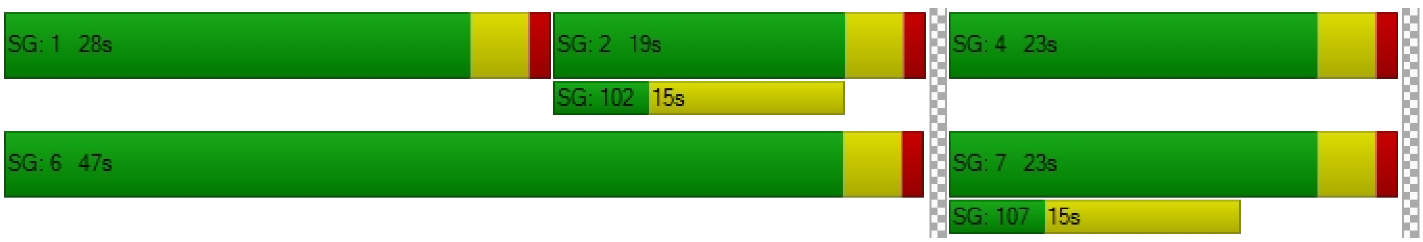
X, volume / capacity	0.89	0.48	0.89	0.88	0.56	0.89
d, Delay for Lane Group [s/veh]	32.49	21.59	36.32	15.68	24.41	42.55
Lane Group LOS	C	C	D	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	7.66	2.89	6.19	7.54	2.85	5.99
50th-Percentile Queue Length [ft]	191.61	72.27	154.77	188.57	71.35	149.75
95th-Percentile Queue Length [veh]	12.20	5.20	10.27	12.05	5.14	10.00
95th-Percentile Queue Length [ft]	305.12	130.08	256.79	301.17	128.43	250.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.49	21.59	36.32	15.68	24.41	42.55
Movement LOS	C	C	D	B	C	D
d_A, Approach Delay [s/veh]	30.38		19.09		32.07	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	24.59					
Intersection LOS	C					
Intersection V/C	0.943					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	23.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.292

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	196	47	0	240
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	79	200	50	88	243
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	27	68	17	30	83
Total Analysis Volume [veh/h]	84	108	272	68	120	331
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.15	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	23.82	16.20	0.00	0.00	8.28	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.19	2.19	0.00	0.00	0.33	0.00
95th-Percentile Queue Length [ft]	54.84	54.84	0.00	0.00	8.17	0.00
d_A, Approach Delay [s/veh]	19.53		0.00		2.20	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.83					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	49	0	0	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	24	0	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	73	0	7	32
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	25	0	2	11
Total Analysis Volume [veh/h]	0	12	99	0	9	43
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.06	0.00	0.01	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	7.39	0.00	10.09	8.54
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.20	0.00	0.16	0.16
95th-Percentile Queue Length [ft]	0.00	0.00	4.92	0.00	4.12	4.12
d_A, Approach Delay [s/veh]	0.00		7.39		8.81	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.30					
Intersection LOS	B					

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	54	44	12	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	168	191	108	128	94
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	63	71	40	48	35
Total Analysis Volume [veh/h]	115	250	285	161	191	140
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.90	0.91	0.91	2.01	1.78	1.82	0.93
95th-Percentile Queue Length [ft]	22.45	22.81	22.81	50.18	44.43	45.43	23.13
Approach Delay [s/veh]	11.80			13.28		12.97	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	12.72						
Intersection LOS	B						

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	15.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	0	19	10	12	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	114	190	0	1	263	73	56	3	111	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	57	0	0	79	22	17	1	33	2	2	0
Total Analysis Volume [veh/h]	137	228	0	1	316	88	67	4	133	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.79	4.34	0.46	0.02	0.84	0.09
95th-Percentile Queue Length [ft]	94.80	108.53	11.49	0.56	20.92	2.36
Approach Delay [s/veh]	16.60	17.24	10.55			10.57
Approach LOS	C	C	B			B
Intersection Delay [s/veh]	15.52					
Intersection LOS	C					

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 4: E+P PM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.939	7.4	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.659	14.7	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.699	16.9	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Left	0.796	13.8	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.308	165.2	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.199	87.0	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	10.3	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.004	9.4	A
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.2	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		17.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	7.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.939

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	3	0	4	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1146	6	2	817	1	2	2	1	5	0	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	320	2	1	228	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1279	7	2	912	1	2	2	1	6	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	88	0	11	88	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.88	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.77	0.00	0.29	0.00	0.05	0.00	0.08	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	84	1425	79	1425
c, Capacity [veh/h]	24	1479	7	2808	1253	46	18	61	18
d1, Uniform Delay [s]	59.13	3.53	59.55	1.22	0.87	59.97	58.52	59.97	58.52
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	7.22	22.54	0.31	0.00	0.80	1.28	0.69	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.87	0.30	0.32	0.00	0.09	0.06	0.10	0.06
d, Delay for Lane Group [s/veh]	62.35	10.74	82.09	1.52	0.87	60.77	59.80	60.67	59.80
Lane Group LOS	E	B	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.07	2.96	0.10	0.12	0.00	0.13	0.04	0.20	0.04
50th-Percentile Queue Length [ft]	1.70	74.12	2.50	3.00	0.01	3.31	0.91	4.88	0.91
95th-Percentile Queue Length [veh]	0.12	5.34	0.18	0.22	0.00	0.24	0.07	0.35	0.07
95th-Percentile Queue Length [ft]	3.06	133.42	4.49	5.41	0.02	5.95	1.64	8.78	1.64

Generated with PTV VISTRO
Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	10.74	10.74	82.09	1.52	0.87	60.77	60.77	59.80	60.67	60.67	59.80
Movement LOS	E	B	B	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	10.90			1.70			60.58			60.54		
Approach LOS	B			A			E			E		
d_I, Intersection Delay [s/veh]	7.37											
Intersection LOS	A											
Intersection V/C	0.939											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	0	0	0	6	9	6	30	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1116	134	34	778	21	23	11	47	90	11	24
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	308	37	9	215	6	6	3	13	25	3	7
Total Analysis Volume [veh/h]	43	1233	148	38	860	23	25	12	52	99	12	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	18	19	0	21	22	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	39	39	4	39	39	3	5	5	6	8	8
g / C, Green / Cycle	0.06	0.56	0.56	0.05	0.56	0.56	0.04	0.07	0.07	0.09	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.39	0.10	0.02	0.27	0.02	0.02	0.01	0.04	0.06	0.01	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	94	1780	795	87	1766	788	65	122	104	139	200	170
d1, Uniform Delay [s]	31.98	11.20	7.67	32.18	9.59	7.12	32.85	30.40	31.33	31.21	27.43	27.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.45	2.24	0.52	3.44	0.96	0.07	3.71	0.35	3.68	6.56	0.12	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

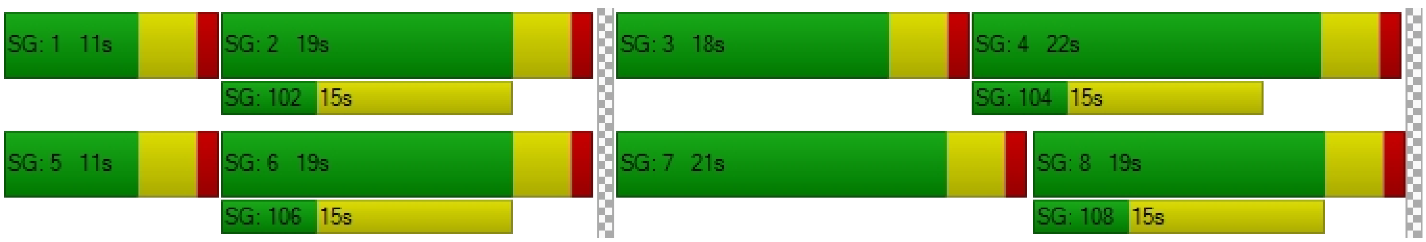
X, volume / capacity	0.46	0.69	0.19	0.44	0.49	0.03	0.39	0.10	0.50	0.71	0.06	0.16
d, Delay for Lane Group [s/veh]	35.44	13.44	8.19	35.62	10.56	7.19	36.56	30.75	35.01	37.77	27.55	28.19
Lane Group LOS	D	B	A	D	B	A	D	C	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.70	4.67	0.79	0.63	2.70	0.11	0.47	0.20	0.93	1.76	0.17	0.39
50th-Percentile Queue Length [ft]	17.58	116.68	19.76	15.66	67.42	2.82	11.72	4.88	23.15	43.89	4.28	9.86
95th-Percentile Queue Length [veh]	1.27	8.21	1.42	1.13	4.85	0.20	0.84	0.35	1.67	3.16	0.31	0.71
95th-Percentile Queue Length [ft]	31.65	205.25	35.57	28.19	121.35	5.07	21.09	8.79	41.67	79.01	7.71	17.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.44	13.44	8.19	35.62	10.56	7.19	36.56	30.75	35.01	37.77	27.55	28.19
Movement LOS	D	B	A	D	B	A	D	C	D	D	C	C
d_A, Approach Delay [s/veh]	13.56			11.51			34.87			35.00		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	14.71											
Intersection LOS	B											
Intersection V/C	0.659											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	14	16	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1219	171	97	913	8	6	14	24	117	26	70
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	339	48	27	254	2	2	4	7	33	7	19
Total Analysis Volume [veh/h]	26	1354	190	108	1014	9	7	16	27	130	29	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	11	11	0	20	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	45	45	6	48	48	1	4	4	8	11	11
g / C, Green / Cycle	0.04	0.56	0.56	0.08	0.60	0.60	0.01	0.05	0.05	0.10	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.42	0.13	0.03	0.32	0.01	0.00	0.01	0.02	0.08	0.02	0.05
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	64	1794	801	251	1924	859	23	93	79	163	240	204
d1, Uniform Delay [s]	37.57	13.35	8.87	35.11	9.27	6.37	39.15	36.14	36.49	35.19	29.95	31.14
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	3.00	0.70	1.17	1.04	0.02	7.48	0.87	2.56	8.49	0.22	1.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

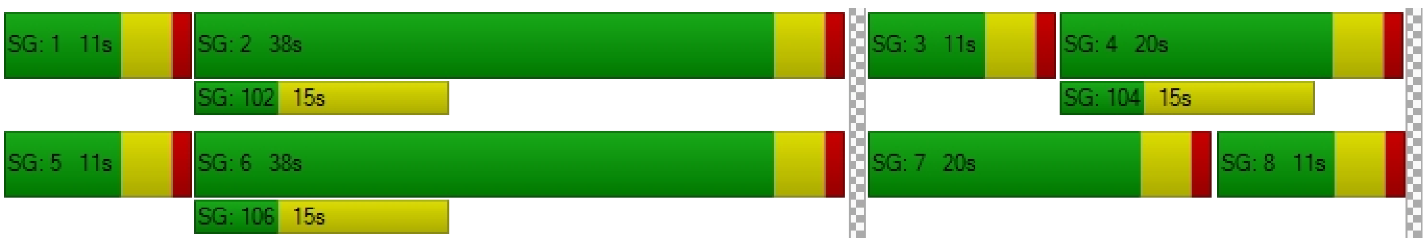
X, volume / capacity	0.41	0.75	0.24	0.43	0.53	0.01	0.31	0.17	0.34	0.80	0.12	0.38
d, Delay for Lane Group [s/veh]	41.65	16.36	9.57	36.28	10.31	6.39	46.63	37.02	39.05	43.67	30.17	32.31
Lane Group LOS	D	B	A	D	B	A	D	D	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.53	7.43	1.40	0.96	3.82	0.05	0.18	0.32	0.56	2.81	0.49	1.40
50th-Percentile Queue Length [ft]	13.29	185.72	35.02	24.02	95.57	1.21	4.57	7.99	14.04	70.17	12.32	35.07
95th-Percentile Queue Length [veh]	0.96	11.90	2.52	1.73	6.88	0.09	0.33	0.57	1.01	5.05	0.89	2.52
95th-Percentile Queue Length [ft]	23.91	297.47	63.04	43.24	172.02	2.18	8.22	14.37	25.28	126.30	22.17	63.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.65	16.36	9.57	36.28	10.31	6.39	46.63	37.02	39.05	43.67	30.17	32.31
Movement LOS	D	B	A	D	B	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	15.95			12.76			39.46			38.28		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	16.91											
Intersection LOS	B											
Intersection V/C	0.699											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	13.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.796

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	16	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	1293	5	2	877	45	88	1	82	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	368	1	1	250	13	25	0	23	1	1	3
Total Analysis Volume [veh/h]	169	1473	6	2	999	51	100	1	93	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	29	0	11	21	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	26	26	0	20	20	5	6	6	1	1	1
g / C, Green / Cycle	0.14	0.54	0.54	0.00	0.40	0.40	0.11	0.12	0.12	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.46	0.00	0.00	0.31	0.04	0.06	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	219	1709	763	6	1285	574	172	201	171	18	40	34
d1, Uniform Delay [s]	20.26	9.74	5.27	24.15	12.64	9.00	20.66	18.85	20.15	23.85	23.21	23.36
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.72	1.39	0.00	24.75	1.05	0.07	3.09	0.01	2.68	9.81	0.52	5.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

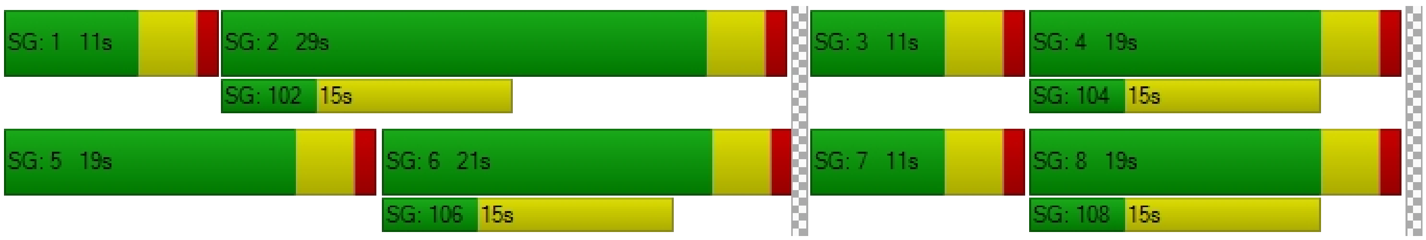
X, volume / capacity	0.77	0.86	0.01	0.31	0.78	0.09	0.58	0.00	0.54	0.32	0.05	0.32
d, Delay for Lane Group [s/veh]	25.97	11.13	5.27	48.90	13.68	9.07	23.75	18.86	22.84	33.66	23.72	28.79
Lane Group LOS	C	B	A	D	B	A	C	B	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.79	3.40	0.01	0.06	3.11	0.22	1.12	0.01	1.02	0.11	0.03	0.16
50th-Percentile Queue Length [ft]	44.66	84.90	0.36	1.59	77.83	5.59	28.06	0.24	25.51	2.83	0.66	4.12
95th-Percentile Queue Length [veh]	3.22	6.11	0.03	0.11	5.60	0.40	2.02	0.02	1.84	0.20	0.05	0.30
95th-Percentile Queue Length [ft]	80.39	152.81	0.65	2.85	140.10	10.06	50.51	0.43	45.92	5.09	1.18	7.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.97	11.13	5.27	48.90	13.68	9.07	23.75	18.86	22.84	33.66	23.72	28.79
Movement LOS	C	B	A	D	B	A	C	B	C	C	C	C
d_A, Approach Delay [s/veh]	12.63			13.53			23.28			29.80		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	13.78											
Intersection LOS	B											
Intersection V/C	0.796											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	165.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.308

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	6	7	3	2	0	0	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	437	1354	200	34	839	64	76	174	540	169	133	24
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	376	55	9	233	18	21	48	150	47	37	7
Total Analysis Volume [veh/h]	485	1503	222	38	931	71	84	193	599	188	148	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	50	50	5	27	27	8	38	38	11	41
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.07	0.32	0.32	0.09	0.34
(v / s)_i Volume / Saturation Flow Rate	0.30	0.51	0.54	0.02	0.29	0.05	0.05	0.12	0.42	0.12	0.11
s, saturation flow rate [veh/h]	1597	1676	1604	1597	3192	1425	1597	1676	1425	1597	1632
c, Capacity [veh/h]	373	700	669	67	721	322	105	529	450	146	558
d1, Uniform Delay [s]	46.00	34.96	34.96	56.42	46.45	37.84	55.29	31.75	41.06	54.50	29.12
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	154.19	116.95	141.00	7.35	141.21	1.57	13.03	0.42	163.76	169.78	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

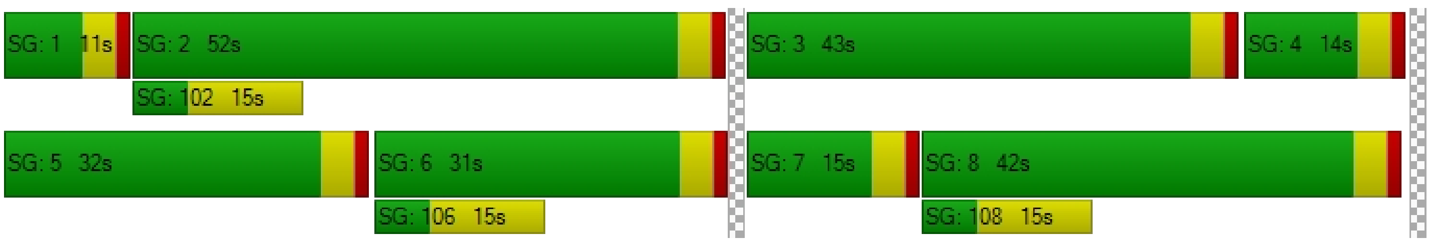
X, volume / capacity	1.30	1.23	1.29	0.57	1.29	0.22	0.80	0.36	1.33	1.28	0.31
d, Delay for Lane Group [s/veh]	200.19	151.91	175.96	63.77	187.65	39.41	68.31	32.17	204.82	224.28	29.44
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	26.42	41.24	43.92	1.22	24.30	1.77	2.89	4.40	33.56	11.32	3.78
50th-Percentile Queue Length [ft]	660.52	1030.99	1098.00	30.58	607.42	44.24	72.13	110.11	838.91	282.96	94.55
95th-Percentile Queue Length [veh]	39.86	59.54	64.54	2.20	36.81	3.19	5.19	7.85	50.57	18.34	6.81
95th-Percentile Queue Length [ft]	996.39	1488.53	1613.55	55.05	920.27	79.63	129.83	196.16	1264.25	458.58	170.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	200.19	162.16	175.96	63.77	187.65	39.41	68.31	32.17	204.82	224.28	29.44	29.44
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	171.89			173.01			153.69			130.35		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	165.24											
Intersection LOS	F											
Intersection V/C	1.308											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	87.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.199

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	4	3	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1548	392	318	1219	304	455
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	416	105	85	328	82	122
Total Analysis Volume [veh/h]	1665	422	342	1311	327	489
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.52	0.30	0.21	0.41	0.11	0.34
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.40	48.95	12.47	34.43	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	99.37	6.06	105.29	1.48	0.26	115.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.68	1.17	0.63	0.37	1.21
d, Delay for Lane Group [s/veh]	133.37	33.46	154.24	13.95	34.69	158.88
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	37.18	9.95	16.91	8.93	3.87	24.83
50th-Percentile Queue Length [ft]	929.59	248.85	422.75	223.20	96.74	620.80
95th-Percentile Queue Length [veh]	53.60	15.13	25.50	13.83	6.97	36.81
95th-Percentile Queue Length [ft]	1339.89	378.21	637.47	345.71	174.14	920.35

Generated with PTV VISTRO
Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	133.37	33.46	154.24	13.95	34.69	158.88
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	113.17		42.97		109.11	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	86.98					
Intersection LOS	F					
Intersection V/C	1.199					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	45	13	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	82	49	14	27	39
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	28	17	5	9	13
Total Analysis Volume [veh/h]	14	112	67	19	37	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.11	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	10.27	9.23	0.00	0.00	7.44	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.45	0.45	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	11.36	11.36	0.00	0.00	1.88	0.00
d_A, Approach Delay [s/veh]	9.35		0.00		3.06	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.81					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	37	0	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	4	0	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1	41	0	2	38
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	14	0	1	13
Total Analysis Volume [veh/h]	0	1	55	0	3	51
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.00	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	7.30	0.00	9.38	8.50
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.11	0.00	0.16	0.16
95th-Percentile Queue Length [ft]	0.00	0.00	2.63	0.00	3.99	3.99
d_A, Approach Delay [s/veh]	0.00		7.30		8.55	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.85					
Intersection LOS	A					

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	10	3	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	191	138	86	104	82
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	71	51	32	39	31
Total Analysis Volume [veh/h]	83	285	206	128	155	122
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.55	0.98	0.98	1.23	1.09	1.25	0.72
95th-Percentile Queue Length [ft]	13.81	24.46	24.46	30.71	27.27	31.19	18.03
Approach Delay [s/veh]	11.01			11.20		11.40	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.18						
Intersection LOS	B						

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	5	2	2	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	134	250	7	3	182	58	79	4	97	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	75	2	1	55	17	24	1	29	2	1	0
Total Analysis Volume [veh/h]	161	300	8	4	219	70	95	5	117	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.44	2.45	0.69	0.03	0.71	0.07
95th-Percentile Queue Length [ft]	160.96	61.18	17.29	0.70	17.80	1.71
Approach Delay [s/veh]	22.85	13.51	10.71			10.49
Approach LOS	C	B	B			B
Intersection Delay [s/veh]	17.29					
Intersection LOS	C					

Appendix E. Cumulative Projects Trip Generations

Cumulative Project Trip Generation

(shaded)	Included as one of the cumulative projects
(unshaded)	Not included as one of the cumulative projects

County of Riverside

Project Name	Project Type	Land Use	ITE Code	Unit Amount	Unit	Trip Generation Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
1. SELF STORAGE FACILITY/RETAIL BUILDING / CAR WASH /	Mixed-Use	Automated Car Wash	948	4.795	TSF	N/A	N/A	N/A	N/A	34	34	68
		Mini-Warehouse	151	970	Storage Unit	243	10	10	19	9	10	19
					Total:	**243**	**10**	**10**	**19**	**43**	**44**	**87**
2. 160,680 SF MIX OF COMMERCIAL, RESTAURANT, FINANCIA	Mixed-Use	Pharmacy/Drugstore with Drive-Thru Window	881	13.6	TSF	1,318	24	23	47	68	68	135
		Gasoline/Service Station with Convenience Mart and Car Wash	946	12	Vehicle Fueling Position	1,834	72	70	142	85	81	166
		Day Care Center	565	5	TSF	370	32	29	61	29	33	62
		High-Turnover (Sit-Down) Restaurant	932	11.5	TSF	1,462	68	56	124	68	45	113
		Fast-Food Restaurant with Drive-Thru Window	934	3	TSF	1,488	69	67	136	51	47	98
		Drive-In Bank	912	5	TSF	741	34	26	60	61	61	122
		Specialty Retail Center	826	64.6	TSF	2,863	N/A	N/A	N/A	77	98	175
		Supermarket	850	55	TSF	5,623	116	71	187	266	255	521
					Total:	**15,699**	**415**	**342**	**757**	**705**	**688**	**1,392**
3. SP COMMERCIAL OFFICE,RETAIL MIXED USE,RESIDENTIAL	Mixed-Use	Specialty Retail Center	826	400	TSF	17,728	N/A	N/A	N/A	477	607	1,084
		General Office Building	710	250	TSF	2,758	343	47	390	63	310	373
		Single-Family Detached Housing	210	98	Dwelling Unit	933	19	56	74	62	36	98
		Continuing Care Retirement Community	255	225	Unit	540	21	11	32	14	22	36
					Total:	**21,959**	**383**	**114**	**496**	**616**	**975**	**1,591**

County of Riverside

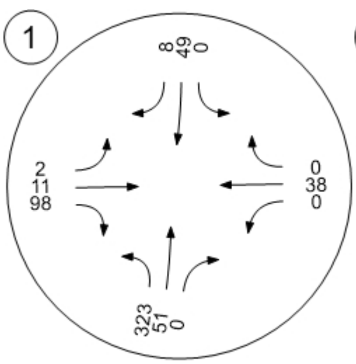
						Trip Generation						
							AM Peak Hour			PM Peak Hour		
Project Name	Project Type	Land Use	ITE Code	Unit Amount	Unit	Daily	In	Out	Total	In	Out	Total

City of Murrieta

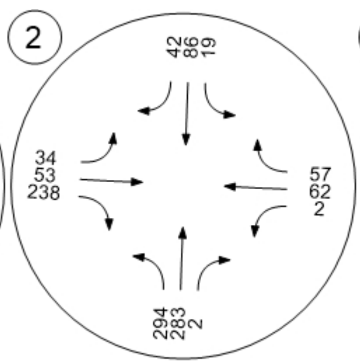
		Trip Generation						
			AM Peak Hour			PM Peak Hour		
Project Name	Description & TG Source	Daily	In	Out	Total	In	Out	Total
Adobe Springs	287 SF DU by 2018. Trames Solutions Inc., 2015.	2,732	55	161	216	181	106	287
CVS	14,576 SF CVS Pharmacy with Drive-Thru. TJW Engineering, Inc., 2013.	721	13	13	26	37	37	74
Golden Cities Tract 28532-1	82 SF DU. Urban Crossroads, 2005.	785	16	46	62	52	30	82
Golden Cities Tract 28532-2	90 SF DU. Urban Crossroads, 2005.	861	17	50	67	58	33	91
Golden Cities Tract 28532-3	69 SF DU. Urban Crossroads, 2006.	660	13	39	52	44	26	70
Golden Cities Tract 28532-4	126 SF DU. Urban Crossroads, 2006.	1,206	24	71	95	81	47	128
Golden Cities Tract 28532-5	119 SF DU. Urban Crossroads, 2006.	1,139	23	67	90	76	44	120
Kaiser	824,000 SF Medical-Dental Office Building. LLG, 2015.	16,293	921	274	1,195	1,195	479	1,646
Mitchell Crossing	331 MF DU & 50,000 SF Speciality Retail. Kunzman Associates, Inc., 2015.	4,417	73	163	236	192	149	341
Murrieta Hills	532 SF DU & 218 MF DU & 599,060 SF Shopping Center. RBF Consulting.	24,562	381	538	919	1,162	1,050	2,212
Pacific Landing	400 Apartment DU. Urban Crossroads, 2008.	2,688	40	164	204	160	88	248
Physicians Hospital	490,000 SF Hospital & 160,000 SF Medical Office Building. RK Engineering Group, Inc., 2008.	14,390	706	279	985	351	822	1,173
Sierra Lane Commercial Center	118,435 SF Specialty Retail & 5,200 SF Tire Store & 5,074 SF Fast-Food Restaurant w/ DT Kunzman Associates, Inc., 2009.	3,463	152	139	291	120	122	242
The Orchard	436,735 SF Commerical Use. Katz, Okitsu & Associates, 2004.	14,996	360	230	130	1,308	623	685
Vineyard Shopping Center	78,489 SF Shopping Center & 91 Room Hotel. Trames Solutions Inc., 2013.	6,254	111	70	181	258	273	531
	Total Trip Generation of the projects that will be included in the TIA:	**40,633**	**863**	**627**	**1,488**	**1,545**	**1,813**	**3,357**

Traffic Volume - Future Total Volume

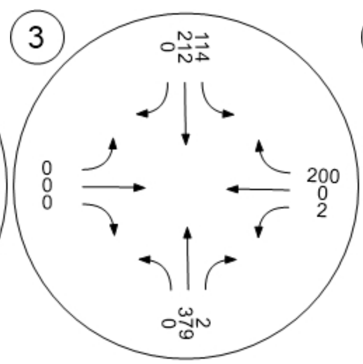
Winchester Road at Keller Ro



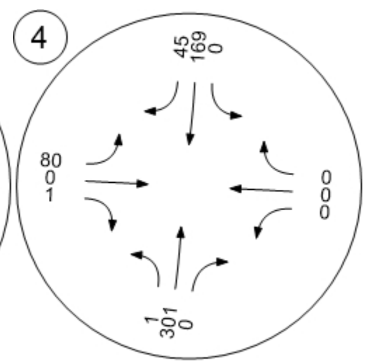
Winchester Road at Pourroy



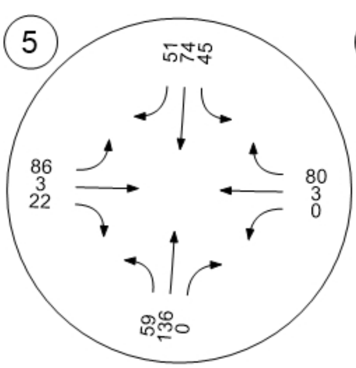
Winchester Road at Whisper



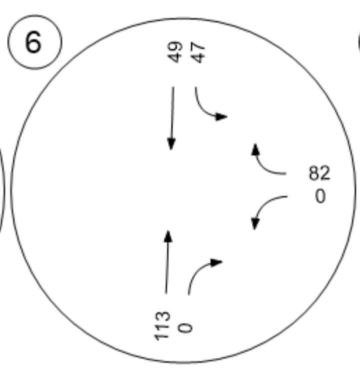
Winchester Road at Jean Nic



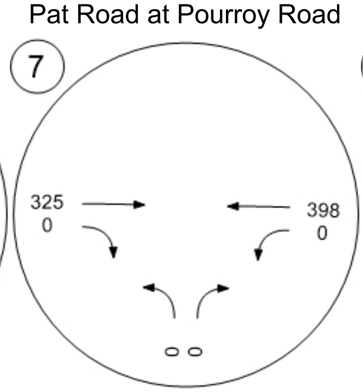
Winchester Road at Max Gilli



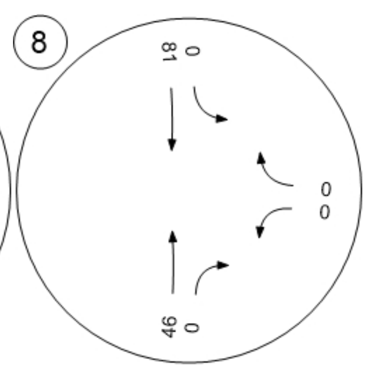
Winchester Road at Benton



Pat Road at Pourroy Road

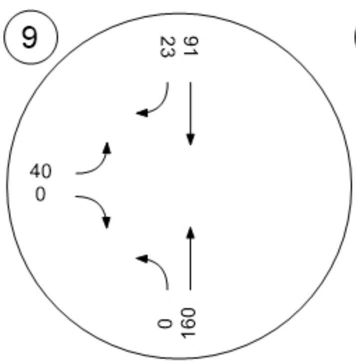


Jean Nicholas Road at Elliot

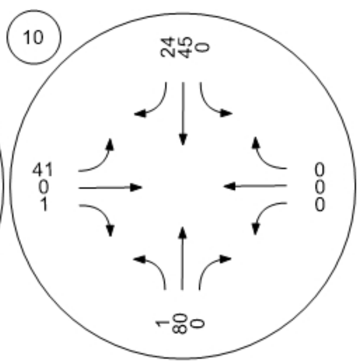


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro

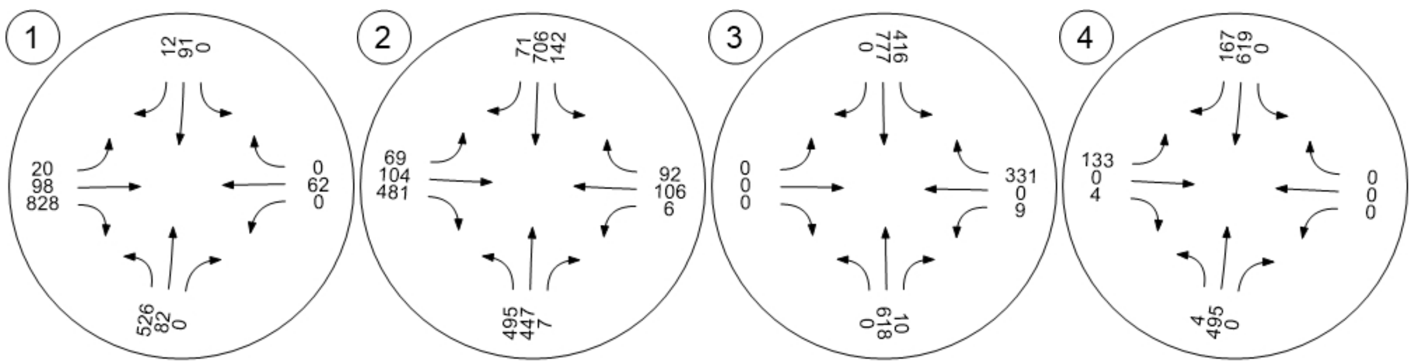


Pourroy Road at Thompson

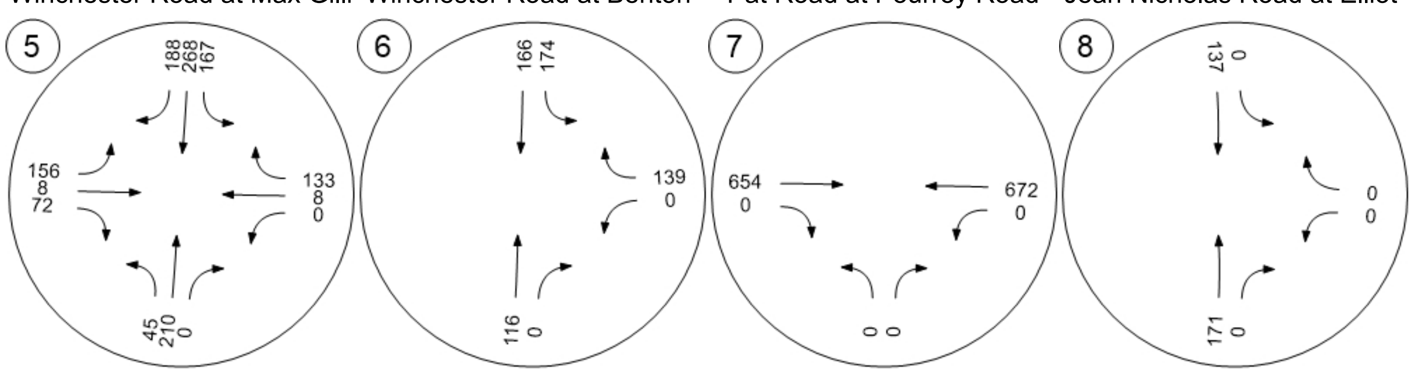


Traffic Volume - Future Total Volume

Winchester Road at Keller Ro Winchester Road at Pourroy Winchester Road at Whisper Winchester Road at Jean Nic

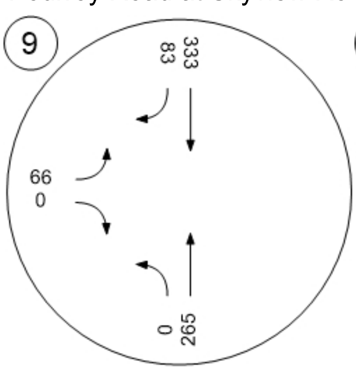


Winchester Road at Max Gilli Winchester Road at Benton Pat Road at Pourroy Road Jean Nicholas Road at Elliot

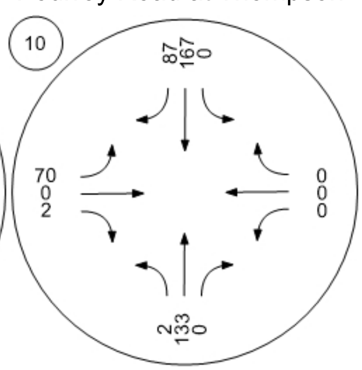


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



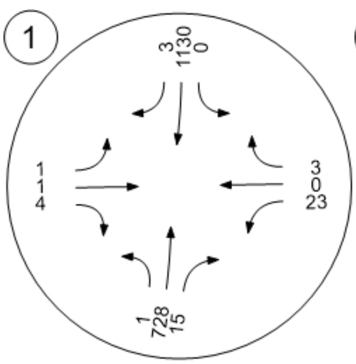
Pourroy Road at Thompson



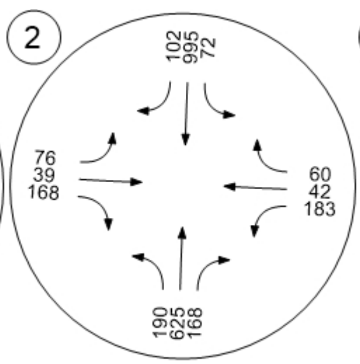
Appendix F. Intersection Volumes, Delay, and LOS Calculation Outputs, Existing Plus Ambient Plus Project Conditions

Traffic Volume - Future Total Volume

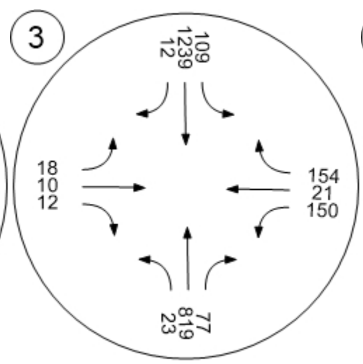
Winchester Road at Keller Ro



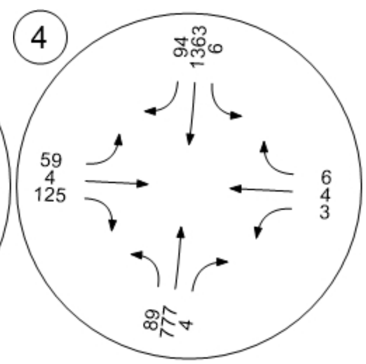
Winchester Road at Pourroy



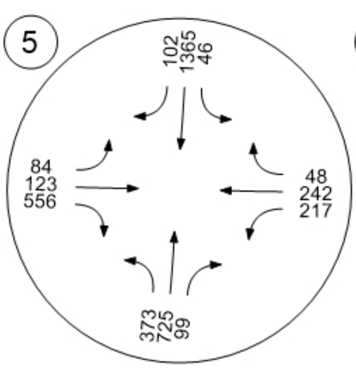
Winchester Road at Whisper



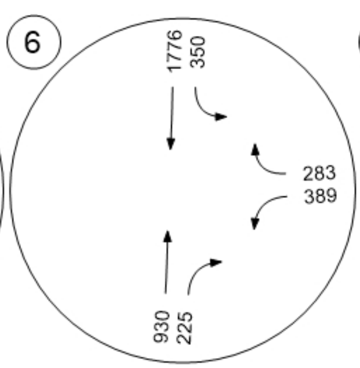
Winchester Road at Jean Nic



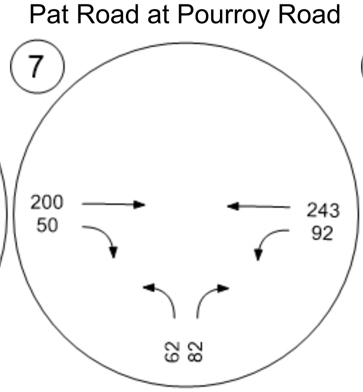
Winchester Road at Max Gilli



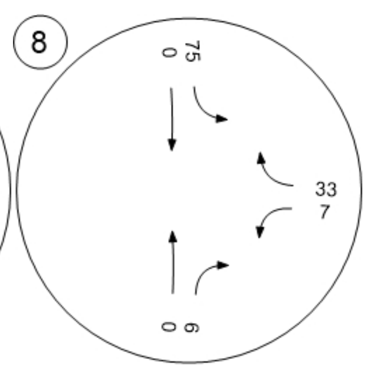
Winchester Road at Benton



Pat Road at Pourroy Road

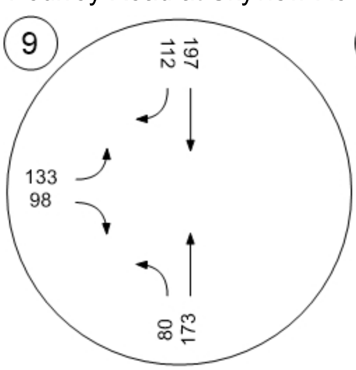


Jean Nicholas Road at Elliot

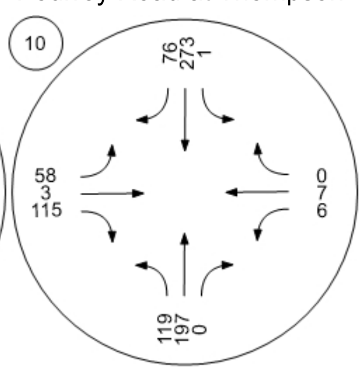


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+A+P AM_new.pdf

Scenario 5: E+A+P AM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	WB Left	5,955.517	4.3	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.857	38.0	D
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.752	18.7	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	NB Left	0.792	17.2	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.521	196.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.937	27.6	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.298	24.3	C
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.256	24.0	C
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		13.1	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		16.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	4.3
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5,955.517

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	12	0	30	0	0	0	0	15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	728	15	0	1130	3	1	1	4	23	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	203	4	0	315	1	0	0	1	6	0	1
Total Analysis Volume [veh/h]	1	813	17	0	1261	3	1	1	4	26	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	90	0	11	90	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	0	103	103	4	4	4	4
g / C, Green / Cycle	0.00	0.86	0.00	0.86	0.86	0.04	0.04	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.00	0.50	0.00	0.40	0.00	0.00	0.00	5359.47	0.00
s, saturation flow rate [veh/h]	3101	1670	1597	3192	1425	591	1425	0	1425
c, Capacity [veh/h]	6	1441	0	2748	1227	67	53	60	53
d1, Uniform Delay [s]	59.79	2.25	0.00	1.92	1.16	55.71	55.77	60.00	55.73
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.86	1.68	0.00	0.55	0.00	0.18	0.60	21.18	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.58	0.00	0.46	0.00	0.03	0.08	0.43	0.06
d, Delay for Lane Group [s/veh]	72.65	3.93	0.00	2.48	1.17	55.89	56.36	81.18	56.17
Lane Group LOS	E	A	A	A	A	E	E	F	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.80	0.00	0.36	0.00	0.06	0.13	1.16	0.09
50th-Percentile Queue Length [ft]	0.62	20.10	0.00	9.02	0.04	1.55	3.15	29.04	2.36
95th-Percentile Queue Length [veh]	0.04	1.45	0.00	0.65	0.00	0.11	0.23	2.09	0.17
95th-Percentile Queue Length [ft]	1.12	36.18	0.00	16.23	0.07	2.78	5.67	52.28	4.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.65	3.93	3.93	0.00	2.48	1.17	55.89	55.89	56.36	81.18	81.18	56.17
Movement LOS	E	A	A	A	A	A	E	E	E	F	F	E
d_A, Approach Delay [s/veh]	4.01			2.47			56.21			78.59		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	4.26											
Intersection LOS	A											
Intersection V/C	5955.517											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	165	0	0	0	0	45	36	24	136	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	625	168	72	995	102	76	39	168	183	42	60
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	173	46	20	275	28	21	11	46	51	12	17
Total Analysis Volume [veh/h]	210	691	186	80	1099	113	84	43	186	202	46	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	30	0	37	45	0	22	23	0	20	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	55	55	7	46	46	7	16	16	16	25	25
g / C, Green / Cycle	0.15	0.50	0.50	0.06	0.42	0.42	0.07	0.15	0.15	0.14	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.13	0.22	0.13	0.05	0.34	0.08	0.05	0.03	0.13	0.13	0.03	0.05
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	238	1593	711	103	1323	591	107	248	210	229	376	319
d1, Uniform Delay [s]	45.95	17.65	15.90	50.76	28.80	20.51	50.62	41.08	46.03	46.28	34.11	34.79
k, delay calibration	0.28	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.32	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.65	0.86	0.89	11.72	6.16	0.72	11.74	0.33	22.80	25.58	0.14	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

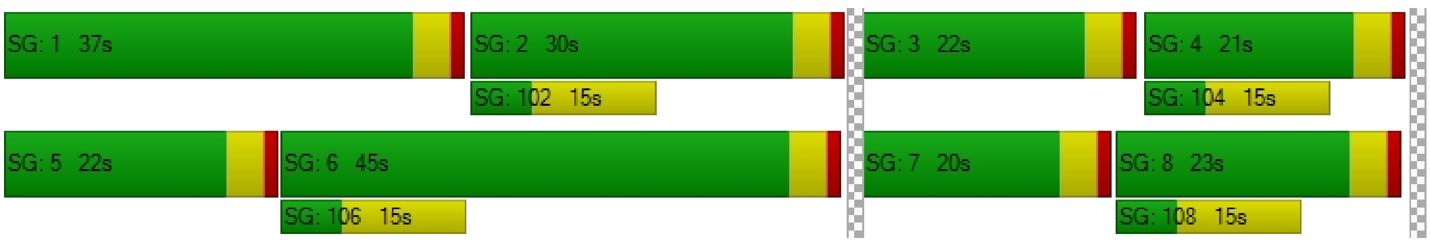
X, volume / capacity	0.88	0.43	0.26	0.78	0.83	0.19	0.78	0.17	0.88	0.88	0.12	0.21
d, Delay for Lane Group [s/veh]	68.60	18.51	16.80	62.49	34.96	21.23	62.35	41.41	68.83	71.86	34.25	35.10
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	6.71	4.96	2.49	2.37	12.36	1.76	2.63	1.05	6.29	6.87	0.97	1.42
50th-Percentile Queue Length [ft]	167.80	123.89	62.20	59.25	308.96	44.05	65.64	26.14	157.30	171.64	24.21	35.58
95th-Percentile Queue Length [veh]	10.96	8.61	4.48	4.27	18.12	3.17	4.73	1.88	10.41	11.16	1.74	2.56
95th-Percentile Queue Length [ft]	274.02	215.16	111.97	106.66	453.09	79.29	118.15	47.06	260.14	279.07	43.58	64.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.60	18.51	16.80	62.49	34.96	21.23	62.35	41.41	68.83	71.86	34.25	35.10
Movement LOS	E	B	B	E	C	C	E	D	E	E	C	D
d_A, Approach Delay [s/veh]	27.89			35.46			63.33			58.63		
Approach LOS	C			D			E			E		
d_I, Intersection Delay [s/veh]	38.05											
Intersection LOS	D											
Intersection V/C	0.857											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	61	75	0	0	0	0	0	0	75
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	819	77	109	1239	12	18	10	12	150	21	154
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	228	21	30	344	3	5	3	3	42	6	43
Total Analysis Volume [veh/h]	26	910	86	121	1377	13	20	11	13	167	23	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	17	0	23	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	35	35	6	39	39	2	4	4	9	10	10
g / C, Green / Cycle	0.04	0.50	0.50	0.09	0.55	0.55	0.03	0.05	0.05	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.29	0.06	0.04	0.43	0.01	0.01	0.01	0.01	0.10	0.01	0.12
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	65	1591	710	283	1752	782	53	88	75	207	250	212
d1, Uniform Delay [s]	32.80	12.34	9.39	30.13	12.55	7.20	33.18	31.70	31.78	29.65	25.75	28.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.91	1.50	0.35	1.02	3.64	0.04	4.34	0.63	1.10	7.19	0.16	7.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

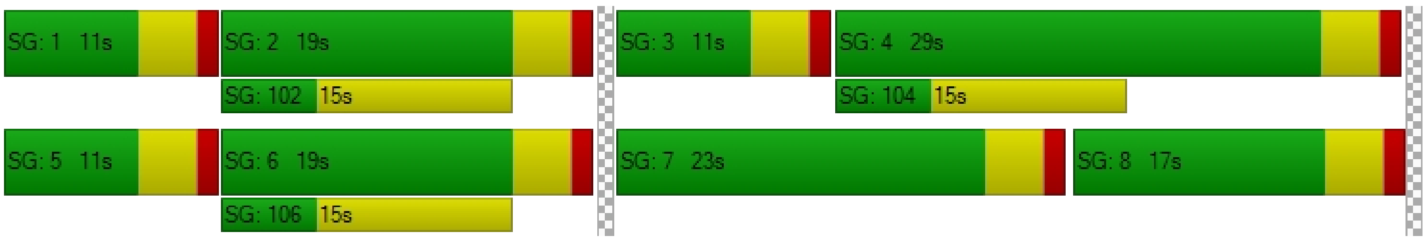
X, volume / capacity	0.40	0.57	0.12	0.43	0.79	0.02	0.38	0.13	0.17	0.81	0.09	0.81
d, Delay for Lane Group [s/veh]	36.70	13.84	9.74	31.15	16.19	7.24	37.52	32.33	32.87	36.84	25.91	35.91
Lane Group LOS	D	B	A	C	B	A	D	C	C	D	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.46	3.97	0.59	0.90	6.61	0.07	0.39	0.19	0.23	3.04	0.33	3.08
50th-Percentile Queue Length [ft]	11.45	99.26	14.80	22.52	165.37	1.76	9.79	4.76	5.75	75.92	8.26	76.90
95th-Percentile Queue Length [veh]	0.82	7.15	1.07	1.62	10.83	0.13	0.70	0.34	0.41	5.47	0.59	5.54
95th-Percentile Queue Length [ft]	20.62	178.67	26.65	40.54	270.82	3.17	17.62	8.56	10.35	136.66	14.86	138.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.70	13.84	9.74	31.15	16.19	7.24	37.52	32.33	32.87	36.84	25.91	35.91
Movement LOS	D	B	A	C	B	A	D	C	C	D	C	D
d_A, Approach Delay [s/veh]	14.08			17.31			34.85			35.71		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	18.71											
Intersection LOS	B											
Intersection V/C	0.752											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.792

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	0	75	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	89	777	4	6	1363	94	59	4	125	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	221	1	2	388	27	17	1	36	1	1	2
Total Analysis Volume [veh/h]	101	885	5	7	1552	107	67	5	142	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	41	49	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	61	61	1	56	56	6	11	11	1	6	6
g / C, Green / Cycle	0.08	0.68	0.68	0.01	0.62	0.62	0.06	0.12	0.12	0.01	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.00	0.00	0.49	0.08	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	126	2170	969	22	1963	876	103	204	174	11	108	92
d1, Uniform Delay [s]	40.86	6.40	4.64	44.04	13.00	7.22	41.19	34.87	38.61	44.55	39.58	39.66
k, delay calibration	0.21	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.41	0.57	0.01	7.91	3.34	0.29	6.76	0.05	9.02	12.46	0.17	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

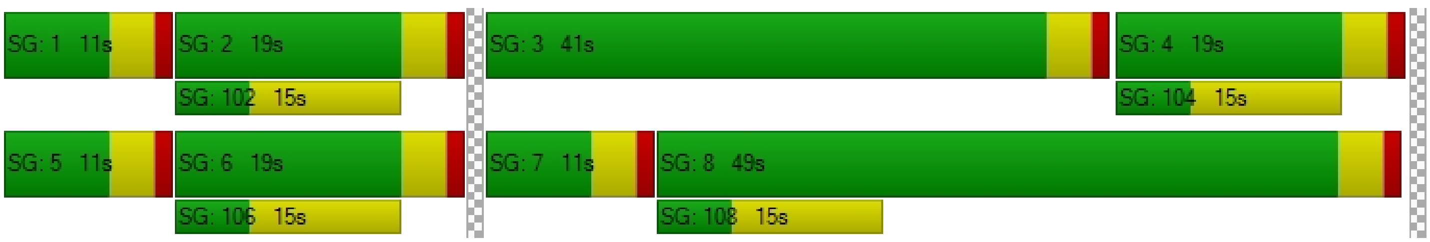
X, volume / capacity	0.80	0.41	0.01	0.32	0.79	0.12	0.65	0.02	0.82	0.27	0.05	0.08
d, Delay for Lane Group [s/veh]	61.28	6.97	4.65	51.95	16.35	7.51	47.95	34.92	47.63	57.01	39.76	40.01
Lane Group LOS	E	A	A	D	B	A	D	C	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	2.77	2.59	0.02	0.19	9.33	0.71	1.63	0.10	3.45	0.10	0.11	0.15
50th-Percentile Queue Length [ft]	69.14	64.73	0.56	4.85	233.28	17.86	40.75	2.46	86.21	2.61	2.71	3.84
95th-Percentile Queue Length [veh]	4.98	4.66	0.04	0.35	14.34	1.29	2.93	0.18	6.21	0.19	0.19	0.28
95th-Percentile Queue Length [ft]	124.44	116.51	1.01	8.73	358.53	32.15	73.34	4.43	155.17	4.70	4.87	6.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.28	6.97	4.65	51.95	16.35	7.51	47.95	34.92	47.63	57.01	39.76	40.01
Movement LOS	E	A	A	D	B	A	D	C	D	E	D	D
d_A, Approach Delay [s/veh]	12.49			15.93			47.43			43.33		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	17.23											
Intersection LOS	B											
Intersection V/C	0.792											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	196.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.521

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	45	0	24	39	12	15	0	0	0	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	373	725	99	46	1365	102	84	123	556	217	242	48
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	103	201	27	13	379	28	23	34	154	60	67	13
Total Analysis Volume [veh/h]	414	805	110	51	1515	113	93	137	617	241	269	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	27	0	39	41	0	34	38	38	16	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	52	52	6	37	37	9	34	34	12	37
g / C, Green / Cycle	0.18	0.44	0.44	0.05	0.31	0.31	0.07	0.28	0.28	0.10	0.31
(v / s)_i Volume / Saturation Flow Rate	0.26	0.28	0.28	0.03	0.47	0.08	0.06	0.08	0.43	0.15	0.20
s, saturation flow rate [veh/h]	1597	1676	1607	1597	3192	1425	1597	1676	1425	1597	1629
c, Capacity [veh/h]	279	732	702	76	987	441	115	473	402	160	506
d1, Uniform Delay [s]	49.50	26.38	26.43	56.21	41.44	31.09	54.86	33.66	43.06	54.00	35.57
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	234.99	4.20	4.44	9.69	245.60	1.40	12.47	0.33	252.43	258.60	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

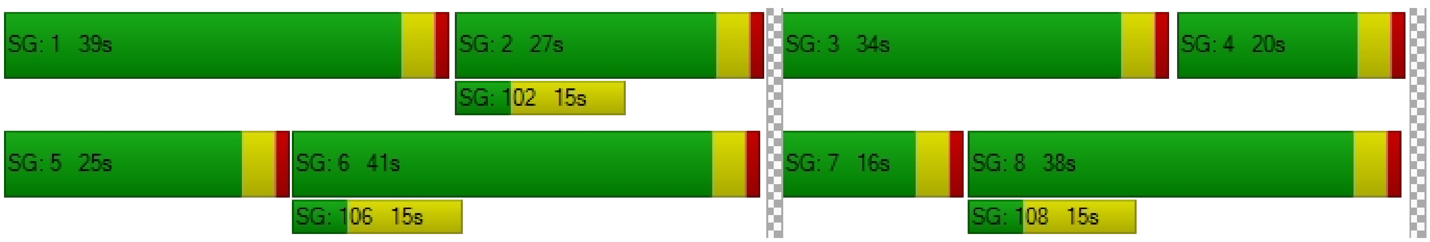
X, volume / capacity	1.48	0.64	0.64	0.67	1.53	0.26	0.81	0.29	1.53	1.51	0.64
d, Delay for Lane Group [s/veh]	284.49	30.57	30.87	65.90	287.04	32.49	67.33	33.99	295.49	312.60	37.90
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	26.19	10.39	10.07	1.67	47.27	2.51	3.17	3.18	39.99	16.29	8.39
50th-Percentile Queue Length [ft]	654.81	259.66	251.85	41.64	1181.84	62.64	79.21	79.51	999.78	407.14	209.72
95th-Percentile Queue Length [veh]	40.74	15.67	15.28	3.00	72.78	4.51	5.70	5.72	62.05	26.19	13.14
95th-Percentile Queue Length [ft]	1018.54	391.80	381.98	74.96	1819.51	112.76	142.57	143.12	1551.20	654.76	328.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	284.49	30.70	30.87	65.90	287.04	32.49	67.33	33.99	295.49	312.60	37.90	37.90
Movement LOS	F	C	C	E	F	C	E	C	F	F	D	D
d_A, Approach Delay [s/veh]	109.77			263.19			228.14			155.49		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	196.60											
Intersection LOS	F											
Intersection V/C	1.521											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.937

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	27	12	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	930	225	350	1776	389	283
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	250	60	94	477	105	76
Total Analysis Volume [veh/h]	1000	242	376	1910	418	304
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	40	59	31	31
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	34	34	23	61	21	21
g / C, Green / Cycle	0.37	0.37	0.26	0.68	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.31	0.17	0.24	0.60	0.13	0.21
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1189	531	414	2158	729	335
d1, Uniform Delay [s]	25.83	21.36	32.32	11.77	30.44	33.48
k, delay calibration	0.50	0.50	0.15	0.50	0.11	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.29	2.81	10.56	5.79	0.71	17.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

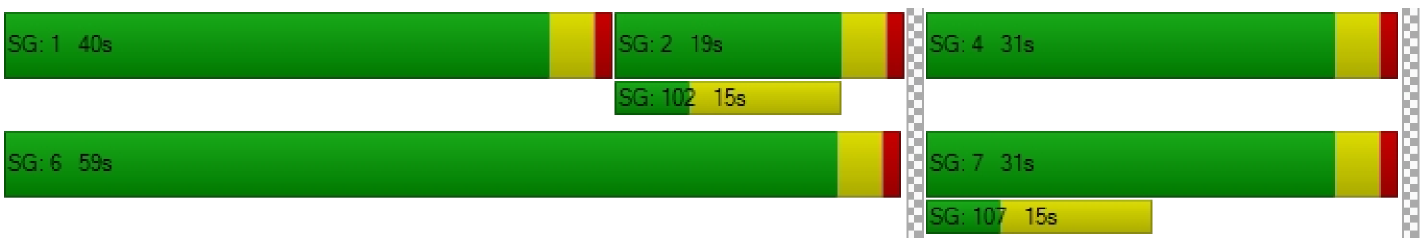
X, volume / capacity	0.84	0.46	0.91	0.89	0.57	0.91
d, Delay for Lane Group [s/veh]	33.11	24.18	42.88	17.56	31.15	50.90
Lane Group LOS	C	C	D	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	9.70	3.82	8.35	11.43	4.00	7.90
50th-Percentile Queue Length [ft]	242.43	95.38	208.75	285.77	99.92	197.49
95th-Percentile Queue Length [veh]	14.80	6.87	13.09	16.98	7.19	12.51
95th-Percentile Queue Length [ft]	370.11	171.69	327.22	424.38	179.85	312.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.11	24.18	42.88	17.56	31.15	50.90
Movement LOS	C	C	D	B	C	D
d_A, Approach Delay [s/veh]	31.37		21.72		39.47	
Approach LOS	C		C		D	
d_I, Intersection Delay [s/veh]	27.56					
Intersection LOS	C					
Intersection V/C	0.937					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	24.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.298

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	196	47	0	240
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	82	200	50	92	243
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	28	68	17	31	83
Total Analysis Volume [veh/h]	84	112	272	68	125	331
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.15	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	24.34	16.50	0.00	0.00	8.29	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.28	2.28	0.00	0.00	0.34	0.00
95th-Percentile Queue Length [ft]	57.05	57.05	0.00	0.00	8.55	0.00
d_A, Approach Delay [s/veh]	19.86		0.00		2.27	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.97					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	24.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.256

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	189	13	94	138	49	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	24	0	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	23	122	144	58	151
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	8	41	49	20	51
Total Analysis Volume [veh/h]	266	31	165	195	78	204
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.13	0.00	0.26	0.27
d_M, Delay for Movement [s/veh]	0.00	0.00	8.27	0.00	23.96	16.92
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.45	0.00	3.03	3.03
95th-Percentile Queue Length [ft]	0.00	0.00	11.22	0.00	75.68	75.68
d_A, Approach Delay [s/veh]	0.00		3.79		18.86	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	7.12					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	54	44	12	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	173	197	112	133	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	64	73	42	50	37
Total Analysis Volume [veh/h]	119	258	294	167	198	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.95	0.97	0.97	2.16	1.91	1.96	1.00
95th-Percentile Queue Length [ft]	23.87	24.21	24.21	54.10	47.83	48.94	24.89
Approach Delay [s/veh]	12.07			13.77		13.38	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	13.12						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	0	19	10	12	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	197	0	1	273	76	58	3	115	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	59	0	0	82	23	17	1	35	2	2	0
Total Analysis Volume [veh/h]	143	237	0	1	328	91	70	4	138	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

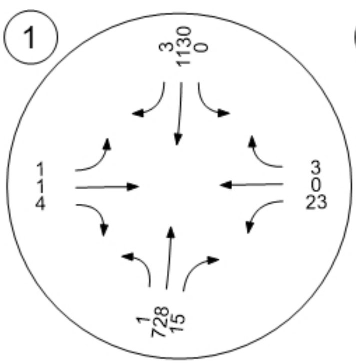
Lanes

Movement, Approach, & Intersection Results

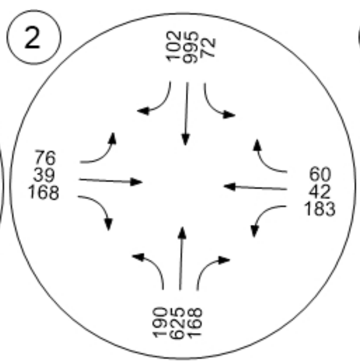
95th-Percentile Queue Length [veh]	4.22	4.82	0.49	0.02	0.89	0.10
95th-Percentile Queue Length [ft]	105.45	120.57	12.27	0.57	22.36	2.41
Approach Delay [s/veh]	17.76	18.53	10.77			10.71
Approach LOS	C	C	B			B
Intersection Delay [s/veh]	16.53					
Intersection LOS	C					

Traffic Volume - Future Total Volume

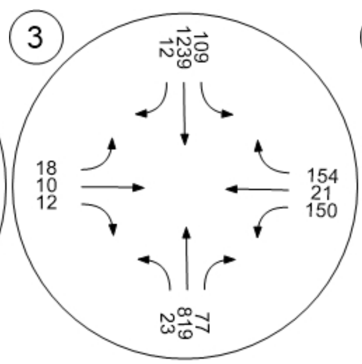
Winchester Road at Keller Ro



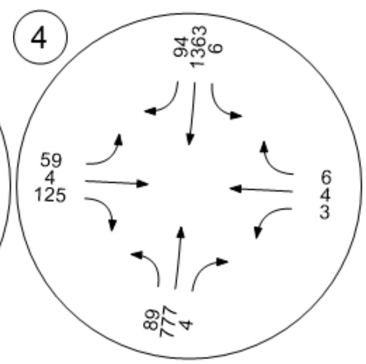
Winchester Road at Pourroy



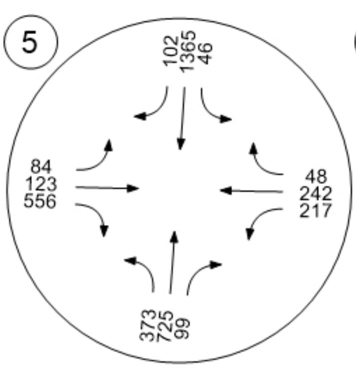
Winchester Road at Whisper



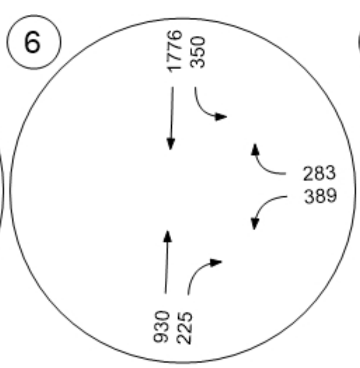
Winchester Road at Jean Nic



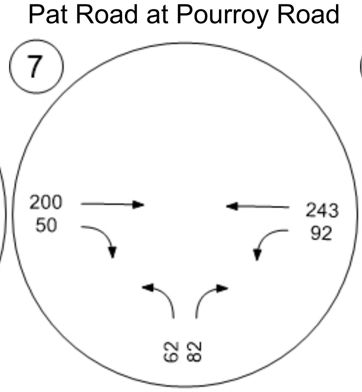
Winchester Road at Max Gilli



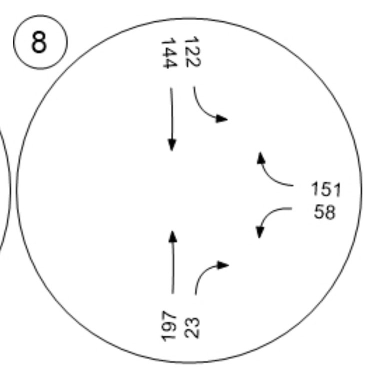
Winchester Road at Benton



Pat Road at Pourroy Road

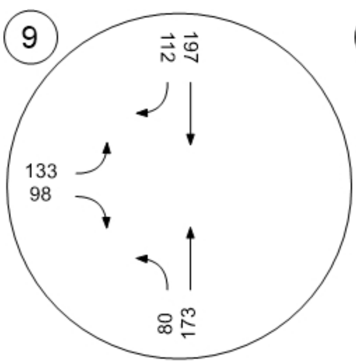


Jean Nicholas Road at Elliot

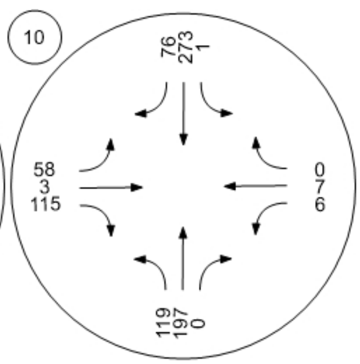


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro

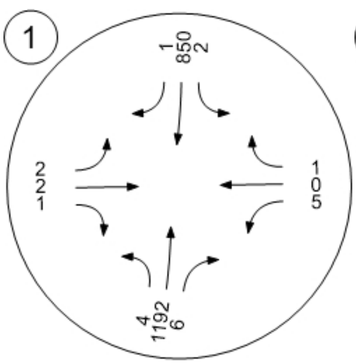


Pourroy Road at Thompson

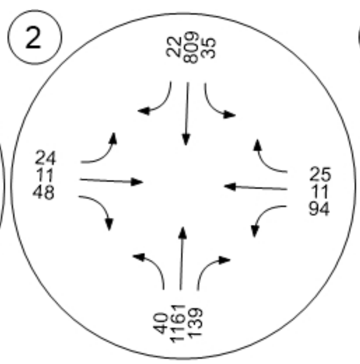


Traffic Volume - Future Total Volume

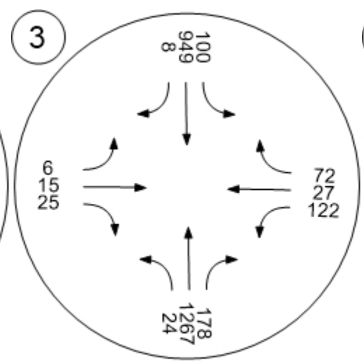
Winchester Road at Keller Ro



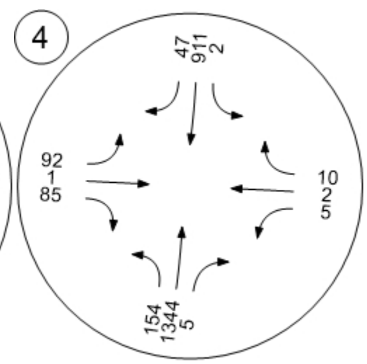
Winchester Road at Pourroy



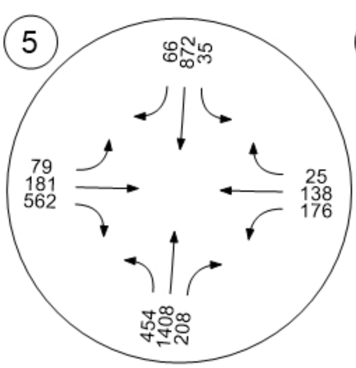
Winchester Road at Whisper



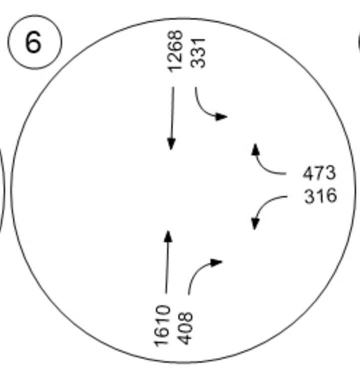
Winchester Road at Jean Nic



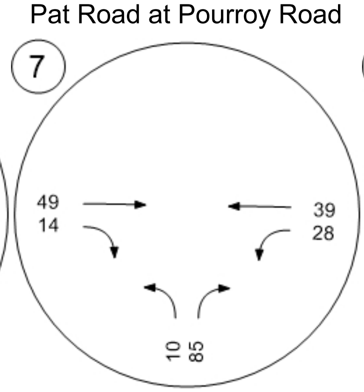
Winchester Road at Max Gilli



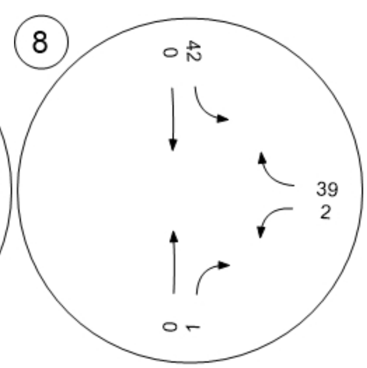
Winchester Road at Benton



Pat Road at Pourroy Road

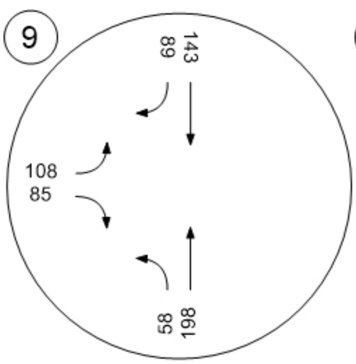


Jean Nicholas Road at Elliot

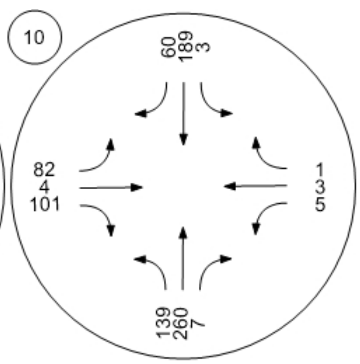


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+A+P PM_new.pdf

Scenario 6: E+A+P PM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.973	8.9	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.685	15.2	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.727	17.8	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Left	0.718	14.9	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.360	184.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.247	98.3	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	10.3	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.110	14.9	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.4	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		18.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.973

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	3	0	4	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1192	6	2	850	1	2	2	1	5	0	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	333	2	1	237	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1330	7	2	949	1	2	2	1	6	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	88	0	11	88	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.88	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.80	0.00	0.30	0.00	0.05	0.00	0.08	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	84	1425	79	1425
c, Capacity [veh/h]	24	1479	7	2808	1253	46	18	61	18
d1, Uniform Delay [s]	59.13	4.06	59.55	1.24	0.87	59.97	58.52	59.97	58.52
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	9.40	22.54	0.33	0.00	0.80	1.28	0.69	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.90	0.30	0.34	0.00	0.09	0.06	0.10	0.06
d, Delay for Lane Group [s/veh]	62.35	13.46	82.09	1.56	0.87	60.77	59.80	60.67	59.80
Lane Group LOS	E	B	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.07	3.86	0.10	0.13	0.00	0.13	0.04	0.20	0.04
50th-Percentile Queue Length [ft]	1.70	96.54	2.50	3.19	0.01	3.31	0.91	4.88	0.91
95th-Percentile Queue Length [veh]	0.12	6.95	0.18	0.23	0.00	0.24	0.07	0.35	0.07
95th-Percentile Queue Length [ft]	3.06	173.78	4.49	5.74	0.02	5.95	1.64	8.78	1.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	13.46	13.46	82.09	1.56	0.87	60.77	60.77	59.80	60.67	60.67	59.80
Movement LOS	E	B	B	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	13.60			1.73			60.58			60.54		
Approach LOS	B			A			E			E		
d_I, Intersection Delay [s/veh]	8.94											
Intersection LOS	A											
Intersection V/C	0.973											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	0	0	0	6	9	6	30	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	1161	139	35	809	22	24	11	48	94	11	25
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	321	38	10	223	6	7	3	13	26	3	7
Total Analysis Volume [veh/h]	44	1283	154	39	894	24	27	12	53	104	12	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	19	19	0	21	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	39	39	4	39	39	3	5	5	6	8	8
g / C, Green / Cycle	0.06	0.56	0.56	0.05	0.55	0.55	0.04	0.07	0.07	0.09	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.40	0.11	0.02	0.28	0.02	0.02	0.01	0.04	0.07	0.01	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	95	1771	791	88	1757	785	69	123	105	141	200	170
d1, Uniform Delay [s]	31.95	11.64	7.80	32.14	9.86	7.22	32.73	30.37	31.32	31.22	27.45	27.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.46	2.62	0.55	3.44	1.06	0.07	3.63	0.34	3.73	7.22	0.12	0.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

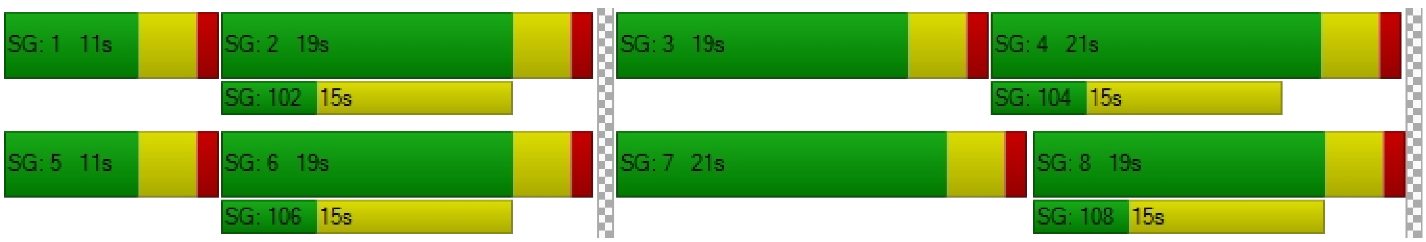
X, volume / capacity	0.46	0.72	0.19	0.44	0.51	0.03	0.39	0.10	0.51	0.74	0.06	0.16
d, Delay for Lane Group [s/veh]	35.41	14.25	8.35	35.58	10.91	7.29	36.36	30.71	35.05	38.43	27.58	28.26
Lane Group LOS	D	B	A	D	B	A	D	C	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.72	5.09	0.84	0.64	2.89	0.12	0.50	0.20	0.94	1.86	0.17	0.41
50th-Percentile Queue Length [ft]	17.97	127.36	20.93	16.05	72.16	2.98	12.56	4.88	23.61	46.60	4.28	10.25
95th-Percentile Queue Length [veh]	1.29	8.80	1.51	1.16	5.20	0.21	0.90	0.35	1.70	3.35	0.31	0.74
95th-Percentile Queue Length [ft]	32.34	219.90	37.68	28.88	129.89	5.36	22.61	8.78	42.49	83.87	7.71	18.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.41	14.25	8.35	35.58	10.91	7.29	36.36	30.71	35.05	38.43	27.58	28.26
Movement LOS	D	B	A	D	B	A	D	C	D	D	C	C
d_A, Approach Delay [s/veh]	14.27			11.83			34.87			35.55		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	15.25											
Intersection LOS	B											
Intersection V/C	0.685											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	14	16	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1267	178	100	949	8	6	15	25	122	27	72
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	352	49	28	264	2	2	4	7	34	8	20
Total Analysis Volume [veh/h]	27	1408	198	111	1054	9	7	17	28	136	30	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	11	11	0	20	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	45	45	6	48	48	1	4	4	8	12	12
g / C, Green / Cycle	0.04	0.56	0.56	0.08	0.60	0.60	0.01	0.06	0.06	0.11	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.44	0.14	0.04	0.33	0.01	0.00	0.01	0.02	0.09	0.02	0.06
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	66	1775	792	252	1903	849	23	95	81	170	250	212
d1, Uniform Delay [s]	37.51	14.15	9.18	35.11	9.77	6.59	39.15	36.06	36.41	35.00	29.57	30.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.05	3.74	0.76	1.21	1.17	0.02	7.48	0.89	2.53	8.33	0.21	1.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

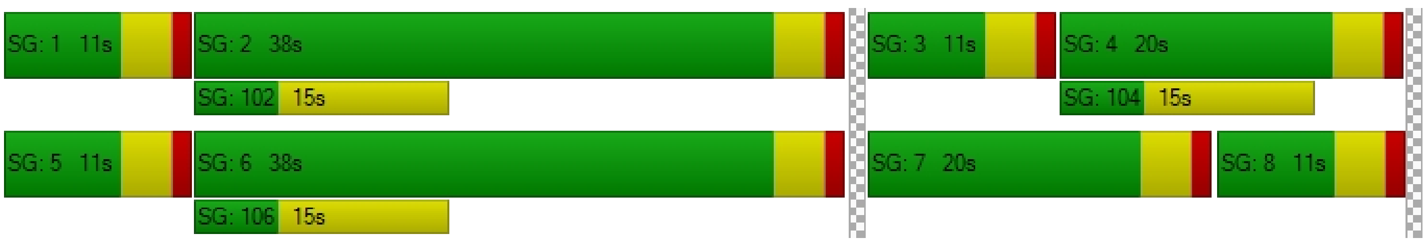
X, volume / capacity	0.41	0.79	0.25	0.44	0.55	0.01	0.31	0.18	0.35	0.80	0.12	0.38
d, Delay for Lane Group [s/veh]	41.56	17.89	9.94	36.32	10.94	6.61	46.63	36.95	38.94	43.33	29.79	31.87
Lane Group LOS	D	B	A	D	B	A	D	D	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.55	8.25	1.50	0.99	4.18	0.05	0.18	0.34	0.58	2.92	0.51	1.43
50th-Percentile Queue Length [ft]	13.75	206.35	37.61	24.71	104.54	1.25	4.57	8.46	14.52	73.08	12.64	35.67
95th-Percentile Queue Length [veh]	0.99	12.97	2.71	1.78	7.53	0.09	0.33	0.61	1.05	5.26	0.91	2.57
95th-Percentile Queue Length [ft]	24.75	324.14	67.70	44.47	188.17	2.25	8.22	15.24	26.14	131.55	22.75	64.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.56	17.89	9.94	36.32	10.94	6.61	46.63	36.95	38.94	43.33	29.79	31.87
Movement LOS	D	B	A	D	B	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	17.32			13.30			39.32			37.95		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	17.80											
Intersection LOS	B											
Intersection V/C	0.727											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.718

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	16	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	1344	5	2	911	47	92	1	85	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	383	1	1	259	13	26	0	24	1	1	3
Total Analysis Volume [veh/h]	175	1531	6	2	1038	54	105	1	97	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	27	0	13	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	46	46	0	37	37	6	7	7	1	2	2
g / C, Green / Cycle	0.13	0.66	0.66	0.00	0.53	0.53	0.09	0.10	0.10	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.48	0.00	0.00	0.33	0.04	0.07	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	215	2094	935	7	1678	749	140	166	141	19	39	33
d1, Uniform Delay [s]	29.48	7.98	4.17	34.78	11.68	8.20	31.22	28.46	30.53	34.36	33.49	33.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.24	2.30	0.01	17.95	1.72	0.19	8.35	0.01	5.76	9.07	0.54	5.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

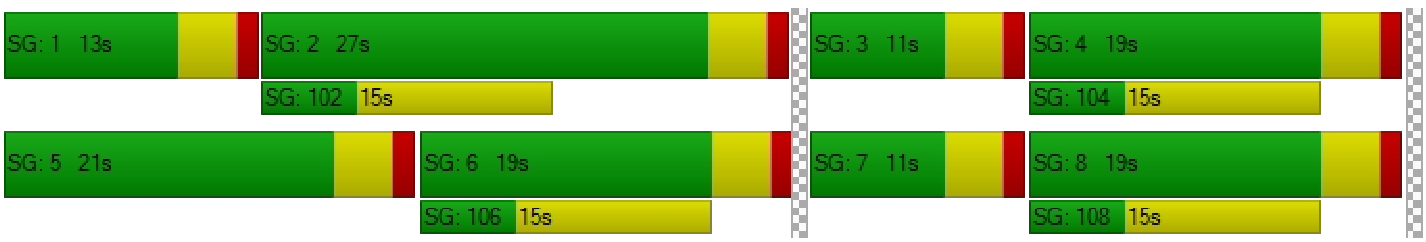
X, volume / capacity	0.81	0.73	0.01	0.27	0.62	0.07	0.75	0.01	0.69	0.31	0.05	0.33
d, Delay for Lane Group [s/veh]	36.72	10.27	4.18	52.73	13.41	8.38	39.57	28.48	36.28	43.43	34.02	39.39
Lane Group LOS	D	B	A	D	B	A	D	C	D	D	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.95	4.57	0.02	0.07	4.39	0.33	2.00	0.02	1.75	0.15	0.04	0.23
50th-Percentile Queue Length [ft]	73.86	114.30	0.48	1.70	109.69	8.24	49.94	0.38	43.79	3.66	0.95	5.78
95th-Percentile Queue Length [veh]	5.32	8.08	0.03	0.12	7.82	0.59	3.60	0.03	3.15	0.26	0.07	0.42
95th-Percentile Queue Length [ft]	132.94	201.96	0.86	3.06	195.57	14.84	89.89	0.69	78.82	6.60	1.72	10.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.72	10.27	4.18	52.73	13.41	8.38	39.57	28.48	36.28	43.43	34.02	39.39
Movement LOS	D	B	A	D	B	A	D	C	D	D	C	D
d_A, Approach Delay [s/veh]	12.96			13.23			37.95			40.10		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	14.90											
Intersection LOS	B											
Intersection V/C	0.718											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	184.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.360

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	6	7	3	2	0	0	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	454	1408	208	35	872	66	79	181	562	176	138	25
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	391	58	10	242	18	22	50	156	49	38	7
Total Analysis Volume [veh/h]	504	1563	231	39	968	73	88	201	624	195	153	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	50	50	5	27	27	8	38	38	11	41
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.07	0.32	0.32	0.09	0.34
(v / s)_i Volume / Saturation Flow Rate	0.32	0.54	0.56	0.02	0.30	0.05	0.06	0.12	0.44	0.12	0.11
s, saturation flow rate [veh/h]	1597	1676	1604	1597	3192	1425	1597	1676	1425	1597	1632
c, Capacity [veh/h]	373	699	668	68	721	322	110	529	450	146	553
d1, Uniform Delay [s]	46.00	35.00	35.00	56.39	46.45	37.90	55.09	31.92	41.05	54.50	29.50
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	175.54	138.51	163.94	7.48	163.42	1.63	12.69	0.45	187.33	188.53	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

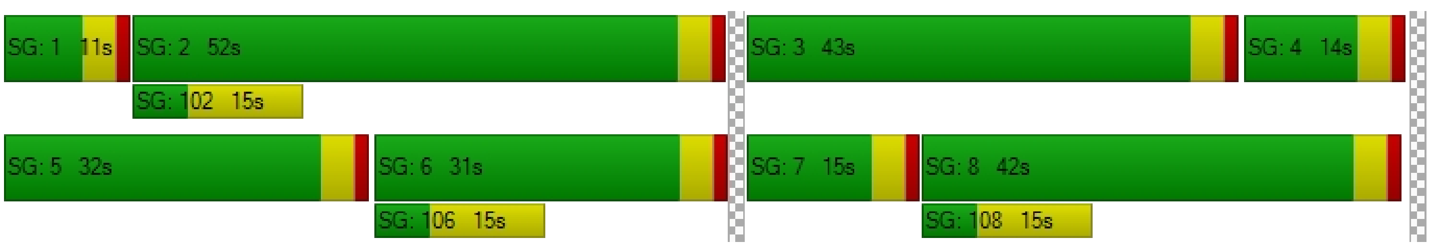
X, volume / capacity	1.35	1.28	1.34	0.58	1.34	0.23	0.80	0.38	1.39	1.33	0.33
d, Delay for Lane Group [s/veh]	221.54	173.51	198.94	63.87	209.87	39.53	67.78	32.36	228.39	243.03	29.84
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	28.63	45.37	48.12	1.26	26.51	1.82	3.01	4.61	36.51	12.08	3.95
50th-Percentile Queue Length [ft]	715.76	1134.22	1202.95	31.40	662.86	45.58	75.23	115.32	912.75	302.03	98.72
95th-Percentile Queue Length [veh]	43.46	66.36	71.56	2.26	40.39	3.28	5.42	8.14	55.50	19.58	7.11
95th-Percentile Queue Length [ft]	1086.58	1659.01	1789.05	56.52	1009.86	82.04	135.41	203.38	1387.61	489.55	177.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	221.54	184.34	198.94	63.87	209.87	39.53	67.78	32.36	228.39	243.03	29.84	29.84
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	193.97			193.08			169.75			140.41		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	184.71											
Intersection LOS	F											
Intersection V/C	1.360											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	98.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.247

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	4	3	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1610	408	331	1268	316	473
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	433	110	89	341	85	127
Total Analysis Volume [veh/h]	1731	439	356	1363	340	509
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.54	0.31	0.22	0.43	0.11	0.36
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.87	48.95	12.83	34.59	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	119.88	6.84	123.36	1.64	0.28	135.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.25	0.71	1.21	0.66	0.39	1.26
d, Delay for Lane Group [s/veh]	153.89	34.72	172.31	14.47	34.87	178.82
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	41.12	10.61	18.38	9.57	4.04	27.07
50th-Percentile Queue Length [ft]	1028.00	265.17	459.55	239.13	101.08	676.72
95th-Percentile Queue Length [veh]	60.00	15.95	27.88	14.64	7.28	40.50
95th-Percentile Queue Length [ft]	1500.03	398.70	697.07	365.93	181.94	1012.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	153.89	34.72	172.31	14.47	34.87	178.82
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	129.78		47.16		121.17	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	98.26					
Intersection LOS	F					
Intersection V/C	1.247					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	45	13	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	85	49	14	28	39
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	17	5	10	13
Total Analysis Volume [veh/h]	14	116	67	19	38	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.12	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	10.31	9.25	0.00	0.00	7.45	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.47	0.47	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	11.77	11.77	0.00	0.00	1.93	0.00
d_A, Approach Delay [s/veh]	9.36		0.00		3.11	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.89					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	14.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.110

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	157	33	40	110	37	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	4	0	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	163	35	46	114	40	132
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	12	16	39	14	45
Total Analysis Volume [veh/h]	220	47	62	154	54	178
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.00	0.11	0.22
d_M, Delay for Movement [s/veh]	0.00	0.00	7.92	0.00	14.91	12.10
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.15	0.00	1.47	1.47
95th-Percentile Queue Length [ft]	0.00	0.00	3.76	0.00	36.66	36.66
d_A, Approach Delay [s/veh]	0.00		2.27		12.75	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.83					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	10	3	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	198	143	89	108	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	74	53	33	40	32
Total Analysis Volume [veh/h]	86	295	213	133	161	127
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.58	1.04	1.04	1.31	1.17	1.34	0.77
95th-Percentile Queue Length [ft]	14.61	26.02	26.02	32.83	29.13	33.40	19.27
Approach Delay [s/veh]	11.23			11.48		11.67	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.44						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	18.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	5	2	2	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	260	7	3	189	60	82	4	101	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	78	2	1	57	18	25	1	30	2	1	0
Total Analysis Volume [veh/h]	167	313	8	4	227	72	99	5	121	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

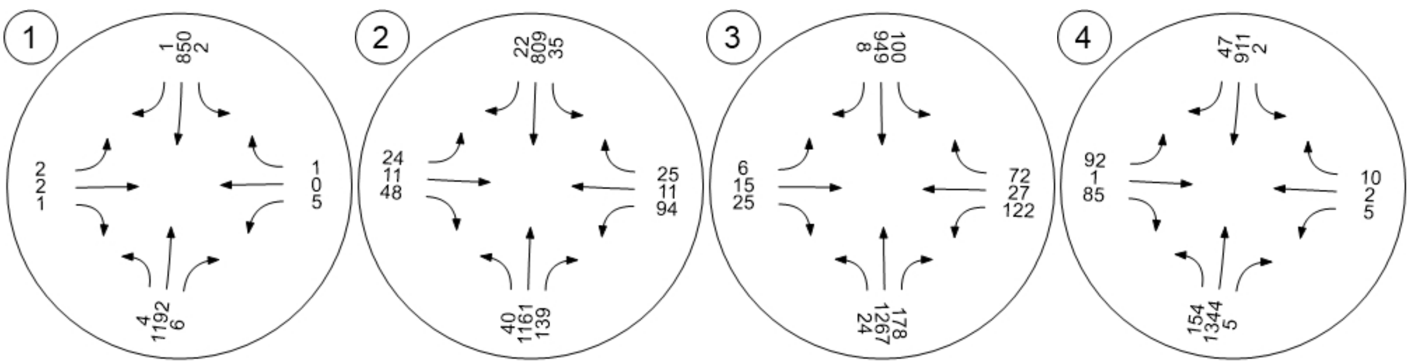
Lanes

Movement, Approach, & Intersection Results

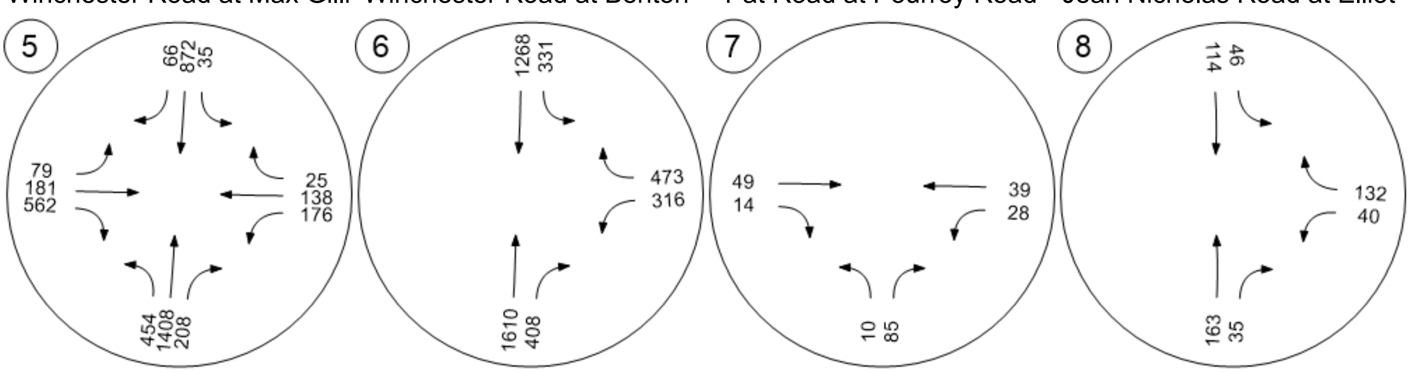
95th-Percentile Queue Length [veh]	7.31	2.65	0.74	0.03	0.76	0.07
95th-Percentile Queue Length [ft]	182.71	66.30	18.47	0.71	18.90	1.75
Approach Delay [s/veh]	25.57	14.07	10.93			10.64
Approach LOS	D	B	B			B
Intersection Delay [s/veh]	18.81					
Intersection LOS	C					

Traffic Volume - Future Total Volume

Winchester Road at Keller Ro Winchester Road at Pourroy Winchester Road at Whisper Winchester Road at Jean Nic

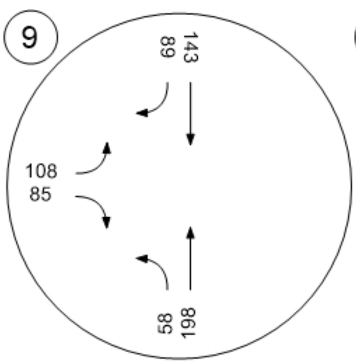


Winchester Road at Max Gilli Winchester Road at Benton Pat Road at Pourroy Road Jean Nicholas Road at Elliot

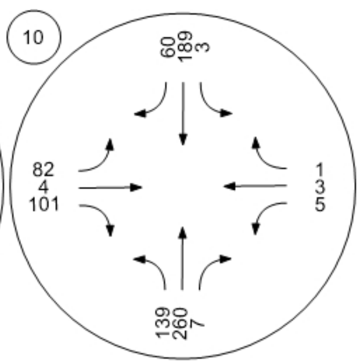


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 5: E+A+P AM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	WB Left	340,237.709	4.2	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.857	38.0	D
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.752	18.7	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.890	16.9	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.521	196.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.937	27.6	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.298	24.3	C
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.012	10.1	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		13.1	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		16.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	4.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	340,237.709

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	12	0	30	0	0	0	0	15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	728	15	0	1130	3	1	1	4	23	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	203	4	0	315	1	0	0	1	6	0	1
Total Analysis Volume [veh/h]	1	813	17	0	1261	3	1	1	4	26	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	90	0	11	90	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	0	103	103	4	4	4	4
g / C, Green / Cycle	0.00	0.86	0.00	0.86	0.86	0.04	0.04	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.00	0.50	0.00	0.40	0.00	0.00	0.00	306213.44	0.00
s, saturation flow rate [veh/h]	3101	1670	1597	3192	1425	599	1425	0	1425
c, Capacity [veh/h]	6	1443	0	2751	1228	67	52	60	52
d1, Uniform Delay [s]	59.79	2.22	0.00	1.90	1.15	55.82	55.87	60.00	55.83
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.86	1.68	0.00	0.55	0.00	0.18	0.63	21.18	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.58	0.00	0.46	0.00	0.03	0.08	0.43	0.06
d, Delay for Lane Group [s/veh]	72.65	3.89	0.00	2.45	1.15	56.00	56.50	81.18	56.30
Lane Group LOS	E	A	A	A	A	E	E	F	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.78	0.00	0.34	0.00	0.06	0.13	1.16	0.09
50th-Percentile Queue Length [ft]	0.62	19.43	0.00	8.61	0.04	1.55	3.16	29.03	2.36
95th-Percentile Queue Length [veh]	0.04	1.40	0.00	0.62	0.00	0.11	0.23	2.09	0.17
95th-Percentile Queue Length [ft]	1.12	34.98	0.00	15.50	0.07	2.78	5.68	52.26	4.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.65	3.89	3.89	0.00	2.45	1.15	56.00	56.00	56.50	81.18	81.18	56.30
Movement LOS	E	A	A	A	A	A	E	E	E	F	F	E
d_A, Approach Delay [s/veh]	3.98			2.45			56.33			78.61		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	4.23											
Intersection LOS	A											
Intersection V/C	340237.709											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	165	0	0	0	0	45	36	24	136	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	625	168	72	995	102	76	39	168	183	42	60
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	173	46	20	275	28	21	11	46	51	12	17
Total Analysis Volume [veh/h]	210	691	186	80	1099	113	84	43	186	202	46	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	30	0	37	45	0	22	23	0	20	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	55	55	7	46	46	7	16	16	16	25	25
g / C, Green / Cycle	0.15	0.50	0.50	0.06	0.42	0.42	0.07	0.15	0.15	0.14	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.13	0.22	0.13	0.05	0.34	0.08	0.05	0.03	0.13	0.13	0.03	0.05
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	238	1593	711	103	1323	591	107	248	210	229	376	319
d1, Uniform Delay [s]	45.95	17.65	15.90	50.76	28.80	20.51	50.62	41.08	46.03	46.28	34.11	34.79
k, delay calibration	0.28	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.32	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.65	0.86	0.89	11.72	6.16	0.72	11.74	0.33	22.80	25.58	0.14	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

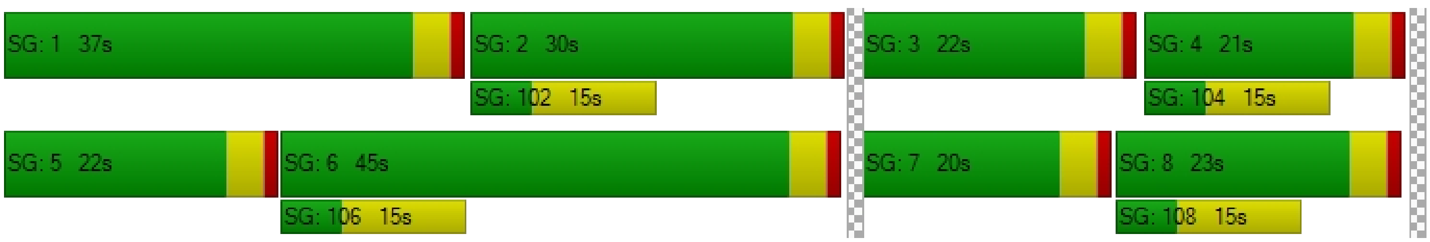
X, volume / capacity	0.88	0.43	0.26	0.78	0.83	0.19	0.78	0.17	0.88	0.88	0.12	0.21
d, Delay for Lane Group [s/veh]	68.60	18.51	16.80	62.49	34.96	21.23	62.35	41.41	68.83	71.86	34.25	35.10
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	6.71	4.96	2.49	2.37	12.36	1.76	2.63	1.05	6.29	6.87	0.97	1.42
50th-Percentile Queue Length [ft]	167.80	123.89	62.20	59.25	308.96	44.05	65.64	26.14	157.30	171.64	24.21	35.58
95th-Percentile Queue Length [veh]	10.96	8.61	4.48	4.27	18.12	3.17	4.73	1.88	10.41	11.16	1.74	2.56
95th-Percentile Queue Length [ft]	274.02	215.16	111.97	106.66	453.09	79.29	118.15	47.06	260.14	279.07	43.58	64.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.60	18.51	16.80	62.49	34.96	21.23	62.35	41.41	68.83	71.86	34.25	35.10
Movement LOS	E	B	B	E	C	C	E	D	E	E	C	D
d_A, Approach Delay [s/veh]	27.89			35.46			63.33			58.63		
Approach LOS	C			D			E			E		
d_I, Intersection Delay [s/veh]	38.05											
Intersection LOS	D											
Intersection V/C	0.857											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	61	75	0	0	0	0	0	0	75
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	819	77	109	1239	12	18	10	12	150	21	154
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	228	21	30	344	3	5	3	3	42	6	43
Total Analysis Volume [veh/h]	26	910	86	121	1377	13	20	11	13	167	23	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	17	0	23	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	35	35	6	39	39	2	4	4	9	10	10
g / C, Green / Cycle	0.04	0.50	0.50	0.09	0.55	0.55	0.03	0.05	0.05	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.29	0.06	0.04	0.43	0.01	0.01	0.01	0.01	0.10	0.01	0.12
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	65	1591	710	283	1752	782	53	88	75	207	250	212
d1, Uniform Delay [s]	32.80	12.34	9.39	30.13	12.55	7.20	33.18	31.70	31.78	29.65	25.75	28.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.91	1.50	0.35	1.02	3.64	0.04	4.34	0.63	1.10	7.19	0.16	7.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

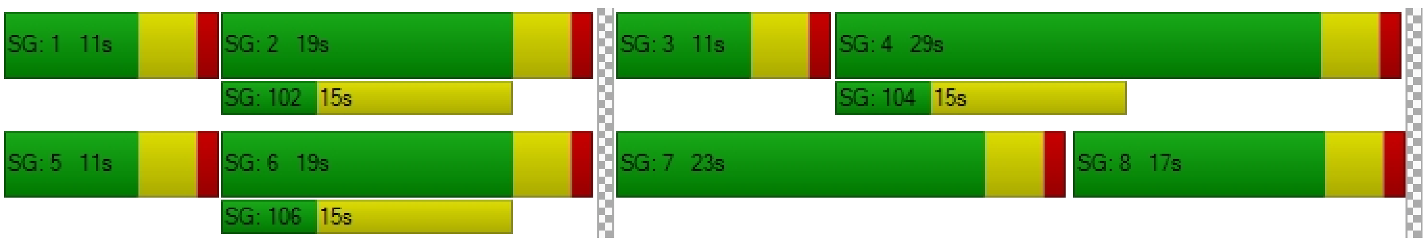
X, volume / capacity	0.40	0.57	0.12	0.43	0.79	0.02	0.38	0.13	0.17	0.81	0.09	0.81
d, Delay for Lane Group [s/veh]	36.70	13.84	9.74	31.15	16.19	7.24	37.52	32.33	32.87	36.84	25.91	35.91
Lane Group LOS	D	B	A	C	B	A	D	C	C	D	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.46	3.97	0.59	0.90	6.61	0.07	0.39	0.19	0.23	3.04	0.33	3.08
50th-Percentile Queue Length [ft]	11.45	99.26	14.80	22.52	165.37	1.76	9.79	4.76	5.75	75.92	8.26	76.90
95th-Percentile Queue Length [veh]	0.82	7.15	1.07	1.62	10.83	0.13	0.70	0.34	0.41	5.47	0.59	5.54
95th-Percentile Queue Length [ft]	20.62	178.67	26.65	40.54	270.82	3.17	17.62	8.56	10.35	136.66	14.86	138.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.70	13.84	9.74	31.15	16.19	7.24	37.52	32.33	32.87	36.84	25.91	35.91
Movement LOS	D	B	A	C	B	A	D	C	C	D	C	D
d_A, Approach Delay [s/veh]	14.08			17.31			34.85			35.71		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	18.71											
Intersection LOS	B											
Intersection V/C	0.752											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.890

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	0	75	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	89	777	4	6	1363	94	59	4	125	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	221	1	2	388	27	17	1	36	1	1	2
Total Analysis Volume [veh/h]	101	885	5	7	1552	107	67	5	142	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	35	35	1	30	30	5	7	7	0	3	3
g / C, Green / Cycle	0.10	0.59	0.59	0.01	0.50	0.50	0.08	0.13	0.13	0.01	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.00	0.00	0.49	0.08	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	155	1866	833	22	1602	715	128	212	180	11	89	76
d1, Uniform Delay [s]	26.01	7.13	5.17	29.16	14.42	8.01	26.37	22.85	25.31	29.52	26.87	26.92
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.61	0.19	0.00	7.64	5.41	0.10	3.26	0.04	7.40	13.21	0.26	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.47	0.01	0.31	0.97	0.15	0.52	0.02	0.79	0.28	0.06	0.09
d, Delay for Lane Group [s/veh]	30.62	7.32	5.17	36.80	19.83	8.11	29.63	22.90	32.71	42.73	27.13	27.44
Lane Group LOS	C	A	A	D	B	A	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.38	1.78	0.01	0.13	7.55	0.50	0.98	0.06	2.20	0.08	0.07	0.10
50th-Percentile Queue Length [ft]	34.43	44.53	0.37	3.36	188.69	12.62	24.50	1.52	54.97	2.01	1.77	2.53
95th-Percentile Queue Length [veh]	2.48	3.21	0.03	0.24	12.05	0.91	1.76	0.11	3.96	0.14	0.13	0.18
95th-Percentile Queue Length [ft]	61.97	80.15	0.67	6.04	301.33	22.72	44.10	2.73	98.94	3.62	3.18	4.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.62	7.32	5.17	36.80	19.83	8.11	29.63	22.90	32.71	42.73	27.13	27.44
Movement LOS	C	A	A	D	B	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	9.68			19.15			31.52			30.40		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	16.87											
Intersection LOS	B											
Intersection V/C	0.890											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	196.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.521

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	45	0	24	39	12	15	0	0	0	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	373	725	99	46	1365	102	84	123	556	217	242	48
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	103	201	27	13	379	28	23	34	154	60	67	13
Total Analysis Volume [veh/h]	414	805	110	51	1515	113	93	137	617	241	269	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	27	0	39	41	0	34	38	38	16	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	52	52	6	37	37	9	34	34	12	37
g / C, Green / Cycle	0.18	0.44	0.44	0.05	0.31	0.31	0.07	0.28	0.28	0.10	0.31
(v / s)_i Volume / Saturation Flow Rate	0.26	0.28	0.28	0.03	0.47	0.08	0.06	0.08	0.43	0.15	0.20
s, saturation flow rate [veh/h]	1597	1676	1607	1597	3192	1425	1597	1676	1425	1597	1629
c, Capacity [veh/h]	279	732	702	76	987	441	115	473	402	160	506
d1, Uniform Delay [s]	49.50	26.38	26.43	56.21	41.44	31.09	54.86	33.66	43.06	54.00	35.57
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	234.99	4.20	4.44	9.69	245.60	1.40	12.47	0.33	252.43	258.60	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.48	0.64	0.64	0.67	1.53	0.26	0.81	0.29	1.53	1.51	0.64
d, Delay for Lane Group [s/veh]	284.49	30.57	30.87	65.90	287.04	32.49	67.33	33.99	295.49	312.60	37.90
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	26.19	10.39	10.07	1.67	47.27	2.51	3.17	3.18	39.99	16.29	8.39
50th-Percentile Queue Length [ft]	654.81	259.66	251.85	41.64	1181.84	62.64	79.21	79.51	999.78	407.14	209.72
95th-Percentile Queue Length [veh]	40.74	15.67	15.28	3.00	72.78	4.51	5.70	5.72	62.05	26.19	13.14
95th-Percentile Queue Length [ft]	1018.54	391.80	381.98	74.96	1819.51	112.76	142.57	143.12	1551.20	654.76	328.47

Generated with PTV VISTRO

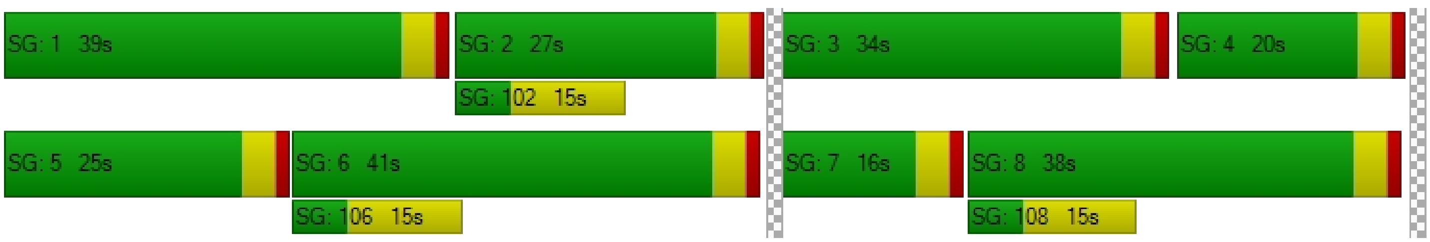
Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	284.49	30.70	30.87	65.90	287.04	32.49	67.33	33.99	295.49	312.60	37.90	37.90
Movement LOS	F	C	C	E	F	C	E	C	F	F	D	D
d_A, Approach Delay [s/veh]	109.77			263.19			228.14			155.49		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	196.60											
Intersection LOS	F											
Intersection V/C	1.521											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.937

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	27	12	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	930	225	350	1776	389	283
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	250	60	94	477	105	76
Total Analysis Volume [veh/h]	1000	242	376	1910	418	304
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	40	59	31	31
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	34	34	23	61	21	21
g / C, Green / Cycle	0.37	0.37	0.26	0.68	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.31	0.17	0.24	0.60	0.13	0.21
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1189	531	414	2158	729	335
d1, Uniform Delay [s]	25.83	21.36	32.32	11.77	30.44	33.48
k, delay calibration	0.50	0.50	0.15	0.50	0.11	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.29	2.81	10.56	5.79	0.71	17.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

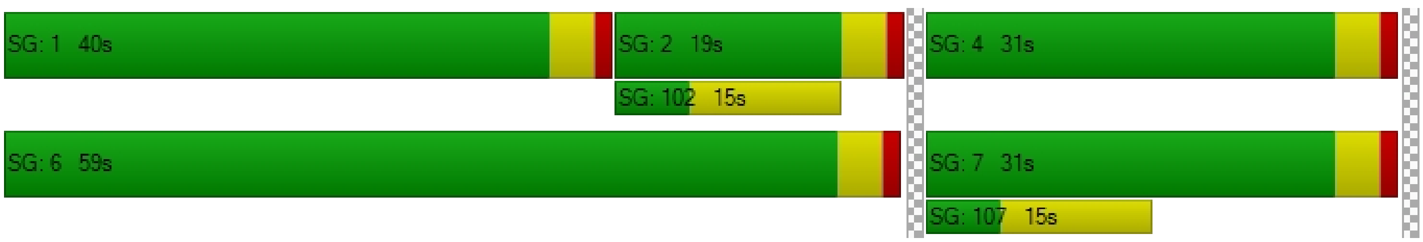
X, volume / capacity	0.84	0.46	0.91	0.89	0.57	0.91
d, Delay for Lane Group [s/veh]	33.11	24.18	42.88	17.56	31.15	50.90
Lane Group LOS	C	C	D	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	9.70	3.82	8.35	11.43	4.00	7.90
50th-Percentile Queue Length [ft]	242.43	95.38	208.75	285.77	99.92	197.49
95th-Percentile Queue Length [veh]	14.80	6.87	13.09	16.98	7.19	12.51
95th-Percentile Queue Length [ft]	370.11	171.69	327.22	424.38	179.85	312.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.11	24.18	42.88	17.56	31.15	50.90
Movement LOS	C	C	D	B	C	D
d_A, Approach Delay [s/veh]	31.37		21.72		39.47	
Approach LOS	C		C		D	
d_I, Intersection Delay [s/veh]	27.56					
Intersection LOS	C					
Intersection V/C	0.937					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	24.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.298

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	196	47	0	240
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	82	200	50	92	243
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	28	68	17	31	83
Total Analysis Volume [veh/h]	84	112	272	68	125	331
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.15	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	24.34	16.50	0.00	0.00	8.29	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.28	2.28	0.00	0.00	0.34	0.00
95th-Percentile Queue Length [ft]	57.05	57.05	0.00	0.00	8.55	0.00
d_A, Approach Delay [s/veh]	19.86		0.00		2.27	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.97					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	49	0	0	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	24	0	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	75	0	7	33
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	25	0	2	11
Total Analysis Volume [veh/h]	0	12	101	0	9	45
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.06	0.00	0.01	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	7.39	0.00	10.13	8.55
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.20	0.00	0.17	0.17
95th-Percentile Queue Length [ft]	0.00	0.00	5.02	0.00	4.28	4.28
d_A, Approach Delay [s/veh]	0.00		7.39		8.81	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.32					
Intersection LOS	B					

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	54	44	12	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	173	197	112	133	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	64	73	42	50	37
Total Analysis Volume [veh/h]	119	258	294	167	198	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.95	0.97	0.97	2.16	1.91	1.96	1.00
95th-Percentile Queue Length [ft]	23.87	24.21	24.21	54.10	47.83	48.94	24.89
Approach Delay [s/veh]	12.07			13.77		13.38	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	13.12						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	0	19	10	12	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	197	0	1	273	76	58	3	115	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	59	0	0	82	23	17	1	35	2	2	0
Total Analysis Volume [veh/h]	143	237	0	1	328	91	70	4	138	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.22	4.82	0.49	0.02	0.89	0.10
95th-Percentile Queue Length [ft]	105.45	120.57	12.27	0.57	22.36	2.41
Approach Delay [s/veh]	17.76	18.53	10.77			10.71
Approach LOS	C	C	B			B
Intersection Delay [s/veh]	16.53					
Intersection LOS	C					

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 6: E+A+P PM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.973	8.9	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.685	15.2	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.727	17.8	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Left	0.815	14.3	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.360	184.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.247	98.3	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	10.3	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.004	9.4	A
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.4	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		18.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.973

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	3	0	4	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1192	6	2	850	1	2	2	1	5	0	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	333	2	1	237	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1330	7	2	949	1	2	2	1	6	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	88	0	11	88	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.88	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.80	0.00	0.30	0.00	0.05	0.00	0.08	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	84	1425	79	1425
c, Capacity [veh/h]	24	1479	7	2808	1253	46	18	61	18
d1, Uniform Delay [s]	59.13	4.06	59.55	1.24	0.87	59.97	58.52	59.97	58.52
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	9.40	22.54	0.33	0.00	0.80	1.28	0.69	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.90	0.30	0.34	0.00	0.09	0.06	0.10	0.06
d, Delay for Lane Group [s/veh]	62.35	13.46	82.09	1.56	0.87	60.77	59.80	60.67	59.80
Lane Group LOS	E	B	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.07	3.86	0.10	0.13	0.00	0.13	0.04	0.20	0.04
50th-Percentile Queue Length [ft]	1.70	96.54	2.50	3.19	0.01	3.31	0.91	4.88	0.91
95th-Percentile Queue Length [veh]	0.12	6.95	0.18	0.23	0.00	0.24	0.07	0.35	0.07
95th-Percentile Queue Length [ft]	3.06	173.78	4.49	5.74	0.02	5.95	1.64	8.78	1.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	13.46	13.46	82.09	1.56	0.87	60.77	60.77	59.80	60.67	60.67	59.80
Movement LOS	E	B	B	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	13.60			1.73			60.58			60.54		
Approach LOS	B			A			E			E		
d_I, Intersection Delay [s/veh]	8.94											
Intersection LOS	A											
Intersection V/C	0.973											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	0	0	0	6	9	6	30	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	1161	139	35	809	22	24	11	48	94	11	25
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	321	38	10	223	6	7	3	13	26	3	7
Total Analysis Volume [veh/h]	44	1283	154	39	894	24	27	12	53	104	12	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	19	19	0	21	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	39	39	4	39	39	3	5	5	6	8	8
g / C, Green / Cycle	0.06	0.56	0.56	0.05	0.55	0.55	0.04	0.07	0.07	0.09	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.40	0.11	0.02	0.28	0.02	0.02	0.01	0.04	0.07	0.01	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	95	1771	791	88	1757	785	69	123	105	141	200	170
d1, Uniform Delay [s]	31.95	11.64	7.80	32.14	9.86	7.22	32.73	30.37	31.32	31.22	27.45	27.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.46	2.62	0.55	3.44	1.06	0.07	3.63	0.34	3.73	7.22	0.12	0.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

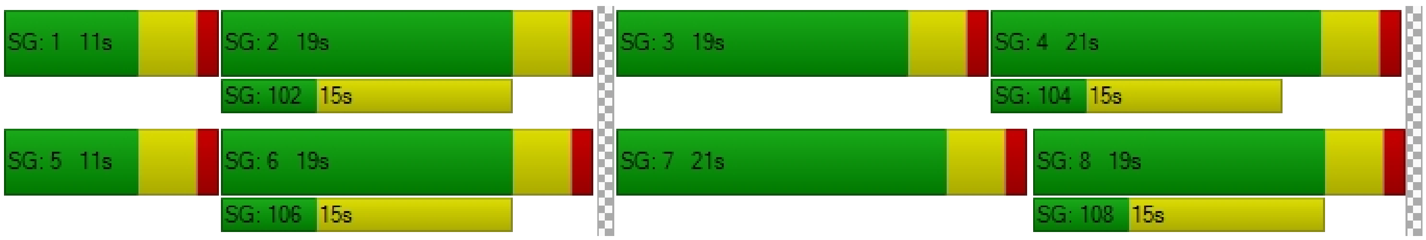
X, volume / capacity	0.46	0.72	0.19	0.44	0.51	0.03	0.39	0.10	0.51	0.74	0.06	0.16
d, Delay for Lane Group [s/veh]	35.41	14.25	8.35	35.58	10.91	7.29	36.36	30.71	35.05	38.43	27.58	28.26
Lane Group LOS	D	B	A	D	B	A	D	C	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.72	5.09	0.84	0.64	2.89	0.12	0.50	0.20	0.94	1.86	0.17	0.41
50th-Percentile Queue Length [ft]	17.97	127.36	20.93	16.05	72.16	2.98	12.56	4.88	23.61	46.60	4.28	10.25
95th-Percentile Queue Length [veh]	1.29	8.80	1.51	1.16	5.20	0.21	0.90	0.35	1.70	3.35	0.31	0.74
95th-Percentile Queue Length [ft]	32.34	219.90	37.68	28.88	129.89	5.36	22.61	8.78	42.49	83.87	7.71	18.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.41	14.25	8.35	35.58	10.91	7.29	36.36	30.71	35.05	38.43	27.58	28.26
Movement LOS	D	B	A	D	B	A	D	C	D	D	C	C
d_A, Approach Delay [s/veh]	14.27			11.83			34.87			35.55		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	15.25											
Intersection LOS	B											
Intersection V/C	0.685											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	14	16	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1267	178	100	949	8	6	15	25	122	27	72
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	352	49	28	264	2	2	4	7	34	8	20
Total Analysis Volume [veh/h]	27	1408	198	111	1054	9	7	17	28	136	30	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	11	11	0	20	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	45	45	6	48	48	1	4	4	8	12	12
g / C, Green / Cycle	0.04	0.56	0.56	0.08	0.60	0.60	0.01	0.06	0.06	0.11	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.44	0.14	0.04	0.33	0.01	0.00	0.01	0.02	0.09	0.02	0.06
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	66	1775	792	252	1903	849	23	95	81	170	250	212
d1, Uniform Delay [s]	37.51	14.15	9.18	35.11	9.77	6.59	39.15	36.06	36.41	35.00	29.57	30.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.05	3.74	0.76	1.21	1.17	0.02	7.48	0.89	2.53	8.33	0.21	1.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

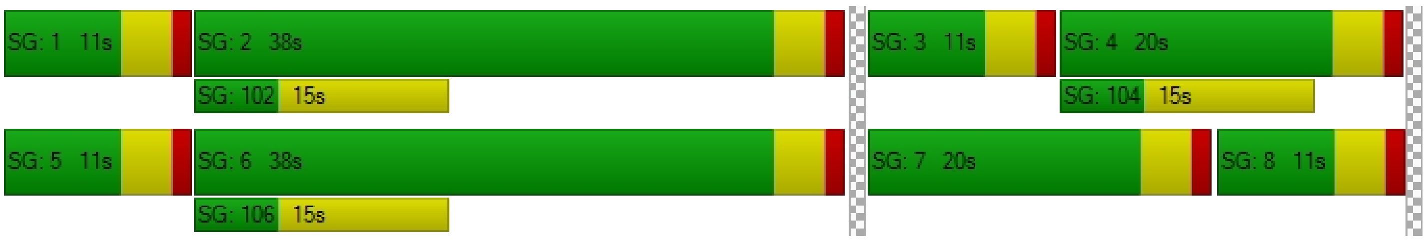
X, volume / capacity	0.41	0.79	0.25	0.44	0.55	0.01	0.31	0.18	0.35	0.80	0.12	0.38
d, Delay for Lane Group [s/veh]	41.56	17.89	9.94	36.32	10.94	6.61	46.63	36.95	38.94	43.33	29.79	31.87
Lane Group LOS	D	B	A	D	B	A	D	D	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.55	8.25	1.50	0.99	4.18	0.05	0.18	0.34	0.58	2.92	0.51	1.43
50th-Percentile Queue Length [ft]	13.75	206.35	37.61	24.71	104.54	1.25	4.57	8.46	14.52	73.08	12.64	35.67
95th-Percentile Queue Length [veh]	0.99	12.97	2.71	1.78	7.53	0.09	0.33	0.61	1.05	5.26	0.91	2.57
95th-Percentile Queue Length [ft]	24.75	324.14	67.70	44.47	188.17	2.25	8.22	15.24	26.14	131.55	22.75	64.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.56	17.89	9.94	36.32	10.94	6.61	46.63	36.95	38.94	43.33	29.79	31.87
Movement LOS	D	B	A	D	B	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	17.32			13.30			39.32			37.95		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	17.80											
Intersection LOS	B											
Intersection V/C	0.727											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.815

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	16	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	1344	5	2	911	47	92	1	85	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	383	1	1	259	13	26	0	24	1	1	3
Total Analysis Volume [veh/h]	175	1531	6	2	1038	54	105	1	97	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	29	0	11	21	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	27	27	0	20	20	5	6	6	1	1	1
g / C, Green / Cycle	0.14	0.55	0.55	0.00	0.41	0.41	0.11	0.12	0.12	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.48	0.00	0.00	0.33	0.04	0.07	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	226	1741	777	6	1303	582	173	202	171	18	40	34
d1, Uniform Delay [s]	20.79	9.97	5.21	24.93	13.03	9.14	21.37	19.44	20.84	24.62	23.96	24.11
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.65	1.58	0.00	24.88	1.16	0.07	3.43	0.01	2.91	9.86	0.52	5.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

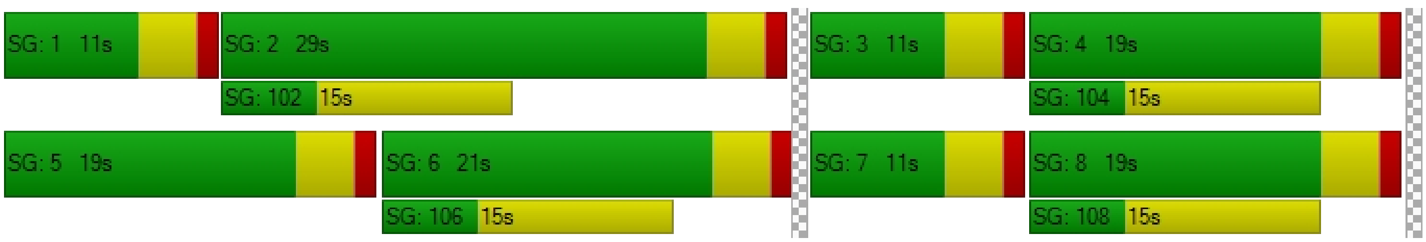
X, volume / capacity	0.78	0.88	0.01	0.31	0.80	0.09	0.61	0.00	0.57	0.33	0.05	0.33
d, Delay for Lane Group [s/veh]	26.43	11.55	5.21	49.81	14.18	9.21	24.80	19.45	23.76	34.48	24.48	29.60
Lane Group LOS	C	B	A	D	B	A	C	B	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.91	3.78	0.01	0.06	3.44	0.25	1.23	0.01	1.11	0.12	0.03	0.17
50th-Percentile Queue Length [ft]	47.81	94.40	0.37	1.61	86.11	6.18	30.86	0.25	27.81	2.90	0.68	4.25
95th-Percentile Queue Length [veh]	3.44	6.80	0.03	0.12	6.20	0.44	2.22	0.02	2.00	0.21	0.05	0.31
95th-Percentile Queue Length [ft]	86.07	169.91	0.66	2.90	155.00	11.12	55.55	0.45	50.05	5.22	1.22	7.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.43	11.55	5.21	49.81	14.18	9.21	24.80	19.45	23.76	34.48	24.48	29.60
Movement LOS	C	B	A	D	B	A	C	B	C	C	C	C
d_A, Approach Delay [s/veh]	13.05			14.00			24.27			30.60		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	14.26											
Intersection LOS	B											
Intersection V/C	0.815											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	184.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.360

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	6	7	3	2	0	0	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	454	1408	208	35	872	66	79	181	562	176	138	25
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	391	58	10	242	18	22	50	156	49	38	7
Total Analysis Volume [veh/h]	504	1563	231	39	968	73	88	201	624	195	153	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	50	50	5	27	27	8	38	38	11	41
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.07	0.32	0.32	0.09	0.34
(v / s)_i Volume / Saturation Flow Rate	0.32	0.54	0.56	0.02	0.30	0.05	0.06	0.12	0.44	0.12	0.11
s, saturation flow rate [veh/h]	1597	1676	1604	1597	3192	1425	1597	1676	1425	1597	1632
c, Capacity [veh/h]	373	699	668	68	721	322	110	529	450	146	553
d1, Uniform Delay [s]	46.00	35.00	35.00	56.39	46.45	37.90	55.09	31.92	41.05	54.50	29.50
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	175.54	138.51	163.94	7.48	163.42	1.63	12.69	0.45	187.33	188.53	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

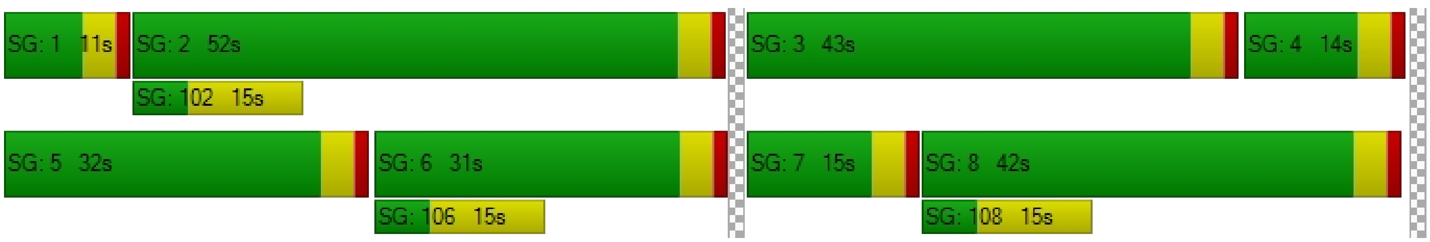
X, volume / capacity	1.35	1.28	1.34	0.58	1.34	0.23	0.80	0.38	1.39	1.33	0.33
d, Delay for Lane Group [s/veh]	221.54	173.51	198.94	63.87	209.87	39.53	67.78	32.36	228.39	243.03	29.84
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	28.63	45.37	48.12	1.26	26.51	1.82	3.01	4.61	36.51	12.08	3.95
50th-Percentile Queue Length [ft]	715.76	1134.22	1202.95	31.40	662.86	45.58	75.23	115.32	912.75	302.03	98.72
95th-Percentile Queue Length [veh]	43.46	66.36	71.56	2.26	40.39	3.28	5.42	8.14	55.50	19.58	7.11
95th-Percentile Queue Length [ft]	1086.58	1659.01	1789.05	56.52	1009.86	82.04	135.41	203.38	1387.61	489.55	177.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	221.54	184.34	198.94	63.87	209.87	39.53	67.78	32.36	228.39	243.03	29.84	29.84
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	193.97			193.08			169.75			140.41		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	184.71											
Intersection LOS	F											
Intersection V/C	1.360											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	98.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.247

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	4	3	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1610	408	331	1268	316	473
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	433	110	89	341	85	127
Total Analysis Volume [veh/h]	1731	439	356	1363	340	509
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.54	0.31	0.22	0.43	0.11	0.36
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.87	48.95	12.83	34.59	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	119.88	6.84	123.36	1.64	0.28	135.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.25	0.71	1.21	0.66	0.39	1.26
d, Delay for Lane Group [s/veh]	153.89	34.72	172.31	14.47	34.87	178.82
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	41.12	10.61	18.38	9.57	4.04	27.07
50th-Percentile Queue Length [ft]	1028.00	265.17	459.55	239.13	101.08	676.72
95th-Percentile Queue Length [veh]	60.00	15.95	27.88	14.64	7.28	40.50
95th-Percentile Queue Length [ft]	1500.03	398.70	697.07	365.93	181.94	1012.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	153.89	34.72	172.31	14.47	34.87	178.82
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	129.78		47.16		121.17	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	98.26					
Intersection LOS	F					
Intersection V/C	1.247					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	45	13	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	85	49	14	28	39
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	17	5	10	13
Total Analysis Volume [veh/h]	14	116	67	19	38	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.12	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	10.31	9.25	0.00	0.00	7.45	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.47	0.47	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	11.77	11.77	0.00	0.00	1.93	0.00
d_A, Approach Delay [s/veh]	9.36		0.00		3.11	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.89					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	37	0	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	4	0	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1	42	0	2	39
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	14	0	1	13
Total Analysis Volume [veh/h]	0	1	57	0	3	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.00	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	7.30	0.00	9.42	8.51
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.11	0.00	0.17	0.17
95th-Percentile Queue Length [ft]	0.00	0.00	2.73	0.00	4.14	4.14
d_A, Approach Delay [s/veh]	0.00		7.30		8.56	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.85					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	10	3	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	198	143	89	108	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	74	53	33	40	32
Total Analysis Volume [veh/h]	86	295	213	133	161	127
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.58	1.04	1.04	1.31	1.17	1.34	0.77
95th-Percentile Queue Length [ft]	14.61	26.02	26.02	32.83	29.13	33.40	19.27
Approach Delay [s/veh]	11.23			11.48		11.67	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.44						
Intersection LOS	B						

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	18.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	5	2	2	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	260	7	3	189	60	82	4	101	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	78	2	1	57	18	25	1	30	2	1	0
Total Analysis Volume [veh/h]	167	313	8	4	227	72	99	5	121	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

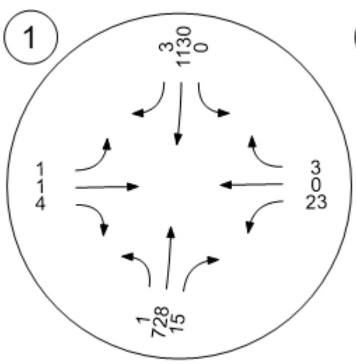
Lanes

Movement, Approach, & Intersection Results

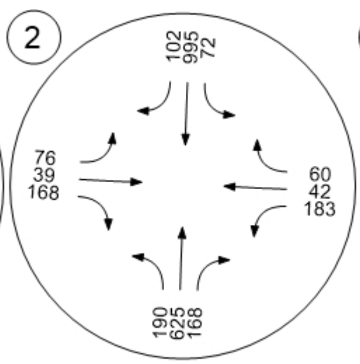
95th-Percentile Queue Length [veh]	7.31	2.65	0.74	0.03	0.76	0.07
95th-Percentile Queue Length [ft]	182.71	66.30	18.47	0.71	18.90	1.75
Approach Delay [s/veh]	25.57	14.07	10.93			10.64
Approach LOS	D	B	B			B
Intersection Delay [s/veh]	18.81					
Intersection LOS	C					

Traffic Volume - Future Total Volume

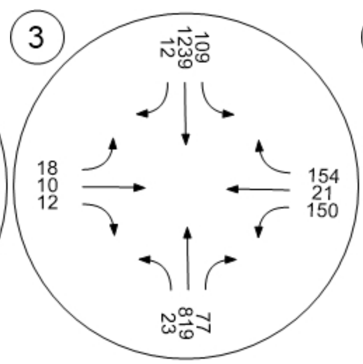
Winchester Road at Keller Ro



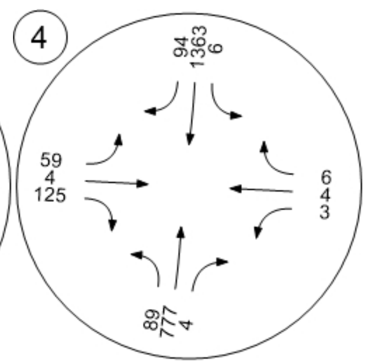
Winchester Road at Pourroy



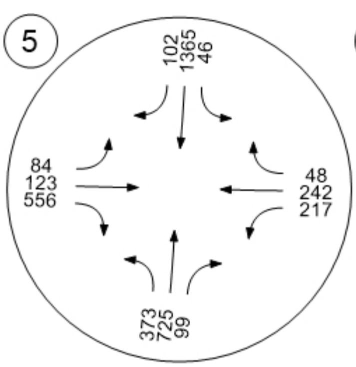
Winchester Road at Whisper



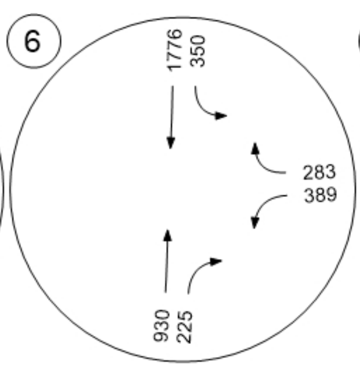
Winchester Road at Jean Nic



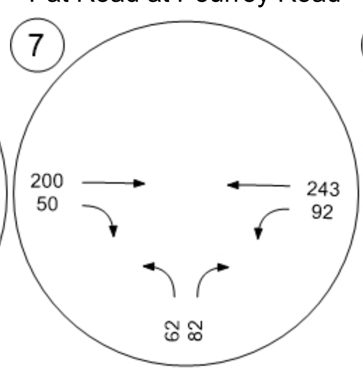
Winchester Road at Max Gilli



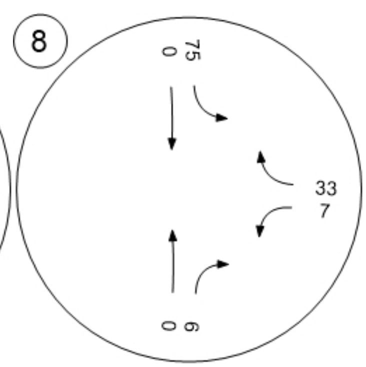
Winchester Road at Benton



Pat Road at Pourroy Road

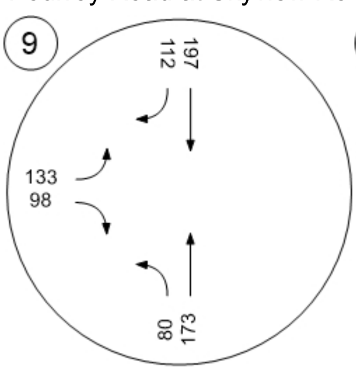


Jean Nicholas Road at Elliot

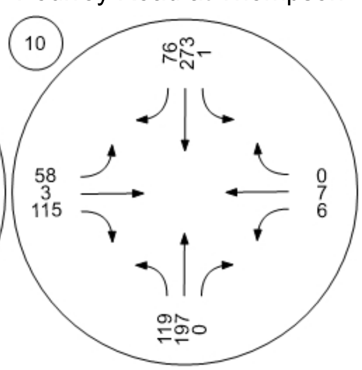


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+A+P AM_new.pdf

Scenario 5: E+A+P AM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	WB Left	5,955.517	4.3	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.857	38.0	D
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.752	18.7	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	NB Left	0.792	17.2	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.521	196.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.937	27.6	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.298	24.3	C
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.256	24.0	C
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		13.1	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		16.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	4.3
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	5,955.517

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	12	0	30	0	0	0	0	15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	728	15	0	1130	3	1	1	4	23	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	203	4	0	315	1	0	0	1	6	0	1
Total Analysis Volume [veh/h]	1	813	17	0	1261	3	1	1	4	26	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	90	0	11	90	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	0	103	103	4	4	4	4
g / C, Green / Cycle	0.00	0.86	0.00	0.86	0.86	0.04	0.04	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.00	0.50	0.00	0.40	0.00	0.00	0.00	5359.47	0.00
s, saturation flow rate [veh/h]	3101	1670	1597	3192	1425	591	1425	0	1425
c, Capacity [veh/h]	6	1441	0	2748	1227	67	53	60	53
d1, Uniform Delay [s]	59.79	2.25	0.00	1.92	1.16	55.71	55.77	60.00	55.73
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.86	1.68	0.00	0.55	0.00	0.18	0.60	21.18	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.58	0.00	0.46	0.00	0.03	0.08	0.43	0.06
d, Delay for Lane Group [s/veh]	72.65	3.93	0.00	2.48	1.17	55.89	56.36	81.18	56.17
Lane Group LOS	E	A	A	A	A	E	E	F	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.80	0.00	0.36	0.00	0.06	0.13	1.16	0.09
50th-Percentile Queue Length [ft]	0.62	20.10	0.00	9.02	0.04	1.55	3.15	29.04	2.36
95th-Percentile Queue Length [veh]	0.04	1.45	0.00	0.65	0.00	0.11	0.23	2.09	0.17
95th-Percentile Queue Length [ft]	1.12	36.18	0.00	16.23	0.07	2.78	5.67	52.28	4.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.65	3.93	3.93	0.00	2.48	1.17	55.89	55.89	56.36	81.18	81.18	56.17
Movement LOS	E	A	A	A	A	A	E	E	E	F	F	E
d_A, Approach Delay [s/veh]	4.01			2.47			56.21			78.59		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	4.26											
Intersection LOS	A											
Intersection V/C	5955.517											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	165	0	0	0	0	45	36	24	136	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	625	168	72	995	102	76	39	168	183	42	60
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	173	46	20	275	28	21	11	46	51	12	17
Total Analysis Volume [veh/h]	210	691	186	80	1099	113	84	43	186	202	46	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	30	0	37	45	0	22	23	0	20	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	55	55	7	46	46	7	16	16	16	25	25
g / C, Green / Cycle	0.15	0.50	0.50	0.06	0.42	0.42	0.07	0.15	0.15	0.14	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.13	0.22	0.13	0.05	0.34	0.08	0.05	0.03	0.13	0.13	0.03	0.05
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	238	1593	711	103	1323	591	107	248	210	229	376	319
d1, Uniform Delay [s]	45.95	17.65	15.90	50.76	28.80	20.51	50.62	41.08	46.03	46.28	34.11	34.79
k, delay calibration	0.28	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.32	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.65	0.86	0.89	11.72	6.16	0.72	11.74	0.33	22.80	25.58	0.14	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

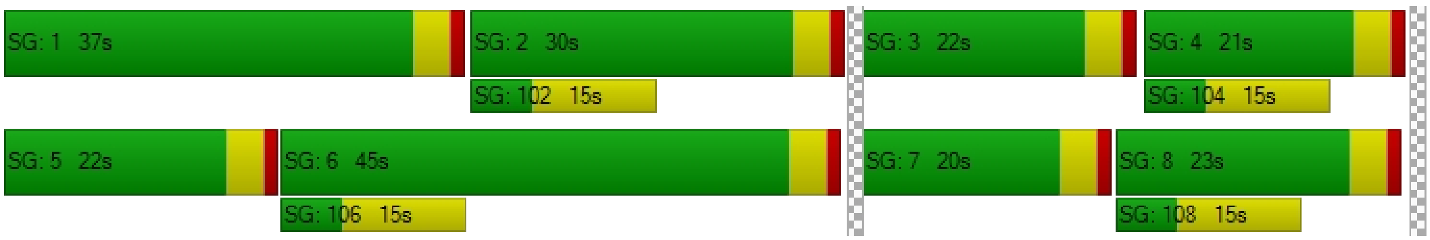
X, volume / capacity	0.88	0.43	0.26	0.78	0.83	0.19	0.78	0.17	0.88	0.88	0.12	0.21
d, Delay for Lane Group [s/veh]	68.60	18.51	16.80	62.49	34.96	21.23	62.35	41.41	68.83	71.86	34.25	35.10
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	6.71	4.96	2.49	2.37	12.36	1.76	2.63	1.05	6.29	6.87	0.97	1.42
50th-Percentile Queue Length [ft]	167.80	123.89	62.20	59.25	308.96	44.05	65.64	26.14	157.30	171.64	24.21	35.58
95th-Percentile Queue Length [veh]	10.96	8.61	4.48	4.27	18.12	3.17	4.73	1.88	10.41	11.16	1.74	2.56
95th-Percentile Queue Length [ft]	274.02	215.16	111.97	106.66	453.09	79.29	118.15	47.06	260.14	279.07	43.58	64.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.60	18.51	16.80	62.49	34.96	21.23	62.35	41.41	68.83	71.86	34.25	35.10
Movement LOS	E	B	B	E	C	C	E	D	E	E	C	D
d_A, Approach Delay [s/veh]	27.89			35.46			63.33			58.63		
Approach LOS	C			D			E			E		
d_I, Intersection Delay [s/veh]	38.05											
Intersection LOS	D											
Intersection V/C	0.857											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	61	75	0	0	0	0	0	0	75
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	819	77	109	1239	12	18	10	12	150	21	154
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	228	21	30	344	3	5	3	3	42	6	43
Total Analysis Volume [veh/h]	26	910	86	121	1377	13	20	11	13	167	23	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	17	0	23	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	35	35	6	39	39	2	4	4	9	10	10
g / C, Green / Cycle	0.04	0.50	0.50	0.09	0.55	0.55	0.03	0.05	0.05	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.29	0.06	0.04	0.43	0.01	0.01	0.01	0.01	0.10	0.01	0.12
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	65	1591	710	283	1752	782	53	88	75	207	250	212
d1, Uniform Delay [s]	32.80	12.34	9.39	30.13	12.55	7.20	33.18	31.70	31.78	29.65	25.75	28.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.91	1.50	0.35	1.02	3.64	0.04	4.34	0.63	1.10	7.19	0.16	7.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

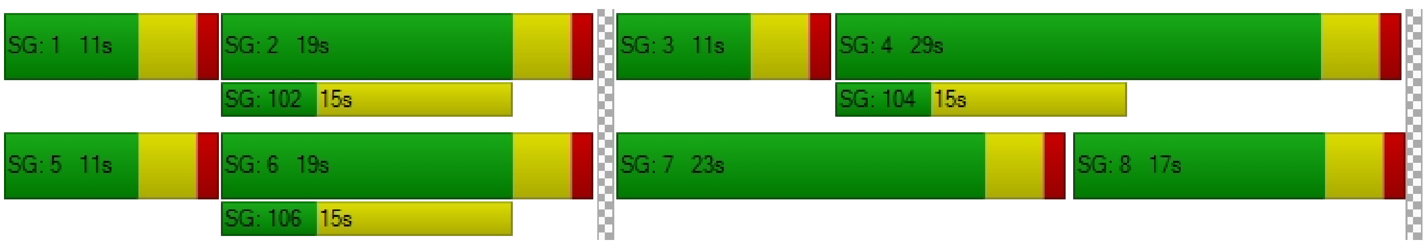
X, volume / capacity	0.40	0.57	0.12	0.43	0.79	0.02	0.38	0.13	0.17	0.81	0.09	0.81
d, Delay for Lane Group [s/veh]	36.70	13.84	9.74	31.15	16.19	7.24	37.52	32.33	32.87	36.84	25.91	35.91
Lane Group LOS	D	B	A	C	B	A	D	C	C	D	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.46	3.97	0.59	0.90	6.61	0.07	0.39	0.19	0.23	3.04	0.33	3.08
50th-Percentile Queue Length [ft]	11.45	99.26	14.80	22.52	165.37	1.76	9.79	4.76	5.75	75.92	8.26	76.90
95th-Percentile Queue Length [veh]	0.82	7.15	1.07	1.62	10.83	0.13	0.70	0.34	0.41	5.47	0.59	5.54
95th-Percentile Queue Length [ft]	20.62	178.67	26.65	40.54	270.82	3.17	17.62	8.56	10.35	136.66	14.86	138.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.70	13.84	9.74	31.15	16.19	7.24	37.52	32.33	32.87	36.84	25.91	35.91
Movement LOS	D	B	A	C	B	A	D	C	C	D	C	D
d_A, Approach Delay [s/veh]	14.08			17.31			34.85			35.71		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	18.71											
Intersection LOS	B											
Intersection V/C	0.752											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.792

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	0	75	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	89	777	4	6	1363	94	59	4	125	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	221	1	2	388	27	17	1	36	1	1	2
Total Analysis Volume [veh/h]	101	885	5	7	1552	107	67	5	142	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	41	49	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	61	61	1	56	56	6	11	11	1	6	6
g / C, Green / Cycle	0.08	0.68	0.68	0.01	0.62	0.62	0.06	0.12	0.12	0.01	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.00	0.00	0.49	0.08	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	126	2170	969	22	1963	876	103	204	174	11	108	92
d1, Uniform Delay [s]	40.86	6.40	4.64	44.04	13.00	7.22	41.19	34.87	38.61	44.55	39.58	39.66
k, delay calibration	0.21	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.41	0.57	0.01	7.91	3.34	0.29	6.76	0.05	9.02	12.46	0.17	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

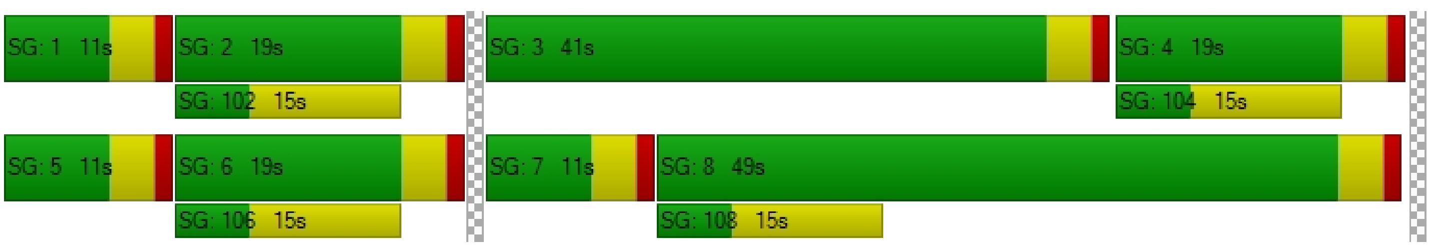
X, volume / capacity	0.80	0.41	0.01	0.32	0.79	0.12	0.65	0.02	0.82	0.27	0.05	0.08
d, Delay for Lane Group [s/veh]	61.28	6.97	4.65	51.95	16.35	7.51	47.95	34.92	47.63	57.01	39.76	40.01
Lane Group LOS	E	A	A	D	B	A	D	C	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	2.77	2.59	0.02	0.19	9.33	0.71	1.63	0.10	3.45	0.10	0.11	0.15
50th-Percentile Queue Length [ft]	69.14	64.73	0.56	4.85	233.28	17.86	40.75	2.46	86.21	2.61	2.71	3.84
95th-Percentile Queue Length [veh]	4.98	4.66	0.04	0.35	14.34	1.29	2.93	0.18	6.21	0.19	0.19	0.28
95th-Percentile Queue Length [ft]	124.44	116.51	1.01	8.73	358.53	32.15	73.34	4.43	155.17	4.70	4.87	6.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.28	6.97	4.65	51.95	16.35	7.51	47.95	34.92	47.63	57.01	39.76	40.01
Movement LOS	E	A	A	D	B	A	D	C	D	E	D	D
d_A, Approach Delay [s/veh]	12.49			15.93			47.43			43.33		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	17.23											
Intersection LOS	B											
Intersection V/C	0.792											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	196.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.521

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	45	0	24	39	12	15	0	0	0	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	373	725	99	46	1365	102	84	123	556	217	242	48
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	103	201	27	13	379	28	23	34	154	60	67	13
Total Analysis Volume [veh/h]	414	805	110	51	1515	113	93	137	617	241	269	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	27	0	39	41	0	34	38	38	16	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	52	52	6	37	37	9	34	34	12	37
g / C, Green / Cycle	0.18	0.44	0.44	0.05	0.31	0.31	0.07	0.28	0.28	0.10	0.31
(v / s)_i Volume / Saturation Flow Rate	0.26	0.28	0.28	0.03	0.47	0.08	0.06	0.08	0.43	0.15	0.20
s, saturation flow rate [veh/h]	1597	1676	1607	1597	3192	1425	1597	1676	1425	1597	1629
c, Capacity [veh/h]	279	732	702	76	987	441	115	473	402	160	506
d1, Uniform Delay [s]	49.50	26.38	26.43	56.21	41.44	31.09	54.86	33.66	43.06	54.00	35.57
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	234.99	4.20	4.44	9.69	245.60	1.40	12.47	0.33	252.43	258.60	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

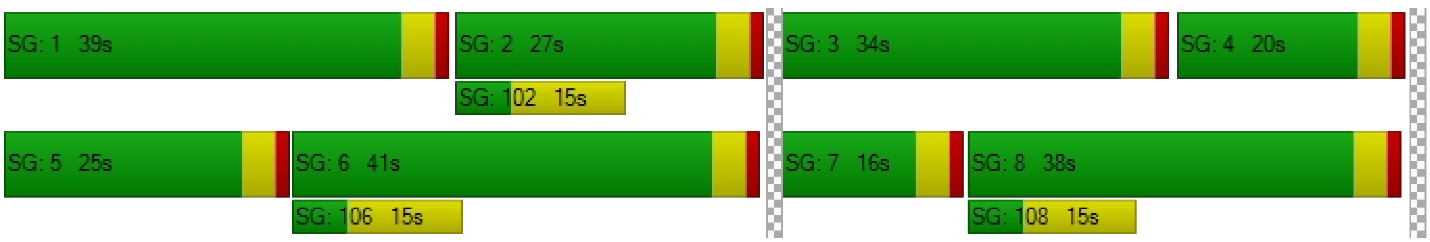
X, volume / capacity	1.48	0.64	0.64	0.67	1.53	0.26	0.81	0.29	1.53	1.51	0.64
d, Delay for Lane Group [s/veh]	284.49	30.57	30.87	65.90	287.04	32.49	67.33	33.99	295.49	312.60	37.90
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	26.19	10.39	10.07	1.67	47.27	2.51	3.17	3.18	39.99	16.29	8.39
50th-Percentile Queue Length [ft]	654.81	259.66	251.85	41.64	1181.84	62.64	79.21	79.51	999.78	407.14	209.72
95th-Percentile Queue Length [veh]	40.74	15.67	15.28	3.00	72.78	4.51	5.70	5.72	62.05	26.19	13.14
95th-Percentile Queue Length [ft]	1018.54	391.80	381.98	74.96	1819.51	112.76	142.57	143.12	1551.20	654.76	328.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	284.49	30.70	30.87	65.90	287.04	32.49	67.33	33.99	295.49	312.60	37.90	37.90
Movement LOS	F	C	C	E	F	C	E	C	F	F	D	D
d_A, Approach Delay [s/veh]	109.77			263.19			228.14			155.49		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	196.60											
Intersection LOS	F											
Intersection V/C	1.521											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.937

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	27	12	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	930	225	350	1776	389	283
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	250	60	94	477	105	76
Total Analysis Volume [veh/h]	1000	242	376	1910	418	304
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	40	59	31	31
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	34	34	23	61	21	21
g / C, Green / Cycle	0.37	0.37	0.26	0.68	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.31	0.17	0.24	0.60	0.13	0.21
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1189	531	414	2158	729	335
d1, Uniform Delay [s]	25.83	21.36	32.32	11.77	30.44	33.48
k, delay calibration	0.50	0.50	0.15	0.50	0.11	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.29	2.81	10.56	5.79	0.71	17.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

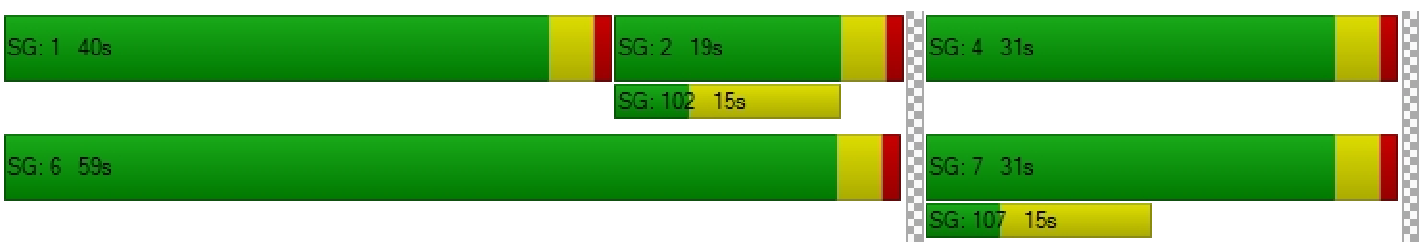
X, volume / capacity	0.84	0.46	0.91	0.89	0.57	0.91
d, Delay for Lane Group [s/veh]	33.11	24.18	42.88	17.56	31.15	50.90
Lane Group LOS	C	C	D	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	9.70	3.82	8.35	11.43	4.00	7.90
50th-Percentile Queue Length [ft]	242.43	95.38	208.75	285.77	99.92	197.49
95th-Percentile Queue Length [veh]	14.80	6.87	13.09	16.98	7.19	12.51
95th-Percentile Queue Length [ft]	370.11	171.69	327.22	424.38	179.85	312.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.11	24.18	42.88	17.56	31.15	50.90
Movement LOS	C	C	D	B	C	D
d_A, Approach Delay [s/veh]	31.37		21.72		39.47	
Approach LOS	C		C		D	
d_I, Intersection Delay [s/veh]	27.56					
Intersection LOS	C					
Intersection V/C	0.937					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	24.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.298

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	196	47	0	240
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	82	200	50	92	243
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	28	68	17	31	83
Total Analysis Volume [veh/h]	84	112	272	68	125	331
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.15	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	24.34	16.50	0.00	0.00	8.29	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.28	2.28	0.00	0.00	0.34	0.00
95th-Percentile Queue Length [ft]	57.05	57.05	0.00	0.00	8.55	0.00
d_A, Approach Delay [s/veh]	19.86		0.00		2.27	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.97					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	24.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.256

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	189	13	94	138	49	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	24	0	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	23	122	144	58	151
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	8	41	49	20	51
Total Analysis Volume [veh/h]	266	31	165	195	78	204
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.13	0.00	0.26	0.27
d_M, Delay for Movement [s/veh]	0.00	0.00	8.27	0.00	23.96	16.92
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.45	0.00	3.03	3.03
95th-Percentile Queue Length [ft]	0.00	0.00	11.22	0.00	75.68	75.68
d_A, Approach Delay [s/veh]	0.00		3.79		18.86	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	7.12					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	54	44	12	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	173	197	112	133	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	64	73	42	50	37
Total Analysis Volume [veh/h]	119	258	294	167	198	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.95	0.97	0.97	2.16	1.91	1.96	1.00
95th-Percentile Queue Length [ft]	23.87	24.21	24.21	54.10	47.83	48.94	24.89
Approach Delay [s/veh]	12.07			13.77		13.38	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	13.12						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	0	19	10	12	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	197	0	1	273	76	58	3	115	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	59	0	0	82	23	17	1	35	2	2	0
Total Analysis Volume [veh/h]	143	237	0	1	328	91	70	4	138	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

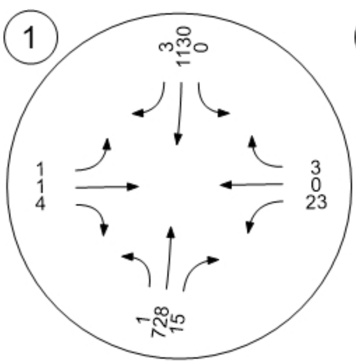
Lanes

Movement, Approach, & Intersection Results

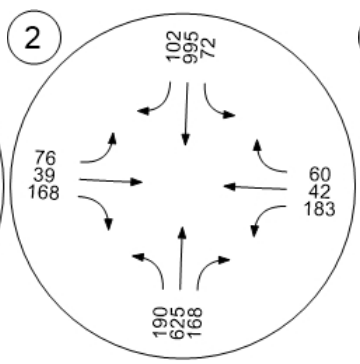
95th-Percentile Queue Length [veh]	4.22	4.82	0.49	0.02	0.89	0.10
95th-Percentile Queue Length [ft]	105.45	120.57	12.27	0.57	22.36	2.41
Approach Delay [s/veh]	17.76	18.53	10.77			10.71
Approach LOS	C	C	B			B
Intersection Delay [s/veh]	16.53					
Intersection LOS	C					

Traffic Volume - Future Total Volume

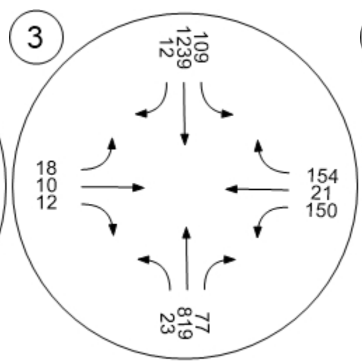
Winchester Road at Keller Ro



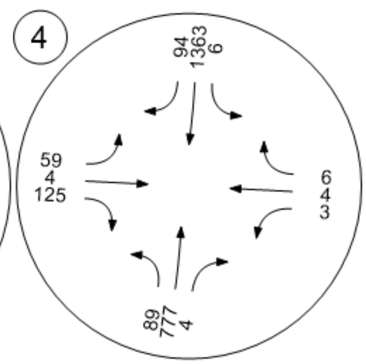
Winchester Road at Pourroy



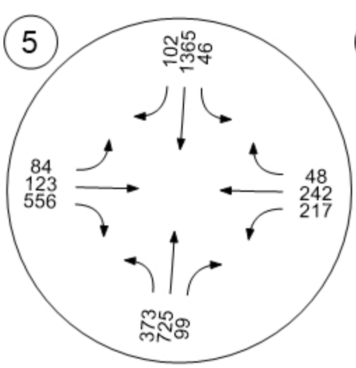
Winchester Road at Whisper



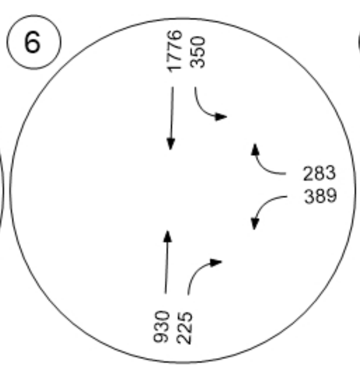
Winchester Road at Jean Nic



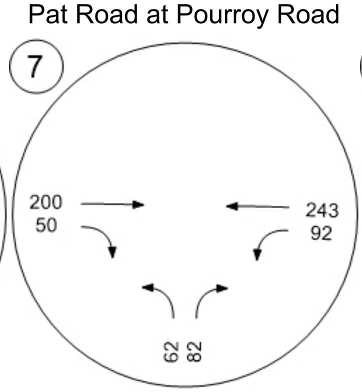
Winchester Road at Max Gilli



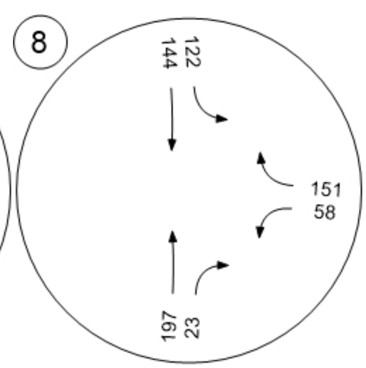
Winchester Road at Benton



Pat Road at Pourroy Road

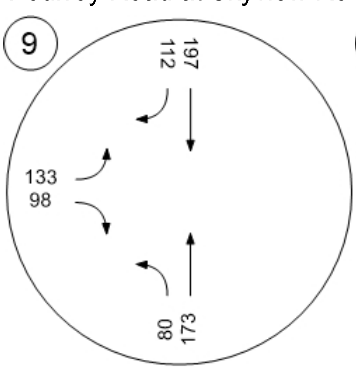


Jean Nicholas Road at Elliot

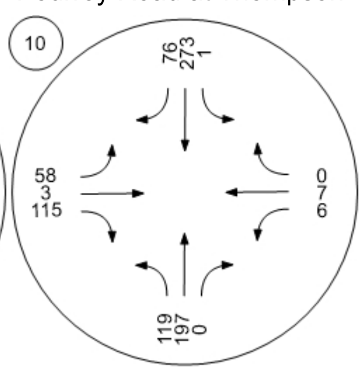


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro

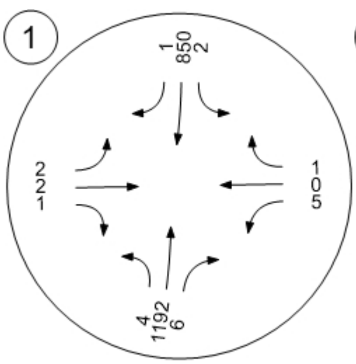


Pourroy Road at Thompson

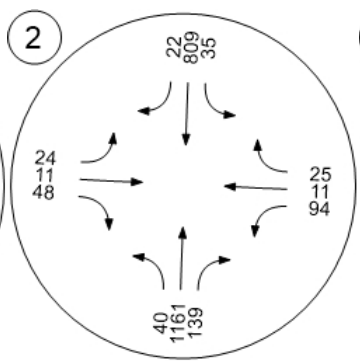


Traffic Volume - Future Total Volume

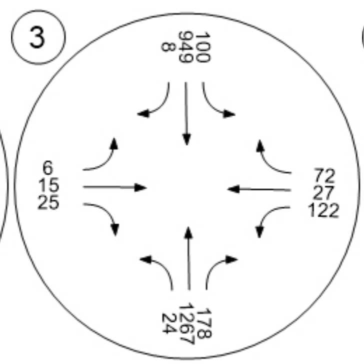
Winchester Road at Keller Ro



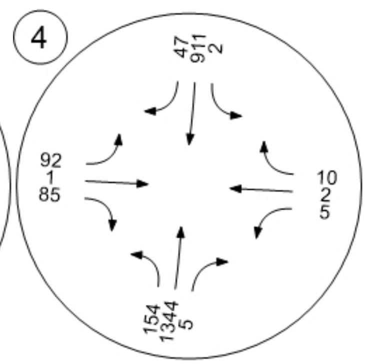
Winchester Road at Pourroy



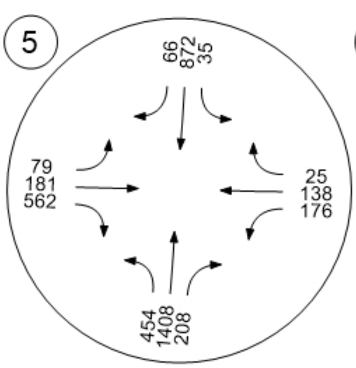
Winchester Road at Whisper



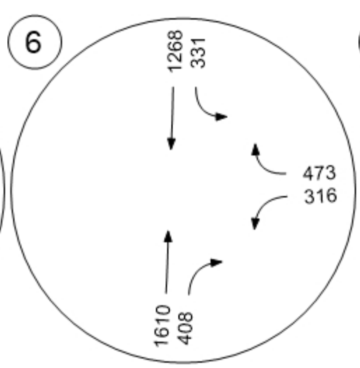
Winchester Road at Jean Nic



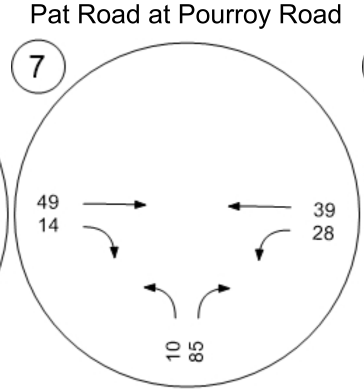
Winchester Road at Max Gilli



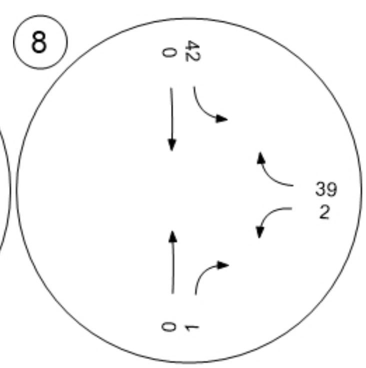
Winchester Road at Benton



Pat Road at Pourroy Road

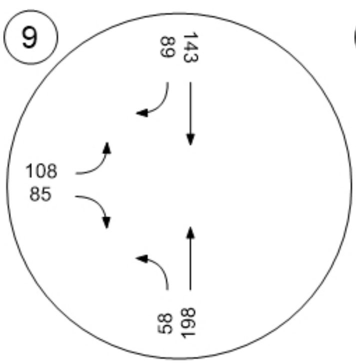


Jean Nicholas Road at Elliot

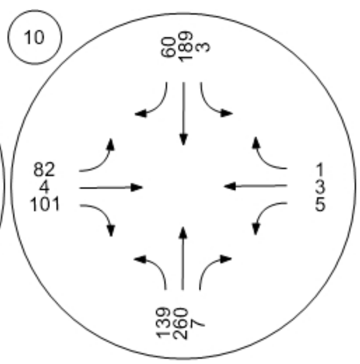


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+A+P PM_new.pdf

Scenario 6: E+A+P PM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.973	8.9	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.685	15.2	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.727	17.8	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Left	0.718	14.9	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.360	184.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.247	98.3	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	10.3	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.110	14.9	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.4	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		18.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.973

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	3	0	4	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1192	6	2	850	1	2	2	1	5	0	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	333	2	1	237	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1330	7	2	949	1	2	2	1	6	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	88	0	11	88	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.88	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.80	0.00	0.30	0.00	0.05	0.00	0.08	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	84	1425	79	1425
c, Capacity [veh/h]	24	1479	7	2808	1253	46	18	61	18
d1, Uniform Delay [s]	59.13	4.06	59.55	1.24	0.87	59.97	58.52	59.97	58.52
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	9.40	22.54	0.33	0.00	0.80	1.28	0.69	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.90	0.30	0.34	0.00	0.09	0.06	0.10	0.06
d, Delay for Lane Group [s/veh]	62.35	13.46	82.09	1.56	0.87	60.77	59.80	60.67	59.80
Lane Group LOS	E	B	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.07	3.86	0.10	0.13	0.00	0.13	0.04	0.20	0.04
50th-Percentile Queue Length [ft]	1.70	96.54	2.50	3.19	0.01	3.31	0.91	4.88	0.91
95th-Percentile Queue Length [veh]	0.12	6.95	0.18	0.23	0.00	0.24	0.07	0.35	0.07
95th-Percentile Queue Length [ft]	3.06	173.78	4.49	5.74	0.02	5.95	1.64	8.78	1.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	13.46	13.46	82.09	1.56	0.87	60.77	60.77	59.80	60.67	60.67	59.80
Movement LOS	E	B	B	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	13.60			1.73			60.58			60.54		
Approach LOS	B			A			E			E		
d_I, Intersection Delay [s/veh]	8.94											
Intersection LOS	A											
Intersection V/C	0.973											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	0	0	0	6	9	6	30	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	1161	139	35	809	22	24	11	48	94	11	25
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	321	38	10	223	6	7	3	13	26	3	7
Total Analysis Volume [veh/h]	44	1283	154	39	894	24	27	12	53	104	12	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	19	19	0	21	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	39	39	4	39	39	3	5	5	6	8	8
g / C, Green / Cycle	0.06	0.56	0.56	0.05	0.55	0.55	0.04	0.07	0.07	0.09	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.40	0.11	0.02	0.28	0.02	0.02	0.01	0.04	0.07	0.01	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	95	1771	791	88	1757	785	69	123	105	141	200	170
d1, Uniform Delay [s]	31.95	11.64	7.80	32.14	9.86	7.22	32.73	30.37	31.32	31.22	27.45	27.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.46	2.62	0.55	3.44	1.06	0.07	3.63	0.34	3.73	7.22	0.12	0.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

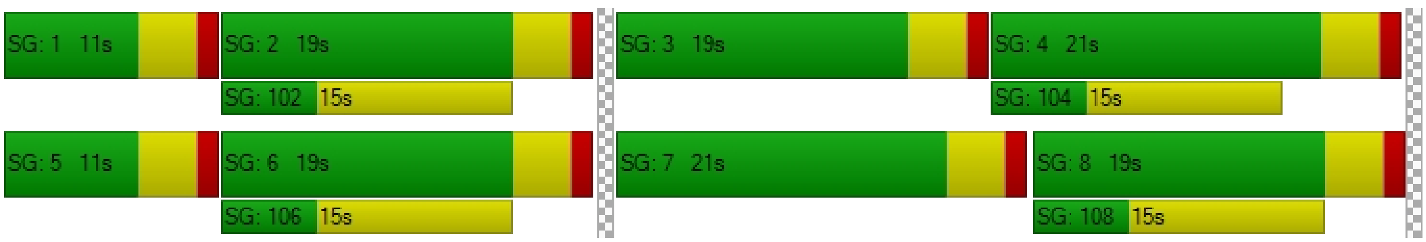
X, volume / capacity	0.46	0.72	0.19	0.44	0.51	0.03	0.39	0.10	0.51	0.74	0.06	0.16
d, Delay for Lane Group [s/veh]	35.41	14.25	8.35	35.58	10.91	7.29	36.36	30.71	35.05	38.43	27.58	28.26
Lane Group LOS	D	B	A	D	B	A	D	C	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.72	5.09	0.84	0.64	2.89	0.12	0.50	0.20	0.94	1.86	0.17	0.41
50th-Percentile Queue Length [ft]	17.97	127.36	20.93	16.05	72.16	2.98	12.56	4.88	23.61	46.60	4.28	10.25
95th-Percentile Queue Length [veh]	1.29	8.80	1.51	1.16	5.20	0.21	0.90	0.35	1.70	3.35	0.31	0.74
95th-Percentile Queue Length [ft]	32.34	219.90	37.68	28.88	129.89	5.36	22.61	8.78	42.49	83.87	7.71	18.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.41	14.25	8.35	35.58	10.91	7.29	36.36	30.71	35.05	38.43	27.58	28.26
Movement LOS	D	B	A	D	B	A	D	C	D	D	C	C
d_A, Approach Delay [s/veh]	14.27			11.83			34.87			35.55		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	15.25											
Intersection LOS	B											
Intersection V/C	0.685											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	14	16	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1267	178	100	949	8	6	15	25	122	27	72
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	352	49	28	264	2	2	4	7	34	8	20
Total Analysis Volume [veh/h]	27	1408	198	111	1054	9	7	17	28	136	30	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	11	11	0	20	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	45	45	6	48	48	1	4	4	8	12	12
g / C, Green / Cycle	0.04	0.56	0.56	0.08	0.60	0.60	0.01	0.06	0.06	0.11	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.44	0.14	0.04	0.33	0.01	0.00	0.01	0.02	0.09	0.02	0.06
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	66	1775	792	252	1903	849	23	95	81	170	250	212
d1, Uniform Delay [s]	37.51	14.15	9.18	35.11	9.77	6.59	39.15	36.06	36.41	35.00	29.57	30.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.05	3.74	0.76	1.21	1.17	0.02	7.48	0.89	2.53	8.33	0.21	1.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

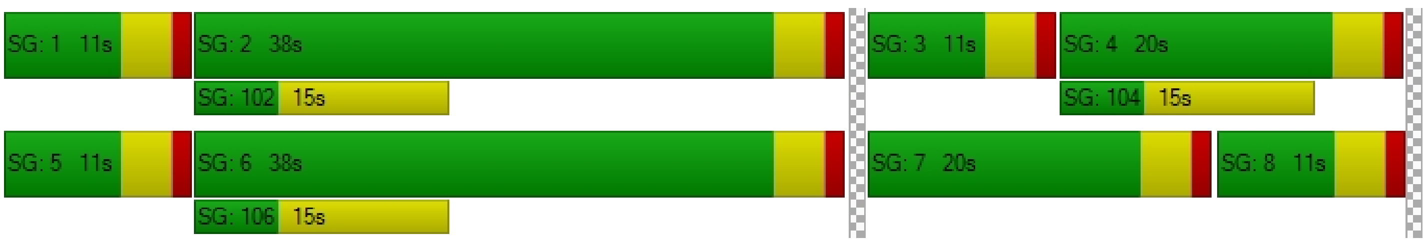
X, volume / capacity	0.41	0.79	0.25	0.44	0.55	0.01	0.31	0.18	0.35	0.80	0.12	0.38
d, Delay for Lane Group [s/veh]	41.56	17.89	9.94	36.32	10.94	6.61	46.63	36.95	38.94	43.33	29.79	31.87
Lane Group LOS	D	B	A	D	B	A	D	D	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.55	8.25	1.50	0.99	4.18	0.05	0.18	0.34	0.58	2.92	0.51	1.43
50th-Percentile Queue Length [ft]	13.75	206.35	37.61	24.71	104.54	1.25	4.57	8.46	14.52	73.08	12.64	35.67
95th-Percentile Queue Length [veh]	0.99	12.97	2.71	1.78	7.53	0.09	0.33	0.61	1.05	5.26	0.91	2.57
95th-Percentile Queue Length [ft]	24.75	324.14	67.70	44.47	188.17	2.25	8.22	15.24	26.14	131.55	22.75	64.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.56	17.89	9.94	36.32	10.94	6.61	46.63	36.95	38.94	43.33	29.79	31.87
Movement LOS	D	B	A	D	B	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	17.32			13.30			39.32			37.95		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	17.80											
Intersection LOS	B											
Intersection V/C	0.727											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.718

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	16	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	1344	5	2	911	47	92	1	85	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	383	1	1	259	13	26	0	24	1	1	3
Total Analysis Volume [veh/h]	175	1531	6	2	1038	54	105	1	97	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	27	0	13	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	46	46	0	37	37	6	7	7	1	2	2
g / C, Green / Cycle	0.13	0.66	0.66	0.00	0.53	0.53	0.09	0.10	0.10	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.48	0.00	0.00	0.33	0.04	0.07	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	215	2094	935	7	1678	749	140	166	141	19	39	33
d1, Uniform Delay [s]	29.48	7.98	4.17	34.78	11.68	8.20	31.22	28.46	30.53	34.36	33.49	33.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.24	2.30	0.01	17.95	1.72	0.19	8.35	0.01	5.76	9.07	0.54	5.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

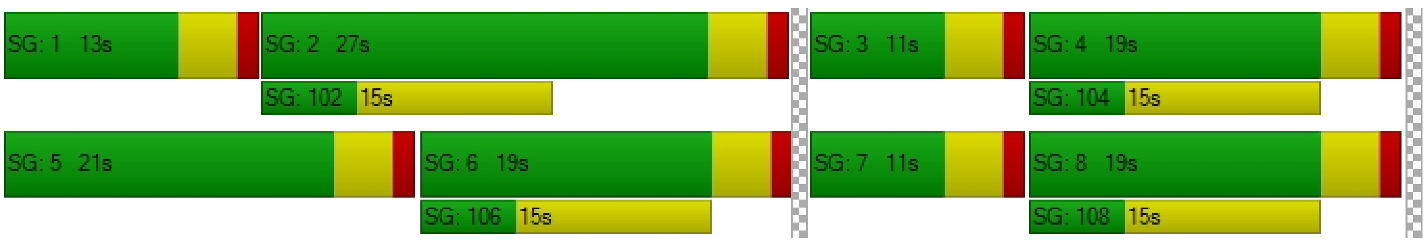
X, volume / capacity	0.81	0.73	0.01	0.27	0.62	0.07	0.75	0.01	0.69	0.31	0.05	0.33
d, Delay for Lane Group [s/veh]	36.72	10.27	4.18	52.73	13.41	8.38	39.57	28.48	36.28	43.43	34.02	39.39
Lane Group LOS	D	B	A	D	B	A	D	C	D	D	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	2.95	4.57	0.02	0.07	4.39	0.33	2.00	0.02	1.75	0.15	0.04	0.23
50th-Percentile Queue Length [ft]	73.86	114.30	0.48	1.70	109.69	8.24	49.94	0.38	43.79	3.66	0.95	5.78
95th-Percentile Queue Length [veh]	5.32	8.08	0.03	0.12	7.82	0.59	3.60	0.03	3.15	0.26	0.07	0.42
95th-Percentile Queue Length [ft]	132.94	201.96	0.86	3.06	195.57	14.84	89.89	0.69	78.82	6.60	1.72	10.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.72	10.27	4.18	52.73	13.41	8.38	39.57	28.48	36.28	43.43	34.02	39.39
Movement LOS	D	B	A	D	B	A	D	C	D	D	C	D
d_A, Approach Delay [s/veh]	12.96			13.23			37.95			40.10		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	14.90											
Intersection LOS	B											
Intersection V/C	0.718											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	184.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.360

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	6	7	3	2	0	0	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	454	1408	208	35	872	66	79	181	562	176	138	25
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	391	58	10	242	18	22	50	156	49	38	7
Total Analysis Volume [veh/h]	504	1563	231	39	968	73	88	201	624	195	153	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	50	50	5	27	27	8	38	38	11	41
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.07	0.32	0.32	0.09	0.34
(v / s)_i Volume / Saturation Flow Rate	0.32	0.54	0.56	0.02	0.30	0.05	0.06	0.12	0.44	0.12	0.11
s, saturation flow rate [veh/h]	1597	1676	1604	1597	3192	1425	1597	1676	1425	1597	1632
c, Capacity [veh/h]	373	699	668	68	721	322	110	529	450	146	553
d1, Uniform Delay [s]	46.00	35.00	35.00	56.39	46.45	37.90	55.09	31.92	41.05	54.50	29.50
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	175.54	138.51	163.94	7.48	163.42	1.63	12.69	0.45	187.33	188.53	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

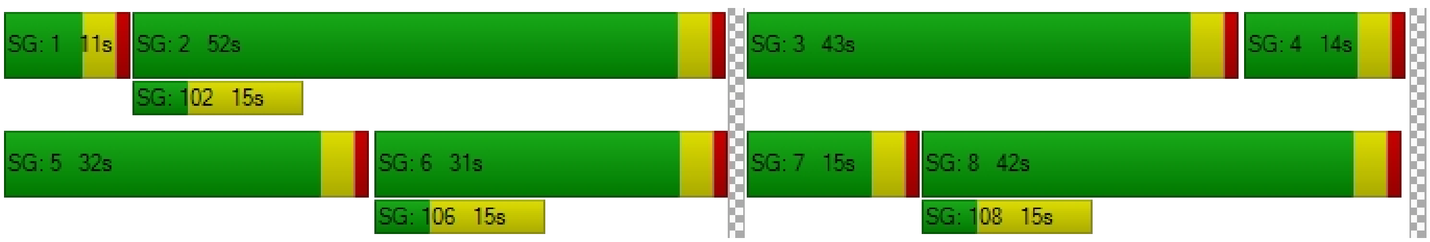
X, volume / capacity	1.35	1.28	1.34	0.58	1.34	0.23	0.80	0.38	1.39	1.33	0.33
d, Delay for Lane Group [s/veh]	221.54	173.51	198.94	63.87	209.87	39.53	67.78	32.36	228.39	243.03	29.84
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	28.63	45.37	48.12	1.26	26.51	1.82	3.01	4.61	36.51	12.08	3.95
50th-Percentile Queue Length [ft]	715.76	1134.22	1202.95	31.40	662.86	45.58	75.23	115.32	912.75	302.03	98.72
95th-Percentile Queue Length [veh]	43.46	66.36	71.56	2.26	40.39	3.28	5.42	8.14	55.50	19.58	7.11
95th-Percentile Queue Length [ft]	1086.58	1659.01	1789.05	56.52	1009.86	82.04	135.41	203.38	1387.61	489.55	177.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	221.54	184.34	198.94	63.87	209.87	39.53	67.78	32.36	228.39	243.03	29.84	29.84
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	193.97			193.08			169.75			140.41		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	184.71											
Intersection LOS	F											
Intersection V/C	1.360											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	98.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.247

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	4	3	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1610	408	331	1268	316	473
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	433	110	89	341	85	127
Total Analysis Volume [veh/h]	1731	439	356	1363	340	509
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.54	0.31	0.22	0.43	0.11	0.36
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.87	48.95	12.83	34.59	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	119.88	6.84	123.36	1.64	0.28	135.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.25	0.71	1.21	0.66	0.39	1.26
d, Delay for Lane Group [s/veh]	153.89	34.72	172.31	14.47	34.87	178.82
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	41.12	10.61	18.38	9.57	4.04	27.07
50th-Percentile Queue Length [ft]	1028.00	265.17	459.55	239.13	101.08	676.72
95th-Percentile Queue Length [veh]	60.00	15.95	27.88	14.64	7.28	40.50
95th-Percentile Queue Length [ft]	1500.03	398.70	697.07	365.93	181.94	1012.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	153.89	34.72	172.31	14.47	34.87	178.82
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	129.78		47.16		121.17	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	98.26					
Intersection LOS	F					
Intersection V/C	1.247					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	45	13	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	85	49	14	28	39
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	17	5	10	13
Total Analysis Volume [veh/h]	14	116	67	19	38	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.12	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	10.31	9.25	0.00	0.00	7.45	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.47	0.47	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	11.77	11.77	0.00	0.00	1.93	0.00
d_A, Approach Delay [s/veh]	9.36		0.00		3.11	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.89					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	14.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.110

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	157	33	40	110	37	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	4	0	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	163	35	46	114	40	132
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	12	16	39	14	45
Total Analysis Volume [veh/h]	220	47	62	154	54	178
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.00	0.11	0.22
d_M, Delay for Movement [s/veh]	0.00	0.00	7.92	0.00	14.91	12.10
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.15	0.00	1.47	1.47
95th-Percentile Queue Length [ft]	0.00	0.00	3.76	0.00	36.66	36.66
d_A, Approach Delay [s/veh]	0.00		2.27		12.75	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.83					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	10	3	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	198	143	89	108	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	74	53	33	40	32
Total Analysis Volume [veh/h]	86	295	213	133	161	127
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.58	1.04	1.04	1.31	1.17	1.34	0.77
95th-Percentile Queue Length [ft]	14.61	26.02	26.02	32.83	29.13	33.40	19.27
Approach Delay [s/veh]	11.23			11.48		11.67	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.44						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	18.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	5	2	2	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	260	7	3	189	60	82	4	101	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	78	2	1	57	18	25	1	30	2	1	0
Total Analysis Volume [veh/h]	167	313	8	4	227	72	99	5	121	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

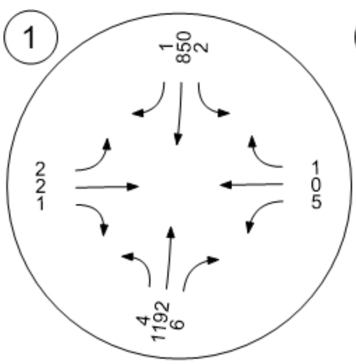
Lanes

Movement, Approach, & Intersection Results

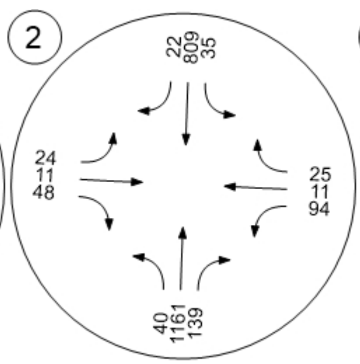
95th-Percentile Queue Length [veh]	7.31	2.65	0.74	0.03	0.76	0.07
95th-Percentile Queue Length [ft]	182.71	66.30	18.47	0.71	18.90	1.75
Approach Delay [s/veh]	25.57	14.07	10.93			10.64
Approach LOS	D	B	B			B
Intersection Delay [s/veh]	18.81					
Intersection LOS	C					

Traffic Volume - Future Total Volume

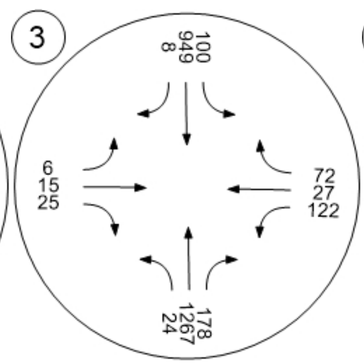
Winchester Road at Keller Ro



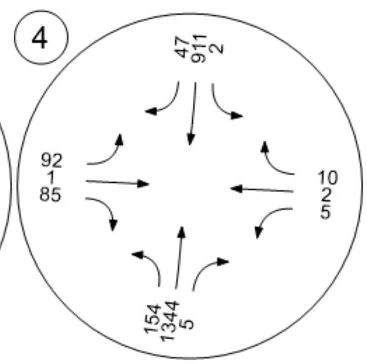
Winchester Road at Pourroy



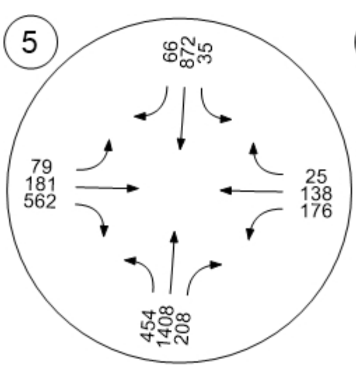
Winchester Road at Whisper



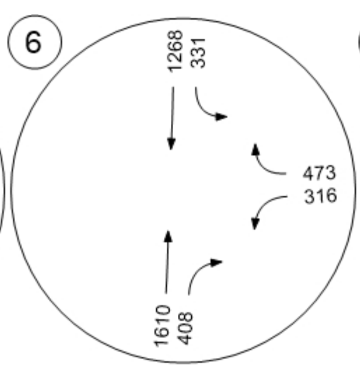
Winchester Road at Jean Nic



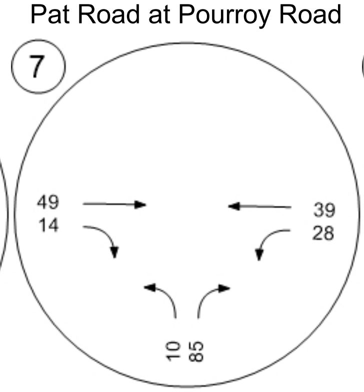
Winchester Road at Max Gilli



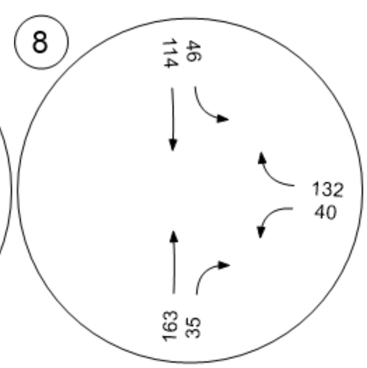
Winchester Road at Benton



Pat Road at Pourroy Road

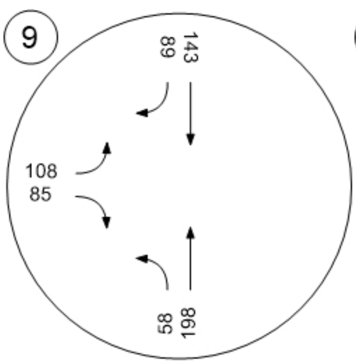


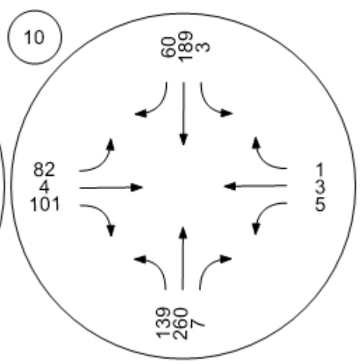
Jean Nicholas Road at Elliot



Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro Pourroy Road at Thompson





Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 5: E+A+P AM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	WB Left	340,237.709	4.2	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.857	38.0	D
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.752	18.7	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.890	16.9	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.521	196.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.937	27.6	C
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.298	24.3	C
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.012	10.1	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		13.1	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		16.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	4.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	340,237.709

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	12	0	30	0	0	0	0	15	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	728	15	0	1130	3	1	1	4	23	0	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	203	4	0	315	1	0	0	1	6	0	1
Total Analysis Volume [veh/h]	1	813	17	0	1261	3	1	1	4	26	0	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	90	0	11	90	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	0	104	0	103	103	4	4	4	4
g / C, Green / Cycle	0.00	0.86	0.00	0.86	0.86	0.04	0.04	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.00	0.50	0.00	0.40	0.00	0.00	0.00	306213.44	0.00
s, saturation flow rate [veh/h]	3101	1670	1597	3192	1425	599	1425	0	1425
c, Capacity [veh/h]	6	1443	0	2751	1228	67	52	60	52
d1, Uniform Delay [s]	59.79	2.22	0.00	1.90	1.15	55.82	55.87	60.00	55.83
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.86	1.68	0.00	0.55	0.00	0.18	0.63	21.18	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.58	0.00	0.46	0.00	0.03	0.08	0.43	0.06
d, Delay for Lane Group [s/veh]	72.65	3.89	0.00	2.45	1.15	56.00	56.50	81.18	56.30
Lane Group LOS	E	A	A	A	A	E	E	F	E
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.02	0.78	0.00	0.34	0.00	0.06	0.13	1.16	0.09
50th-Percentile Queue Length [ft]	0.62	19.43	0.00	8.61	0.04	1.55	3.16	29.03	2.36
95th-Percentile Queue Length [veh]	0.04	1.40	0.00	0.62	0.00	0.11	0.23	2.09	0.17
95th-Percentile Queue Length [ft]	1.12	34.98	0.00	15.50	0.07	2.78	5.68	52.26	4.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.65	3.89	3.89	0.00	2.45	1.15	56.00	56.00	56.50	81.18	81.18	56.30
Movement LOS	E	A	A	A	A	A	E	E	E	F	F	E
d_A, Approach Delay [s/veh]	3.98			2.45			56.33			78.61		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	4.23											
Intersection LOS	A											
Intersection V/C	340237.709											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	165	0	0	0	0	45	36	24	136	0	30	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	190	625	168	72	995	102	76	39	168	183	42	60
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	173	46	20	275	28	21	11	46	51	12	17
Total Analysis Volume [veh/h]	210	691	186	80	1099	113	84	43	186	202	46	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	30	0	37	45	0	22	23	0	20	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	55	55	7	46	46	7	16	16	16	25	25
g / C, Green / Cycle	0.15	0.50	0.50	0.06	0.42	0.42	0.07	0.15	0.15	0.14	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.13	0.22	0.13	0.05	0.34	0.08	0.05	0.03	0.13	0.13	0.03	0.05
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	238	1593	711	103	1323	591	107	248	210	229	376	319
d1, Uniform Delay [s]	45.95	17.65	15.90	50.76	28.80	20.51	50.62	41.08	46.03	46.28	34.11	34.79
k, delay calibration	0.28	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.32	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.65	0.86	0.89	11.72	6.16	0.72	11.74	0.33	22.80	25.58	0.14	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

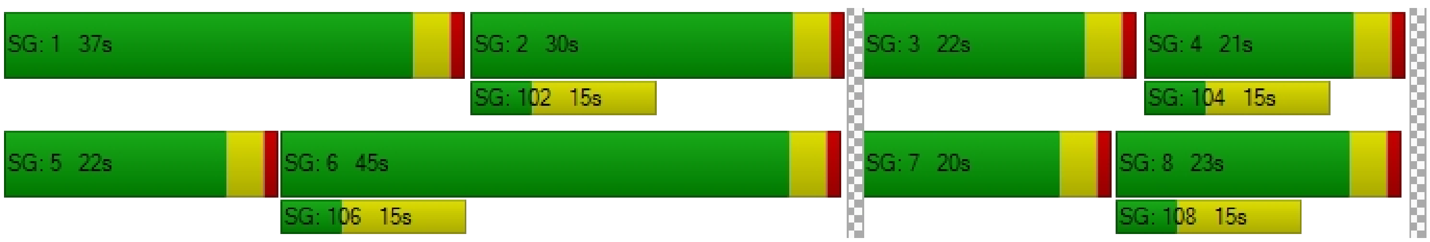
X, volume / capacity	0.88	0.43	0.26	0.78	0.83	0.19	0.78	0.17	0.88	0.88	0.12	0.21
d, Delay for Lane Group [s/veh]	68.60	18.51	16.80	62.49	34.96	21.23	62.35	41.41	68.83	71.86	34.25	35.10
Lane Group LOS	E	B	B	E	C	C	E	D	E	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	6.71	4.96	2.49	2.37	12.36	1.76	2.63	1.05	6.29	6.87	0.97	1.42
50th-Percentile Queue Length [ft]	167.80	123.89	62.20	59.25	308.96	44.05	65.64	26.14	157.30	171.64	24.21	35.58
95th-Percentile Queue Length [veh]	10.96	8.61	4.48	4.27	18.12	3.17	4.73	1.88	10.41	11.16	1.74	2.56
95th-Percentile Queue Length [ft]	274.02	215.16	111.97	106.66	453.09	79.29	118.15	47.06	260.14	279.07	43.58	64.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.60	18.51	16.80	62.49	34.96	21.23	62.35	41.41	68.83	71.86	34.25	35.10
Movement LOS	E	B	B	E	C	C	E	D	E	E	C	D
d_A, Approach Delay [s/veh]	27.89			35.46			63.33			58.63		
Approach LOS	C			D			E			E		
d_I, Intersection Delay [s/veh]	38.05											
Intersection LOS	D											
Intersection V/C	0.857											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	61	75	0	0	0	0	0	0	75
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	819	77	109	1239	12	18	10	12	150	21	154
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	228	21	30	344	3	5	3	3	42	6	43
Total Analysis Volume [veh/h]	26	910	86	121	1377	13	20	11	13	167	23	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	17	0	23	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	35	35	6	39	39	2	4	4	9	10	10
g / C, Green / Cycle	0.04	0.50	0.50	0.09	0.55	0.55	0.03	0.05	0.05	0.13	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.29	0.06	0.04	0.43	0.01	0.01	0.01	0.01	0.10	0.01	0.12
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	65	1591	710	283	1752	782	53	88	75	207	250	212
d1, Uniform Delay [s]	32.80	12.34	9.39	30.13	12.55	7.20	33.18	31.70	31.78	29.65	25.75	28.86
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.91	1.50	0.35	1.02	3.64	0.04	4.34	0.63	1.10	7.19	0.16	7.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

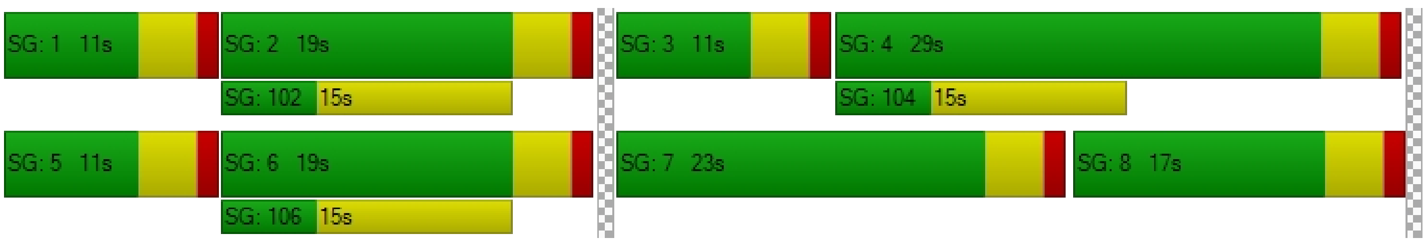
X, volume / capacity	0.40	0.57	0.12	0.43	0.79	0.02	0.38	0.13	0.17	0.81	0.09	0.81
d, Delay for Lane Group [s/veh]	36.70	13.84	9.74	31.15	16.19	7.24	37.52	32.33	32.87	36.84	25.91	35.91
Lane Group LOS	D	B	A	C	B	A	D	C	C	D	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.46	3.97	0.59	0.90	6.61	0.07	0.39	0.19	0.23	3.04	0.33	3.08
50th-Percentile Queue Length [ft]	11.45	99.26	14.80	22.52	165.37	1.76	9.79	4.76	5.75	75.92	8.26	76.90
95th-Percentile Queue Length [veh]	0.82	7.15	1.07	1.62	10.83	0.13	0.70	0.34	0.41	5.47	0.59	5.54
95th-Percentile Queue Length [ft]	20.62	178.67	26.65	40.54	270.82	3.17	17.62	8.56	10.35	136.66	14.86	138.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.70	13.84	9.74	31.15	16.19	7.24	37.52	32.33	32.87	36.84	25.91	35.91
Movement LOS	D	B	A	C	B	A	D	C	C	D	C	D
d_A, Approach Delay [s/veh]	14.08			17.31			34.85			35.71		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	18.71											
Intersection LOS	B											
Intersection V/C	0.752											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.890

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	90	0	0	75	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	89	777	4	6	1363	94	59	4	125	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	221	1	2	388	27	17	1	36	1	1	2
Total Analysis Volume [veh/h]	101	885	5	7	1552	107	67	5	142	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	35	35	1	30	30	5	7	7	0	3	3
g / C, Green / Cycle	0.10	0.59	0.59	0.01	0.50	0.50	0.08	0.13	0.13	0.01	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.06	0.28	0.00	0.00	0.49	0.08	0.04	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	155	1866	833	22	1602	715	128	212	180	11	89	76
d1, Uniform Delay [s]	26.01	7.13	5.17	29.16	14.42	8.01	26.37	22.85	25.31	29.52	26.87	26.92
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.61	0.19	0.00	7.64	5.41	0.10	3.26	0.04	7.40	13.21	0.26	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.47	0.01	0.31	0.97	0.15	0.52	0.02	0.79	0.28	0.06	0.09
d, Delay for Lane Group [s/veh]	30.62	7.32	5.17	36.80	19.83	8.11	29.63	22.90	32.71	42.73	27.13	27.44
Lane Group LOS	C	A	A	D	B	A	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.38	1.78	0.01	0.13	7.55	0.50	0.98	0.06	2.20	0.08	0.07	0.10
50th-Percentile Queue Length [ft]	34.43	44.53	0.37	3.36	188.69	12.62	24.50	1.52	54.97	2.01	1.77	2.53
95th-Percentile Queue Length [veh]	2.48	3.21	0.03	0.24	12.05	0.91	1.76	0.11	3.96	0.14	0.13	0.18
95th-Percentile Queue Length [ft]	61.97	80.15	0.67	6.04	301.33	22.72	44.10	2.73	98.94	3.62	3.18	4.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.62	7.32	5.17	36.80	19.83	8.11	29.63	22.90	32.71	42.73	27.13	27.44
Movement LOS	C	A	A	D	B	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	9.68			19.15			31.52			30.40		
Approach LOS	A			B			C			C		
d_I, Intersection Delay [s/veh]	16.87											
Intersection LOS	B											
Intersection V/C	0.890											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	196.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.521

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	45	0	24	39	12	15	0	0	0	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	373	725	99	46	1365	102	84	123	556	217	242	48
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	103	201	27	13	379	28	23	34	154	60	67	13
Total Analysis Volume [veh/h]	414	805	110	51	1515	113	93	137	617	241	269	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	27	0	39	41	0	34	38	38	16	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	52	52	6	37	37	9	34	34	12	37
g / C, Green / Cycle	0.18	0.44	0.44	0.05	0.31	0.31	0.07	0.28	0.28	0.10	0.31
(v / s)_i Volume / Saturation Flow Rate	0.26	0.28	0.28	0.03	0.47	0.08	0.06	0.08	0.43	0.15	0.20
s, saturation flow rate [veh/h]	1597	1676	1607	1597	3192	1425	1597	1676	1425	1597	1629
c, Capacity [veh/h]	279	732	702	76	987	441	115	473	402	160	506
d1, Uniform Delay [s]	49.50	26.38	26.43	56.21	41.44	31.09	54.86	33.66	43.06	54.00	35.57
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.19
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	234.99	4.20	4.44	9.69	245.60	1.40	12.47	0.33	252.43	258.60	2.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.48	0.64	0.64	0.67	1.53	0.26	0.81	0.29	1.53	1.51	0.64
d, Delay for Lane Group [s/veh]	284.49	30.57	30.87	65.90	287.04	32.49	67.33	33.99	295.49	312.60	37.90
Lane Group LOS	F	C	C	E	F	C	E	C	F	F	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	26.19	10.39	10.07	1.67	47.27	2.51	3.17	3.18	39.99	16.29	8.39
50th-Percentile Queue Length [ft]	654.81	259.66	251.85	41.64	1181.84	62.64	79.21	79.51	999.78	407.14	209.72
95th-Percentile Queue Length [veh]	40.74	15.67	15.28	3.00	72.78	4.51	5.70	5.72	62.05	26.19	13.14
95th-Percentile Queue Length [ft]	1018.54	391.80	381.98	74.96	1819.51	112.76	142.57	143.12	1551.20	654.76	328.47

Generated with PTV VISTRO

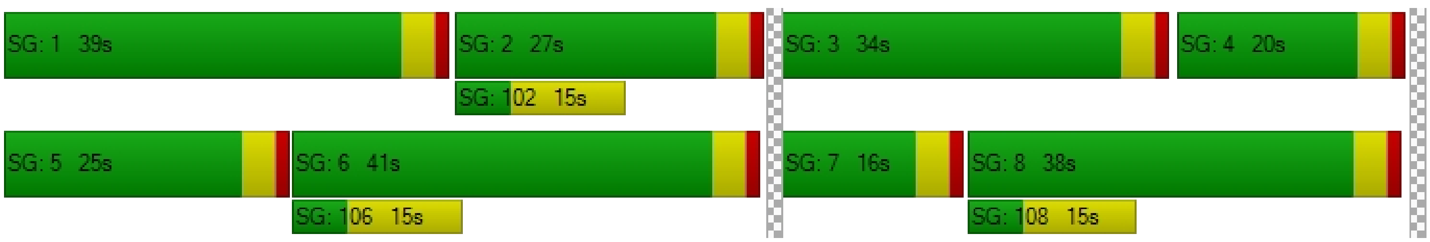
Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	284.49	30.70	30.87	65.90	287.04	32.49	67.33	33.99	295.49	312.60	37.90	37.90
Movement LOS	F	C	C	E	F	C	E	C	F	F	D	D
d_A, Approach Delay [s/veh]	109.77			263.19			228.14			155.49		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	196.60											
Intersection LOS	F											
Intersection V/C	1.521											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.937

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	15	0	27	12	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	930	225	350	1776	389	283
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	250	60	94	477	105	76
Total Analysis Volume [veh/h]	1000	242	376	1910	418	304
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	19	0	40	59	31	31
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	34	34	23	61	21	21
g / C, Green / Cycle	0.37	0.37	0.26	0.68	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.31	0.17	0.24	0.60	0.13	0.21
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1189	531	414	2158	729	335
d1, Uniform Delay [s]	25.83	21.36	32.32	11.77	30.44	33.48
k, delay calibration	0.50	0.50	0.15	0.50	0.11	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.29	2.81	10.56	5.79	0.71	17.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

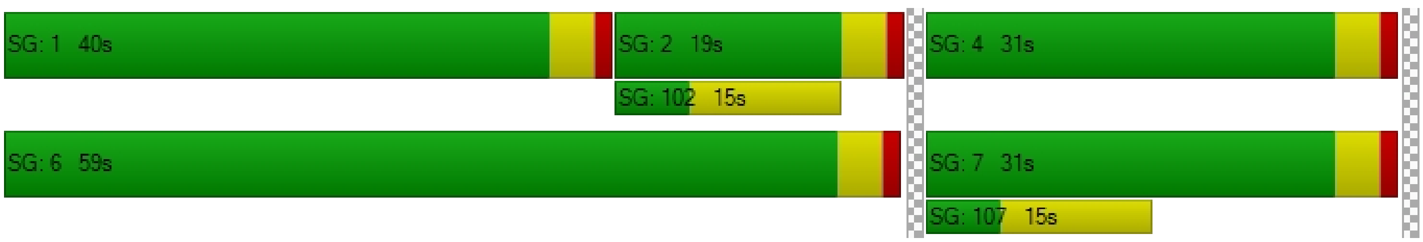
X, volume / capacity	0.84	0.46	0.91	0.89	0.57	0.91
d, Delay for Lane Group [s/veh]	33.11	24.18	42.88	17.56	31.15	50.90
Lane Group LOS	C	C	D	B	C	D
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	9.70	3.82	8.35	11.43	4.00	7.90
50th-Percentile Queue Length [ft]	242.43	95.38	208.75	285.77	99.92	197.49
95th-Percentile Queue Length [veh]	14.80	6.87	13.09	16.98	7.19	12.51
95th-Percentile Queue Length [ft]	370.11	171.69	327.22	424.38	179.85	312.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.11	24.18	42.88	17.56	31.15	50.90
Movement LOS	C	C	D	B	C	D
d_A, Approach Delay [s/veh]	31.37		21.72		39.47	
Approach LOS	C		C		D	
d_I, Intersection Delay [s/veh]	27.56					
Intersection LOS	C					
Intersection V/C	0.937					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	24.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.298

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	196	47	0	240
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	82	200	50	92	243
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	28	68	17	31	83
Total Analysis Volume [veh/h]	84	112	272	68	125	331
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.15	0.00	0.00	0.10	0.00
d_M, Delay for Movement [s/veh]	24.34	16.50	0.00	0.00	8.29	0.00
Movement LOS	C	C	A	A	A	A
95th-Percentile Queue Length [veh]	2.28	2.28	0.00	0.00	0.34	0.00
95th-Percentile Queue Length [ft]	57.05	57.05	0.00	0.00	8.55	0.00
d_A, Approach Delay [s/veh]	19.86		0.00		2.27	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.97					
Intersection LOS	C					

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	49	0	0	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	24	0	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	9	75	0	7	33
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	25	0	2	11
Total Analysis Volume [veh/h]	0	12	101	0	9	45
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.06	0.00	0.01	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	7.39	0.00	10.13	8.55
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.20	0.00	0.17	0.17
95th-Percentile Queue Length [ft]	0.00	0.00	5.02	0.00	4.28	4.28
d_A, Approach Delay [s/veh]	0.00		7.39		8.81	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.32					
Intersection LOS	B					

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	54	44	12	15	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	173	197	112	133	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	64	73	42	50	37
Total Analysis Volume [veh/h]	119	258	294	167	198	146
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.95	0.97	0.97	2.16	1.91	1.96	1.00
95th-Percentile Queue Length [ft]	23.87	24.21	24.21	54.10	47.83	48.94	24.89
Approach Delay [s/veh]	12.07			13.77		13.38	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	13.12						
Intersection LOS	B						

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	0	19	10	12	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	197	0	1	273	76	58	3	115	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	59	0	0	82	23	17	1	35	2	2	0
Total Analysis Volume [veh/h]	143	237	0	1	328	91	70	4	138	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	4.22	4.82	0.49	0.02	0.89	0.10
95th-Percentile Queue Length [ft]	105.45	120.57	12.27	0.57	22.36	2.41
Approach Delay [s/veh]	17.76	18.53	10.77			10.71
Approach LOS	C	C	B			B
Intersection Delay [s/veh]	16.53					
Intersection LOS	C					

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 6: E+A+P PM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	SB Left	0.973	8.9	A
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	0.685	15.2	B
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	EB Left	0.727	17.8	B
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Left	0.815	14.3	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.360	184.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.247	98.3	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	10.3	B
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.004	9.4	A
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		11.4	B
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		18.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.973

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	3	0	4	0	0	0	0	2	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1192	6	2	850	1	2	2	1	5	0	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	333	2	1	237	0	1	1	0	1	0	0
Total Analysis Volume [veh/h]	4	1330	7	2	949	1	2	2	1	6	0	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	88	0	11	88	0	0	21	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	106	0	106	106	1	1	1	1
g / C, Green / Cycle	0.01	0.88	0.00	0.88	0.88	0.01	0.01	0.01	0.01
(v / s)_i Volume / Saturation Flow Rate	0.00	0.80	0.00	0.30	0.00	0.05	0.00	0.08	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	84	1425	79	1425
c, Capacity [veh/h]	24	1479	7	2808	1253	46	18	61	18
d1, Uniform Delay [s]	59.13	4.06	59.55	1.24	0.87	59.97	58.52	59.97	58.52
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.21	9.40	22.54	0.33	0.00	0.80	1.28	0.69	1.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.90	0.30	0.34	0.00	0.09	0.06	0.10	0.06
d, Delay for Lane Group [s/veh]	62.35	13.46	82.09	1.56	0.87	60.77	59.80	60.67	59.80
Lane Group LOS	E	B	F	A	A	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	0.07	3.86	0.10	0.13	0.00	0.13	0.04	0.20	0.04
50th-Percentile Queue Length [ft]	1.70	96.54	2.50	3.19	0.01	3.31	0.91	4.88	0.91
95th-Percentile Queue Length [veh]	0.12	6.95	0.18	0.23	0.00	0.24	0.07	0.35	0.07
95th-Percentile Queue Length [ft]	3.06	173.78	4.49	5.74	0.02	5.95	1.64	8.78	1.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.35	13.46	13.46	82.09	1.56	0.87	60.77	60.77	59.80	60.67	60.67	59.80
Movement LOS	E	B	B	F	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	13.60			1.73			60.58			60.54		
Approach LOS	B			A			E			E		
d_I, Intersection Delay [s/veh]	8.94											
Intersection LOS	A											
Intersection V/C	0.973											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	24	0	0	0	0	6	9	6	30	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	40	1161	139	35	809	22	24	11	48	94	11	25
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	321	38	10	223	6	7	3	13	26	3	7
Total Analysis Volume [veh/h]	44	1283	154	39	894	24	27	12	53	104	12	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	19	19	0	21	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	39	39	4	39	39	3	5	5	6	8	8
g / C, Green / Cycle	0.06	0.56	0.56	0.05	0.55	0.55	0.04	0.07	0.07	0.09	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.03	0.40	0.11	0.02	0.28	0.02	0.02	0.01	0.04	0.07	0.01	0.02
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	95	1771	791	88	1757	785	69	123	105	141	200	170
d1, Uniform Delay [s]	31.95	11.64	7.80	32.14	9.86	7.22	32.73	30.37	31.32	31.22	27.45	27.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.46	2.62	0.55	3.44	1.06	0.07	3.63	0.34	3.73	7.22	0.12	0.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

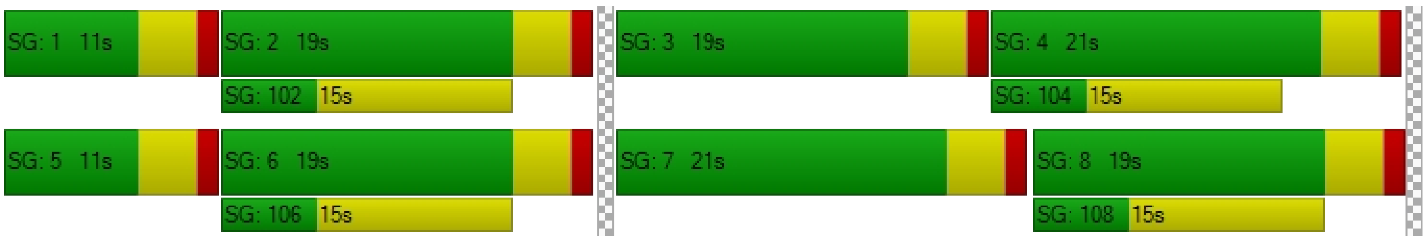
X, volume / capacity	0.46	0.72	0.19	0.44	0.51	0.03	0.39	0.10	0.51	0.74	0.06	0.16
d, Delay for Lane Group [s/veh]	35.41	14.25	8.35	35.58	10.91	7.29	36.36	30.71	35.05	38.43	27.58	28.26
Lane Group LOS	D	B	A	D	B	A	D	C	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.72	5.09	0.84	0.64	2.89	0.12	0.50	0.20	0.94	1.86	0.17	0.41
50th-Percentile Queue Length [ft]	17.97	127.36	20.93	16.05	72.16	2.98	12.56	4.88	23.61	46.60	4.28	10.25
95th-Percentile Queue Length [veh]	1.29	8.80	1.51	1.16	5.20	0.21	0.90	0.35	1.70	3.35	0.31	0.74
95th-Percentile Queue Length [ft]	32.34	219.90	37.68	28.88	129.89	5.36	22.61	8.78	42.49	83.87	7.71	18.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.41	14.25	8.35	35.58	10.91	7.29	36.36	30.71	35.05	38.43	27.58	28.26
Movement LOS	D	B	A	D	B	A	D	C	D	D	C	C
d_A, Approach Delay [s/veh]	14.27			11.83			34.87			35.55		
Approach LOS	B			B			C			D		
d_I, Intersection Delay [s/veh]	15.25											
Intersection LOS	B											
Intersection V/C	0.685											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	14	16	0	0	0	0	0	0	12
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1267	178	100	949	8	6	15	25	122	27	72
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	352	49	28	264	2	2	4	7	34	8	20
Total Analysis Volume [veh/h]	27	1408	198	111	1054	9	7	17	28	136	30	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	38	0	11	38	0	11	11	0	20	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	45	45	6	48	48	1	4	4	8	12	12
g / C, Green / Cycle	0.04	0.56	0.56	0.08	0.60	0.60	0.01	0.06	0.06	0.11	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.44	0.14	0.04	0.33	0.01	0.00	0.01	0.02	0.09	0.02	0.06
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	66	1775	792	252	1903	849	23	95	81	170	250	212
d1, Uniform Delay [s]	37.51	14.15	9.18	35.11	9.77	6.59	39.15	36.06	36.41	35.00	29.57	30.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.05	3.74	0.76	1.21	1.17	0.02	7.48	0.89	2.53	8.33	0.21	1.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

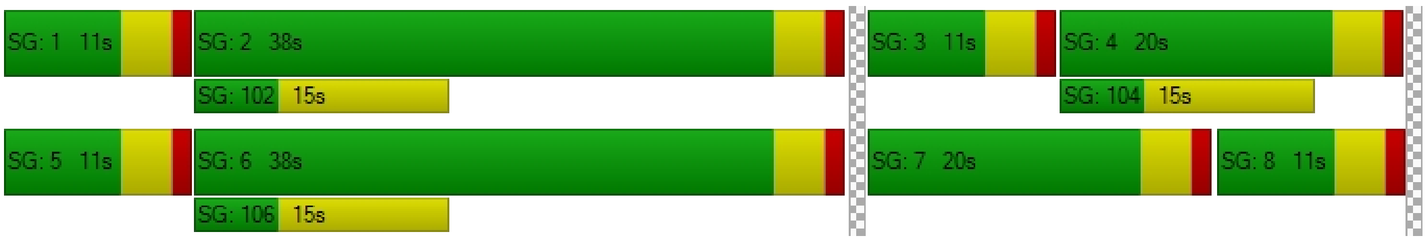
X, volume / capacity	0.41	0.79	0.25	0.44	0.55	0.01	0.31	0.18	0.35	0.80	0.12	0.38
d, Delay for Lane Group [s/veh]	41.56	17.89	9.94	36.32	10.94	6.61	46.63	36.95	38.94	43.33	29.79	31.87
Lane Group LOS	D	B	A	D	B	A	D	D	D	D	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	0.55	8.25	1.50	0.99	4.18	0.05	0.18	0.34	0.58	2.92	0.51	1.43
50th-Percentile Queue Length [ft]	13.75	206.35	37.61	24.71	104.54	1.25	4.57	8.46	14.52	73.08	12.64	35.67
95th-Percentile Queue Length [veh]	0.99	12.97	2.71	1.78	7.53	0.09	0.33	0.61	1.05	5.26	0.91	2.57
95th-Percentile Queue Length [ft]	24.75	324.14	67.70	44.47	188.17	2.25	8.22	15.24	26.14	131.55	22.75	64.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.56	17.89	9.94	36.32	10.94	6.61	46.63	36.95	38.94	43.33	29.79	31.87
Movement LOS	D	B	A	D	B	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	17.32			13.30			39.32			37.95		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	17.80											
Intersection LOS	B											
Intersection V/C	0.727											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.815

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	12	0	0	16	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	1344	5	2	911	47	92	1	85	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	383	1	1	259	13	26	0	24	1	1	3
Total Analysis Volume [veh/h]	175	1531	6	2	1038	54	105	1	97	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	29	0	11	21	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	27	27	0	20	20	5	6	6	1	1	1
g / C, Green / Cycle	0.14	0.55	0.55	0.00	0.41	0.41	0.11	0.12	0.12	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.48	0.00	0.00	0.33	0.04	0.07	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	226	1741	777	6	1303	582	173	202	171	18	40	34
d1, Uniform Delay [s]	20.79	9.97	5.21	24.93	13.03	9.14	21.37	19.44	20.84	24.62	23.96	24.11
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.65	1.58	0.00	24.88	1.16	0.07	3.43	0.01	2.91	9.86	0.52	5.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

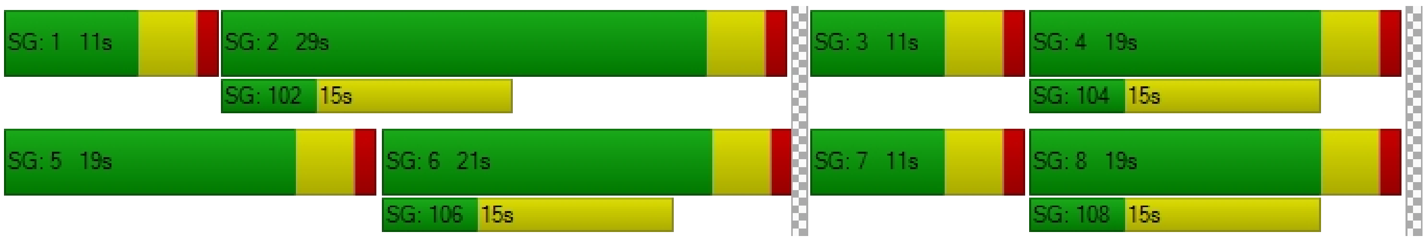
X, volume / capacity	0.78	0.88	0.01	0.31	0.80	0.09	0.61	0.00	0.57	0.33	0.05	0.33
d, Delay for Lane Group [s/veh]	26.43	11.55	5.21	49.81	14.18	9.21	24.80	19.45	23.76	34.48	24.48	29.60
Lane Group LOS	C	B	A	D	B	A	C	B	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.91	3.78	0.01	0.06	3.44	0.25	1.23	0.01	1.11	0.12	0.03	0.17
50th-Percentile Queue Length [ft]	47.81	94.40	0.37	1.61	86.11	6.18	30.86	0.25	27.81	2.90	0.68	4.25
95th-Percentile Queue Length [veh]	3.44	6.80	0.03	0.12	6.20	0.44	2.22	0.02	2.00	0.21	0.05	0.31
95th-Percentile Queue Length [ft]	86.07	169.91	0.66	2.90	155.00	11.12	55.55	0.45	50.05	5.22	1.22	7.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.43	11.55	5.21	49.81	14.18	9.21	24.80	19.45	23.76	34.48	24.48	29.60
Movement LOS	C	B	A	D	B	A	C	B	C	C	C	C
d_A, Approach Delay [s/veh]	13.05			14.00			24.27			30.60		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	14.26											
Intersection LOS	B											
Intersection V/C	0.815											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	184.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.360

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	6	0	6	7	3	2	0	0	0	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	454	1408	208	35	872	66	79	181	562	176	138	25
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	391	58	10	242	18	22	50	156	49	38	7
Total Analysis Volume [veh/h]	504	1563	231	39	968	73	88	201	624	195	153	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	32	52	0	11	31	0	43	42	42	15	14	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	28	50	50	5	27	27	8	38	38	11	41
g / C, Green / Cycle	0.23	0.42	0.42	0.04	0.23	0.23	0.07	0.32	0.32	0.09	0.34
(v / s)_i Volume / Saturation Flow Rate	0.32	0.54	0.56	0.02	0.30	0.05	0.06	0.12	0.44	0.12	0.11
s, saturation flow rate [veh/h]	1597	1676	1604	1597	3192	1425	1597	1676	1425	1597	1632
c, Capacity [veh/h]	373	699	668	68	721	322	110	529	450	146	553
d1, Uniform Delay [s]	46.00	35.00	35.00	56.39	46.45	37.90	55.09	31.92	41.05	54.50	29.50
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	175.54	138.51	163.94	7.48	163.42	1.63	12.69	0.45	187.33	188.53	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.35	1.28	1.34	0.58	1.34	0.23	0.80	0.38	1.39	1.33	0.33
d, Delay for Lane Group [s/veh]	221.54	173.51	198.94	63.87	209.87	39.53	67.78	32.36	228.39	243.03	29.84
Lane Group LOS	F	F	F	E	F	D	E	C	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	28.63	45.37	48.12	1.26	26.51	1.82	3.01	4.61	36.51	12.08	3.95
50th-Percentile Queue Length [ft]	715.76	1134.22	1202.95	31.40	662.86	45.58	75.23	115.32	912.75	302.03	98.72
95th-Percentile Queue Length [veh]	43.46	66.36	71.56	2.26	40.39	3.28	5.42	8.14	55.50	19.58	7.11
95th-Percentile Queue Length [ft]	1086.58	1659.01	1789.05	56.52	1009.86	82.04	135.41	203.38	1387.61	489.55	177.70

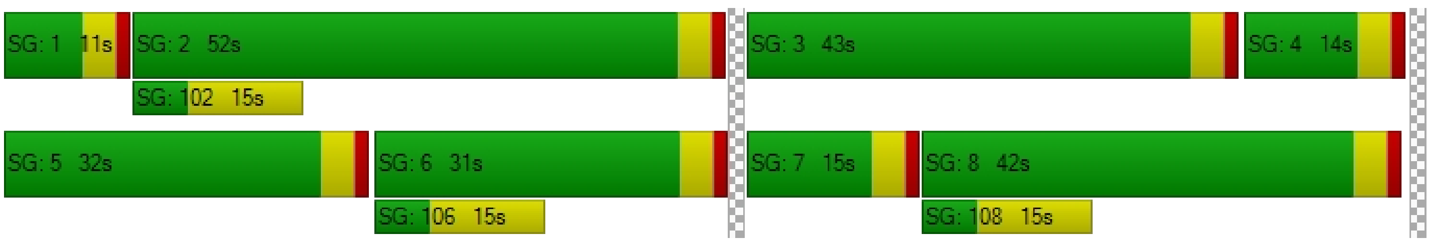
Generated with PTV VISTRO
Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	221.54	184.34	198.94	63.87	209.87	39.53	67.78	32.36	228.39	243.03	29.84	29.84
Movement LOS	F	F	F	E	F	D	E	C	F	F	C	C
d_A, Approach Delay [s/veh]	193.97			193.08			169.75			140.41		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	184.71											
Intersection LOS	F											
Intersection V/C	1.360											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	98.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.247

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	4	3	0	4
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1610	408	331	1268	316	473
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	433	110	89	341	85	127
Total Analysis Volume [veh/h]	1731	439	356	1363	340	509
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	56	0	26	82	38	38
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	22	78	34	34
g / C, Green / Cycle	0.43	0.43	0.18	0.65	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.54	0.31	0.22	0.43	0.11	0.36
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1382	617	293	2075	879	404
d1, Uniform Delay [s]	34.01	27.87	48.95	12.83	34.59	42.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	119.88	6.84	123.36	1.64	0.28	135.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.25	0.71	1.21	0.66	0.39	1.26
d, Delay for Lane Group [s/veh]	153.89	34.72	172.31	14.47	34.87	178.82
Lane Group LOS	F	C	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	41.12	10.61	18.38	9.57	4.04	27.07
50th-Percentile Queue Length [ft]	1028.00	265.17	459.55	239.13	101.08	676.72
95th-Percentile Queue Length [veh]	60.00	15.95	27.88	14.64	7.28	40.50
95th-Percentile Queue Length [ft]	1500.03	398.70	697.07	365.93	181.94	1012.50

Generated with PTV VISTRO

Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	153.89	34.72	172.31	14.47	34.87	178.82
Movement LOS	F	C	F	B	C	F
d_A, Approach Delay [s/veh]	129.78		47.16		121.17	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	98.26					
Intersection LOS	F					
Intersection V/C	1.247					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	45	13	0	34
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	85	49	14	28	39
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	17	5	10	13
Total Analysis Volume [veh/h]	14	116	67	19	38	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.12	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	10.31	9.25	0.00	0.00	7.45	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.47	0.47	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	11.77	11.77	0.00	0.00	1.93	0.00
d_A, Approach Delay [s/veh]	9.36		0.00		3.11	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.89					
Intersection LOS	B					

Intersection Level Of Service Report

Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	9.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	37	0	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	4	0	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1	42	0	2	39
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	14	0	1	13
Total Analysis Volume [veh/h]	0	1	57	0	3	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.00	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	7.30	0.00	9.42	8.51
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.11	0.00	0.17	0.17
95th-Percentile Queue Length [ft]	0.00	0.00	2.73	0.00	4.14	4.14
d_A, Approach Delay [s/veh]	0.00		7.30		8.56	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.85					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	9	10	3	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	198	143	89	108	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	74	53	33	40	32
Total Analysis Volume [veh/h]	86	295	213	133	161	127
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.58	1.04	1.04	1.31	1.17	1.34	0.77
95th-Percentile Queue Length [ft]	14.61	26.02	26.02	32.83	29.13	33.40	19.27
Approach Delay [s/veh]	11.23			11.48		11.67	
Approach LOS	B			B		B	
Intersection Delay [s/veh]	11.44						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	18.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	0	0	5	2	2	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	260	7	3	189	60	82	4	101	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	78	2	1	57	18	25	1	30	2	1	0
Total Analysis Volume [veh/h]	167	313	8	4	227	72	99	5	121	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

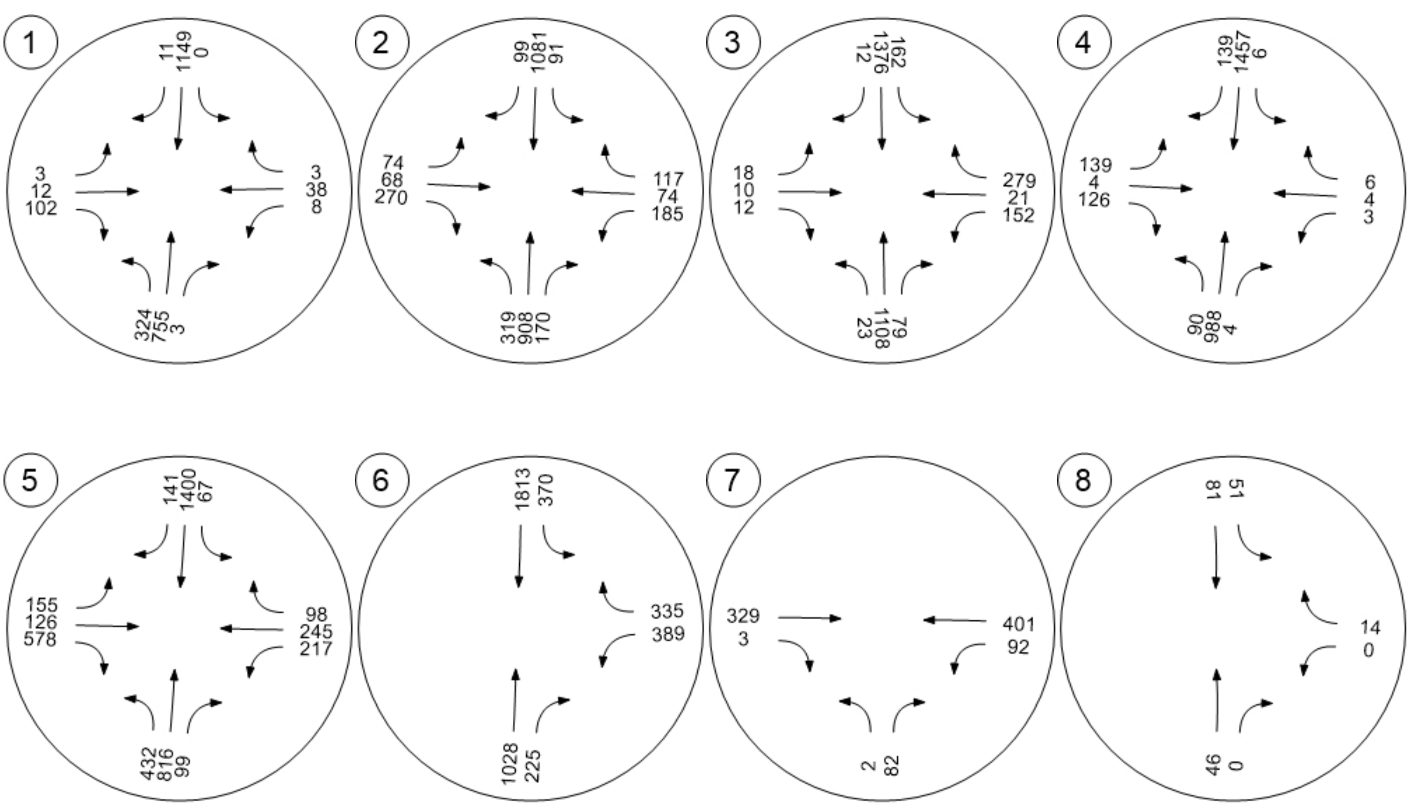
Lanes

Movement, Approach, & Intersection Results

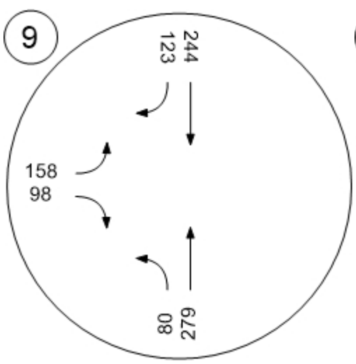
95th-Percentile Queue Length [veh]	7.31	2.65	0.74	0.03	0.76	0.07
95th-Percentile Queue Length [ft]	182.71	66.30	18.47	0.71	18.90	1.75
Approach Delay [s/veh]	25.57	14.07	10.93			10.64
Approach LOS	D	B	B			B
Intersection Delay [s/veh]	18.81					
Intersection LOS	C					

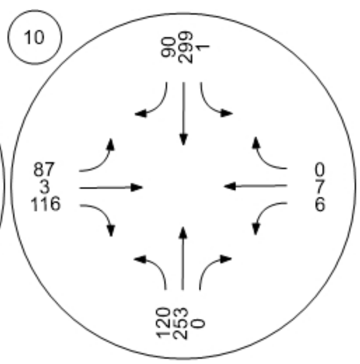
Appendix G. Intersection Volumes, Delay, and LOS Calculation Outputs, 2018 No Project Conditions

Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume





Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+A+C AM_new.pdf

Scenario 9: E+A+C AM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Left	0.704	20.5	C
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	1.075	71.5	E
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	0.863	32.3	C
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	NB Left	0.819	19.6	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	NB Left	1.602	214.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.959	40.5	D
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	27.7	D
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.252	25.4	D
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		17.0	C
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		22.9	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	323	51	0	0	49	8	2	11	98	0	38	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	755	3	0	1149	11	3	12	102	8	38	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	211	1	0	321	3	1	3	28	2	11	1
Total Analysis Volume [veh/h]	362	843	3	0	1282	12	3	13	114	9	42	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	42	23	0	38	19	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	53	0	41	41	15	15	15	15
g / C, Green / Cycle	0.15	0.66	0.00	0.51	0.51	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.12	0.50	0.00	0.40	0.01	0.02	0.08	0.06	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	770	1425	805	1425
c, Capacity [veh/h]	464	1113	0	1644	734	196	264	202	264
d1, Uniform Delay [s]	32.75	9.09	0.00	15.73	9.49	27.20	28.85	27.75	26.60
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.89	4.89	0.00	3.74	0.04	0.18	1.11	0.65	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

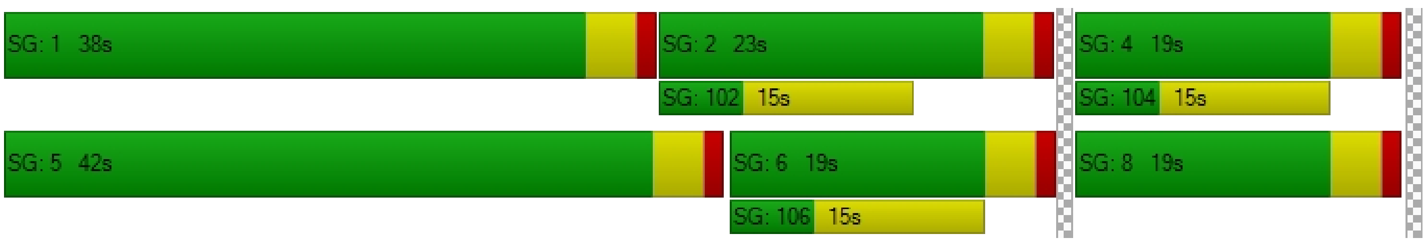
X, volume / capacity	0.78	0.76	0.00	0.78	0.02	0.08	0.43	0.25	0.01
d, Delay for Lane Group [s/veh]	35.64	13.98	0.00	19.47	9.53	27.38	29.96	28.39	26.61
Lane Group LOS	D	B	A	B	A	C	C	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.14	6.64	0.00	7.63	0.08	0.26	1.96	0.84	0.05
50th-Percentile Queue Length [ft]	78.54	165.98	0.00	190.71	2.12	6.38	49.11	20.89	1.17
95th-Percentile Queue Length [veh]	5.65	10.86	0.00	12.16	0.15	0.46	3.54	1.50	0.08
95th-Percentile Queue Length [ft]	141.37	271.62	0.00	303.95	3.82	11.48	88.40	37.60	2.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.64	13.98	13.98	0.00	19.47	9.53	27.38	27.38	29.96	28.39	28.39	26.61
Movement LOS	D	B	B	A	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.47			19.37			29.64			28.29		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	20.55											
Intersection LOS	C											
Intersection V/C	0.704											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	71.5
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.075

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	294	283	2	19	86	42	34	53	238	2	62	57
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	319	908	170	91	1081	99	74	68	270	185	74	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	251	47	25	299	27	20	19	75	51	20	32
Total Analysis Volume [veh/h]	352	1003	188	101	1194	109	82	75	298	204	82	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	56	0	18	45	0	27	28	0	18	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	57	57	9	41	41	8	24	24	14	30	30
g / C, Green / Cycle	0.21	0.47	0.47	0.08	0.34	0.34	0.06	0.20	0.20	0.12	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.22	0.31	0.13	0.06	0.37	0.08	0.05	0.04	0.21	0.13	0.05	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	333	1515	676	123	1096	489	102	332	283	186	421	358
d1, Uniform Delay [s]	47.51	24.15	19.08	54.58	39.41	28.02	55.42	40.38	48.11	53.00	35.39	37.01
k, delay calibration	0.48	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.47	0.47	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	64.73	2.29	1.02	12.66	55.01	1.05	13.42	0.34	67.21	91.10	0.22	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

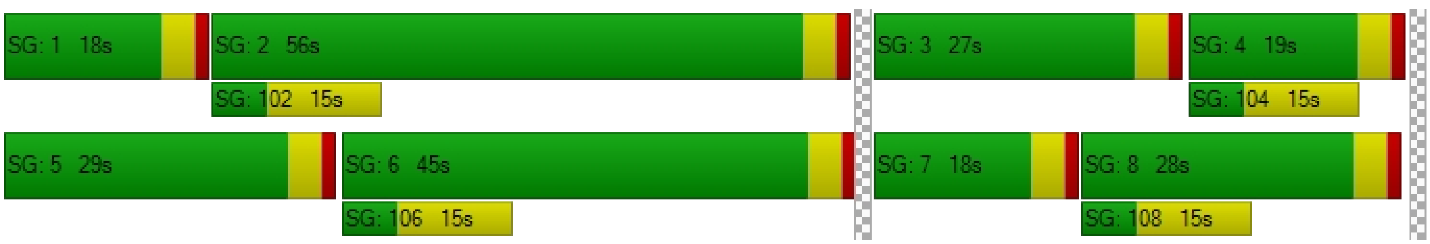
X, volume / capacity	1.06	0.66	0.28	0.82	1.09	0.22	0.80	0.23	1.05	1.09	0.19	0.36
d, Delay for Lane Group [s/veh]	112.23	26.44	20.10	67.24	94.42	29.08	68.84	40.72	115.32	144.10	35.61	37.62
Lane Group LOS	F	C	C	E	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	15.19	10.03	3.02	3.27	22.92	2.20	2.83	1.90	13.67	10.18	1.87	3.09
50th-Percentile Queue Length [ft]	379.72	250.75	75.49	81.68	572.99	55.03	70.72	47.53	341.72	254.55	46.72	77.31
95th-Percentile Queue Length [veh]	22.25	15.22	5.43	5.88	32.56	3.96	5.09	3.42	20.29	16.00	3.36	5.57
95th-Percentile Queue Length [ft]	556.30	380.60	135.87	147.02	813.92	99.06	127.30	85.55	507.33	399.90	84.10	139.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	112.23	26.44	20.10	67.24	94.42	29.08	68.84	40.72	115.32	144.10	35.61	37.62
Movement LOS	F	C	C	E	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	45.24			87.39			94.65			89.57		
Approach LOS	D			F			F			F		
d_I, Intersection Delay [s/veh]	71.45											
Intersection LOS	E											
Intersection V/C	1.075											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	379	2	114	212	0	0	0	0	2	0	200
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1108	79	162	1376	12	18	10	12	152	21	279
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	308	22	45	382	3	5	3	3	42	6	78
Total Analysis Volume [veh/h]	26	1231	88	180	1529	13	20	11	13	169	23	310
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	41	0	11	41	0	11	32	0	16	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	50	50	7	53	53	3	15	15	12	24	24
g / C, Green / Cycle	0.04	0.50	0.50	0.07	0.53	0.53	0.03	0.15	0.15	0.12	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.02	0.39	0.06	0.06	0.48	0.01	0.01	0.01	0.01	0.11	0.01	0.22
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	59	1591	710	220	1698	758	50	252	214	192	402	342
d1, Uniform Delay [s]	47.18	20.50	13.43	45.90	21.05	11.07	47.60	36.38	36.47	43.31	29.33	36.97
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.31	0.11	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.99	3.73	0.36	7.39	8.11	0.04	5.20	0.07	0.12	27.72	0.06	12.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

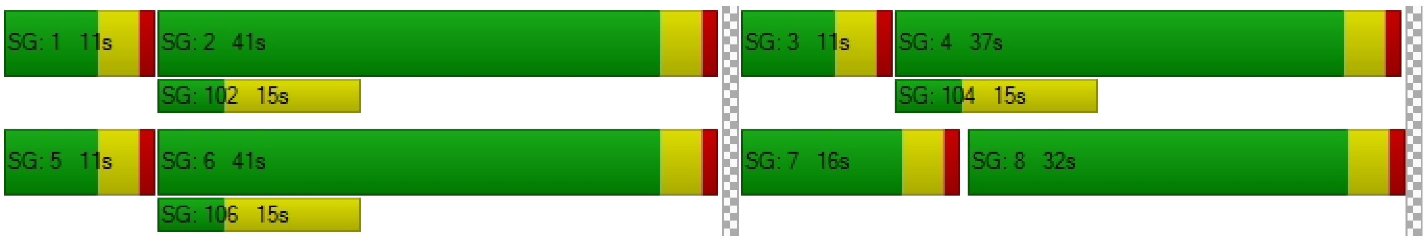
X, volume / capacity	0.44	0.77	0.12	0.82	0.90	0.02	0.40	0.04	0.06	0.88	0.06	0.91
d, Delay for Lane Group [s/veh]	52.17	24.24	13.78	53.29	29.16	11.11	52.80	36.45	36.59	71.03	29.39	49.34
Lane Group LOS	D	C	B	D	C	B	D	D	D	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.68	10.73	1.00	2.31	15.05	0.13	0.56	0.24	0.28	5.56	0.43	8.41
50th-Percentile Queue Length [ft]	17.10	268.30	24.95	57.76	376.16	3.15	14.09	5.93	7.05	138.97	10.80	210.16
95th-Percentile Queue Length [veh]	1.23	16.10	1.80	4.16	21.41	0.23	1.01	0.43	0.51	9.43	0.78	13.16
95th-Percentile Queue Length [ft]	30.78	402.61	44.92	103.96	535.20	5.68	25.36	10.67	12.70	235.64	19.45	329.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.17	24.24	13.78	53.29	29.16	11.11	52.80	36.45	36.59	71.03	29.39	49.34
Movement LOS	D	C	B	D	C	B	D	D	D	E	C	D
d_A, Approach Delay [s/veh]	24.09			31.55			43.92			55.73		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	32.28											
Intersection LOS	C											
Intersection V/C	0.863											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.819

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	301	0	0	169	45	80	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	988	4	6	1457	139	139	4	126	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	281	1	2	415	40	40	1	36	1	1	2
Total Analysis Volume [veh/h]	103	1125	5	7	1659	158	158	5	144	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	41	0	11	40	0	29	37	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	69	69	1	62	62	12	13	13	1	2	2
g / C, Green / Cycle	0.08	0.69	0.69	0.01	0.62	0.62	0.12	0.13	0.13	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.06	0.35	0.00	0.00	0.52	0.11	0.10	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	127	2197	981	21	1985	886	189	223	189	10	34	29
d1, Uniform Delay [s]	45.34	7.51	4.88	48.96	14.89	8.05	43.15	37.75	41.86	49.51	48.15	48.24
k, delay calibration	0.22	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.89	0.86	0.01	9.27	4.36	0.44	9.27	0.04	6.20	16.26	1.92	4.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

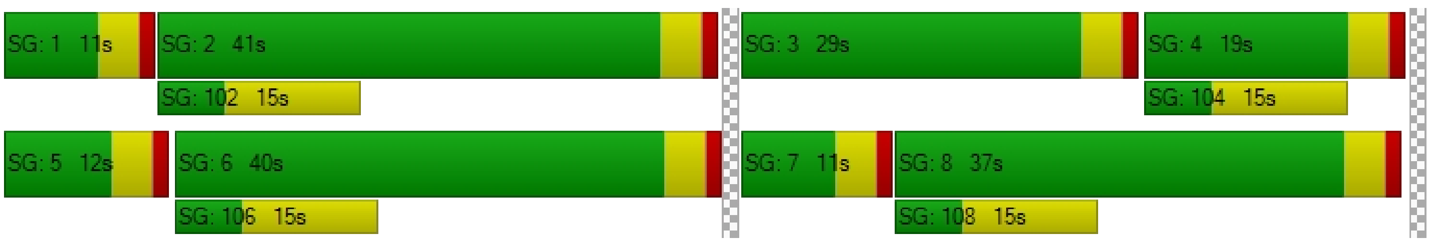
X, volume / capacity	0.81	0.51	0.01	0.34	0.84	0.18	0.84	0.02	0.76	0.30	0.15	0.24
d, Delay for Lane Group [s/veh]	67.24	8.37	4.89	58.23	19.25	8.49	52.42	37.79	48.06	65.77	50.07	52.40
Lane Group LOS	E	A	A	E	B	A	D	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.14	4.28	0.03	0.22	12.37	1.26	4.28	0.11	3.73	0.12	0.14	0.20
50th-Percentile Queue Length [ft]	78.62	106.91	0.64	5.45	309.19	31.43	106.94	2.72	93.13	2.98	3.51	5.12
95th-Percentile Queue Length [veh]	5.66	7.67	0.05	0.39	18.14	2.26	7.67	0.20	6.71	0.21	0.25	0.37
95th-Percentile Queue Length [ft]	141.52	191.69	1.16	9.81	453.38	56.58	191.74	4.90	167.63	5.36	6.32	9.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.24	8.37	4.89	58.23	19.25	8.49	52.42	37.79	48.06	65.77	50.07	52.40
Movement LOS	E	A	A	E	B	A	D	D	D	E	D	D
d_A, Approach Delay [s/veh]	13.27			18.47			50.14			54.30		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	19.61											
Intersection LOS	B											
Intersection V/C	0.819											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	214.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.602

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	59	136	0	45	74	51	86	3	22	0	3	80
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	432	816	99	67	1400	141	155	126	578	217	245	98
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	226	27	19	388	39	43	35	160	60	68	27
Total Analysis Volume [veh/h]	479	906	110	74	1554	156	172	140	642	241	272	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	26	34	0	32	40	0	28	38	38	16	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	51	51	7	36	36	15	34	34	12	31
g / C, Green / Cycle	0.18	0.43	0.43	0.06	0.30	0.30	0.12	0.28	0.28	0.10	0.26
(v / s)_i Volume / Saturation Flow Rate	0.30	0.31	0.31	0.05	0.49	0.11	0.11	0.08	0.45	0.15	0.24
s, saturation flow rate [veh/h]	1597	1676	1614	1597	3192	1425	1597	1676	1425	1597	1596
c, Capacity [veh/h]	293	715	688	93	961	429	198	473	402	160	412
d1, Uniform Delay [s]	49.00	28.49	28.63	55.82	41.93	32.91	51.60	33.74	43.08	54.00	43.39
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.39
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	301.32	6.18	6.64	14.31	282.28	2.38	10.93	0.35	280.16	258.38	24.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

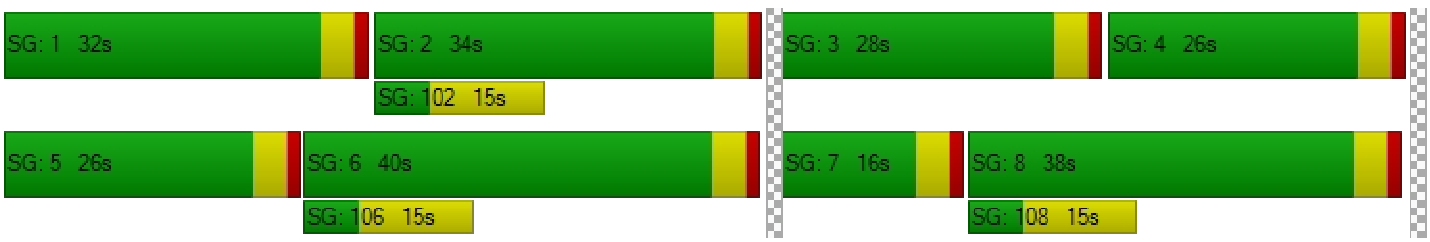
X, volume / capacity	1.64	0.72	0.73	0.80	1.62	0.36	0.87	0.30	1.60	1.51	0.92
d, Delay for Lane Group [s/veh]	350.32	34.67	35.27	70.13	324.22	35.28	62.52	34.09	323.24	312.38	67.98
Lane Group LOS	F	C	D	E	F	D	E	C	F	F	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	32.82	12.46	12.25	2.49	50.96	3.66	5.67	3.26	43.06	16.28	13.74
50th-Percentile Queue Length [ft]	820.51	311.52	306.37	62.33	1273.94	91.57	141.85	81.44	1076.46	407.03	343.47
95th-Percentile Queue Length [veh]	51.34	18.25	18.00	4.49	79.07	6.59	9.58	5.86	67.18	26.18	19.82
95th-Percentile Queue Length [ft]	1283.39	456.25	449.90	112.19	1976.84	164.83	239.51	146.58	1679.60	654.57	495.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	350.32	34.93	35.27	70.13	324.22	35.28	62.52	34.09	323.24	312.38	67.98	67.98
Movement LOS	F	C	D	E	F	D	E	C	F	F	E	E
d_A, Approach Delay [s/veh]	136.01			288.41			233.80			162.68		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	214.64											
Intersection LOS	F											
Intersection V/C	1.602											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.959

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	113	0	47	49	0	82
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1028	225	370	1813	389	335
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	276	60	99	487	105	90
Total Analysis Volume [veh/h]	1105	242	398	1949	418	360
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	38	0	41	79	41	41
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	44	44	32	80	32	32
g / C, Green / Cycle	0.37	0.37	0.26	0.67	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.35	0.17	0.25	0.61	0.13	0.25
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1172	523	423	2124	831	382
d1, Uniform Delay [s]	36.71	28.91	43.19	17.25	37.14	43.00
k, delay calibration	0.50	0.50	0.32	0.50	0.11	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.67	2.92	23.18	7.81	0.47	25.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

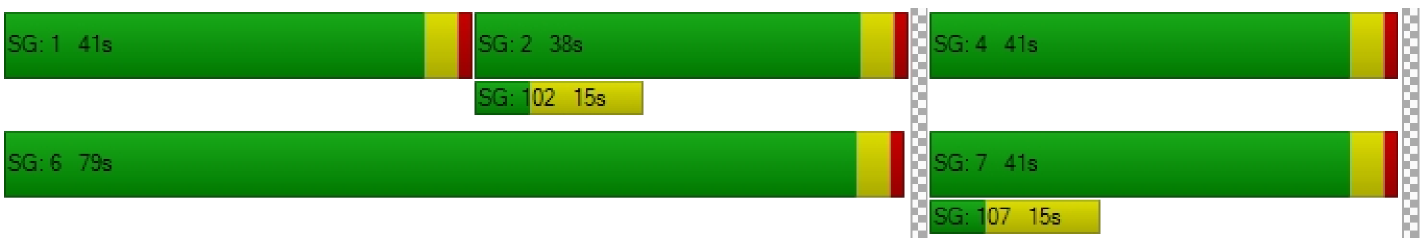
X, volume / capacity	0.94	0.46	0.94	0.92	0.50	0.94
d, Delay for Lane Group [s/veh]	52.38	31.84	66.37	25.05	37.62	68.42
Lane Group LOS	D	C	E	C	D	E
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	16.98	5.40	13.58	20.16	5.25	13.05
50th-Percentile Queue Length [ft]	424.49	135.05	339.41	504.07	131.23	326.37
95th-Percentile Queue Length [veh]	23.74	9.21	19.62	27.53	9.01	18.98
95th-Percentile Queue Length [ft]	593.44	230.35	490.48	688.17	225.16	474.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.38	31.84	66.37	25.05	37.62	68.42
Movement LOS	D	C	E	C	D	E
d_A, Approach Delay [s/veh]	48.69		32.06		51.87	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	40.51					
Intersection LOS	D					
Intersection V/C	0.959					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	27.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	325	0	0	398
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	82	329	3	92	401
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	28	112	1	31	137
Total Analysis Volume [veh/h]	3	112	448	4	125	546
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.18	0.00	0.00	0.11	0.01
d_M, Delay for Movement [s/veh]	27.74	12.49	0.00	0.00	8.66	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.75	0.75	0.00	0.00	0.38	0.00
95th-Percentile Queue Length [ft]	18.68	18.68	0.00	0.00	9.50	0.00
d_A, Approach Delay [s/veh]	12.89		0.00		1.61	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.07					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	25.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.252

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	189	13	94	138	49	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	46	0	0	81	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	243	14	98	225	51	132
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	5	33	76	17	45
Total Analysis Volume [veh/h]	328	19	132	304	69	178
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.11	0.00	0.25	0.25
d_M, Delay for Movement [s/veh]	0.00	0.00	8.33	0.00	25.44	17.38
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.37	0.00	2.80	2.80
95th-Percentile Queue Length [ft]	0.00	0.00	9.14	0.00	70.04	70.04
d_A, Approach Delay [s/veh]	0.00		2.52		19.63	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	5.78					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	17.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	160	91	23	40	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	279	244	123	158	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	104	91	46	59	37
Total Analysis Volume [veh/h]	119	416	364	183	235	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.05	2.16	2.16	3.47	3.08	3.09	1.17
95th-Percentile Queue Length [ft]	26.33	53.91	53.91	86.83	77.11	77.37	29.17
Approach Delay [s/veh]	15.31			18.43		17.15	
Approach LOS	C			C		C	
Intersection Delay [s/veh]	16.96						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	22.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	80	0	0	45	24	41	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	253	0	1	299	90	87	3	116	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	76	0	0	90	27	26	1	35	2	2	0
Total Analysis Volume [veh/h]	144	304	0	1	359	108	105	4	139	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

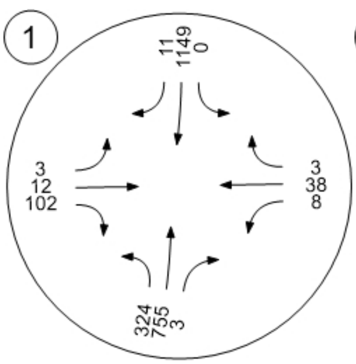
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.91	7.13	0.85	0.02	0.98	0.10
95th-Percentile Queue Length [ft]	172.80	178.13	21.32	0.60	24.51	2.62
Approach Delay [s/veh]	26.15	25.92	11.84			11.39
Approach LOS	D	D	B			B
Intersection Delay [s/veh]	22.86					
Intersection LOS	C					

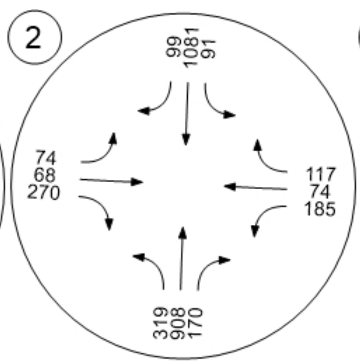
PLACEWORKS

Traffic Volume - Future Total Volume

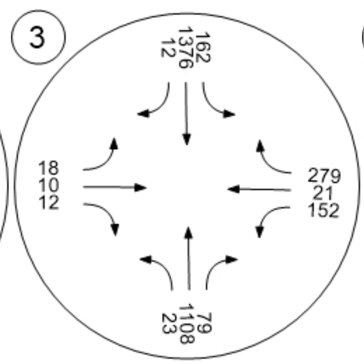
Winchester Road at Keller Ro



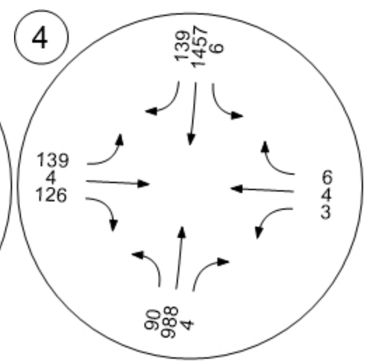
Winchester Road at Pourroy



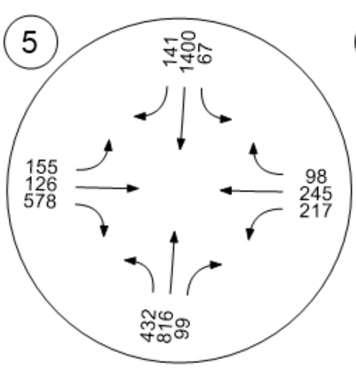
Winchester Road at Whisper



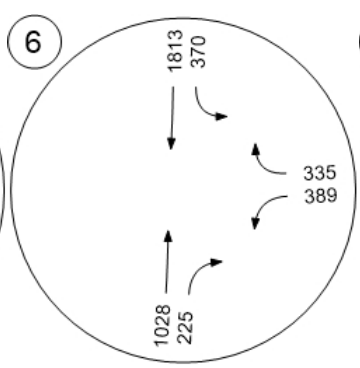
Winchester Road at Jean Nic



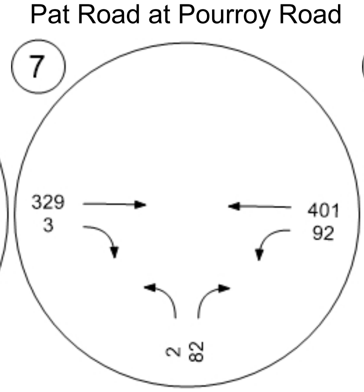
Winchester Road at Max Gilli



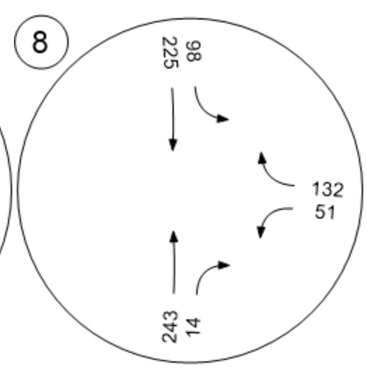
Winchester Road at Benton



Pat Road at Pourroy Road

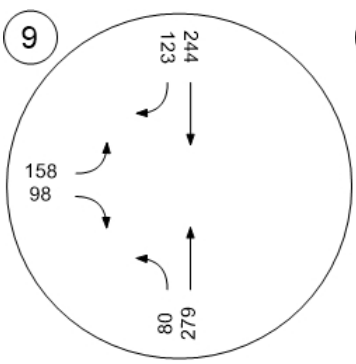


Jean Nicholas Road at Elliot

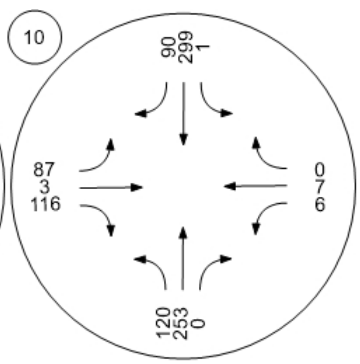


Traffic Volume - Future Total Volume

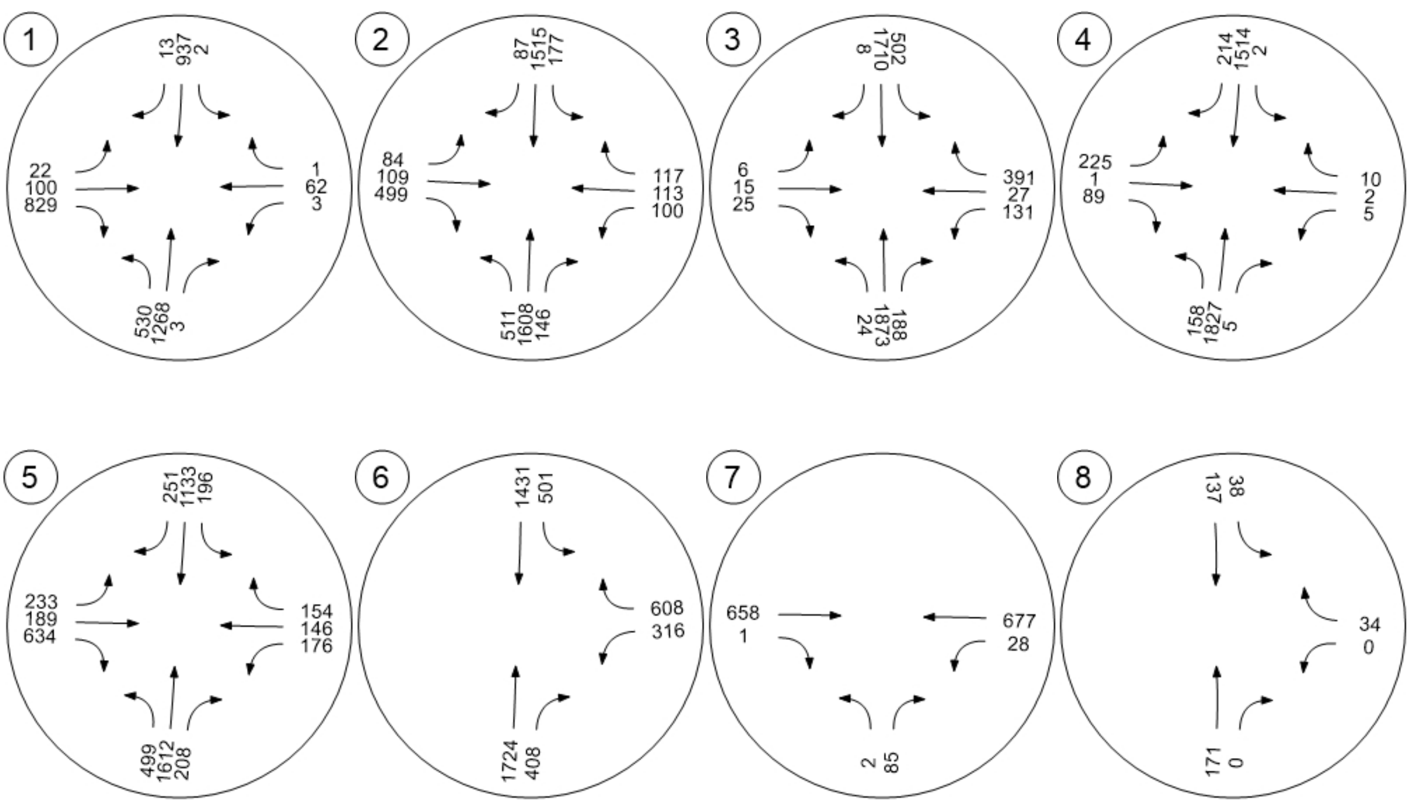
Pourroy Road at Skyview Ro



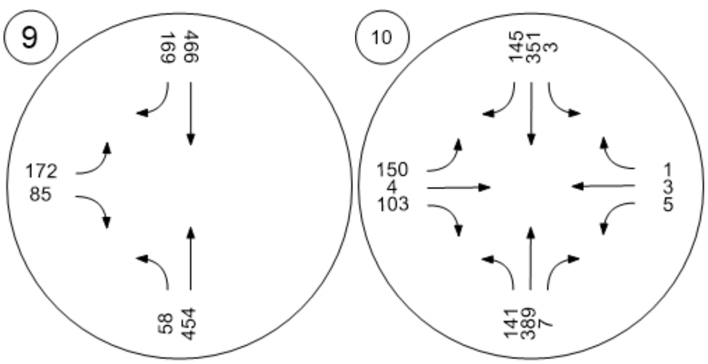
Pourroy Road at Thompson



Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+A+C PM_new.pdf

Scenario 10: E+A+C PM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	EB Right	1.663	219.2	F
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	1.539	208.1	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	1.316	152.0	F
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	NB Left	0.948	39.6	D
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.592	258.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.530	175.4	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.041	61.5	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.181	24.4	C
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		63.3	F
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		81.5	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	219.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.663

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	526	82	0	0	91	12	20	98	828	0	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	530	1268	3	2	937	13	22	100	829	3	62	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	354	1	1	261	4	6	28	231	1	17	0
Total Analysis Volume [veh/h]	592	1415	3	2	1046	15	25	112	925	3	69	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	58	0	11	43	0	0	51	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	61	0	39	39	47	47	47	47
g / C, Green / Cycle	0.18	0.50	0.00	0.33	0.33	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.19	0.85	0.00	0.33	0.01	0.15	0.65	0.04	0.00
s, saturation flow rate [veh/h]	3101	1676	1597	3192	1425	929	1425	1654	1425
c, Capacity [veh/h]	569	846	7	1039	464	399	557	678	557
d1, Uniform Delay [s]	48.97	29.70	59.55	40.46	27.58	26.00	36.54	23.25	22.27
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.15	309.42	22.54	29.53	0.13	0.51	305.17	0.07	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

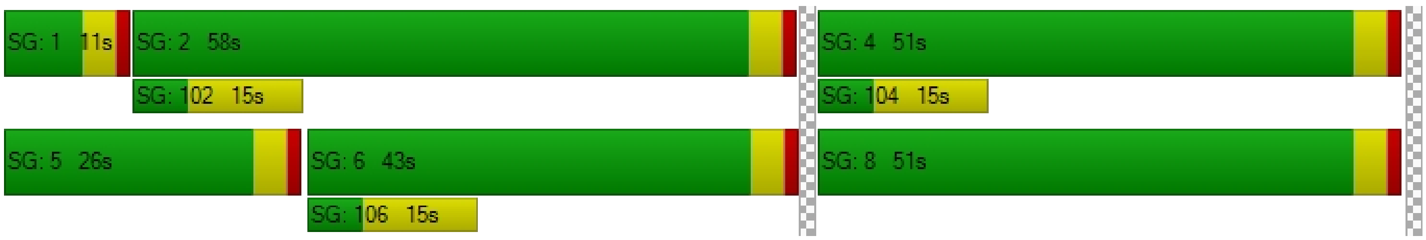
X, volume / capacity	1.04	1.68	0.30	1.01	0.03	0.34	1.66	0.11	0.00
d, Delay for Lane Group [s/veh]	78.12	339.12	82.09	69.99	27.70	26.51	341.71	23.32	22.27
Lane Group LOS	F	F	F	F	C	C	F	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	10.23	93.27	0.10	18.14	0.29	2.65	63.14	1.32	0.02
50th-Percentile Queue Length [ft]	255.67	2331.75	2.50	453.42	7.24	66.32	1578.39	33.05	0.44
95th-Percentile Queue Length [veh]	15.78	146.39	0.18	25.23	0.52	4.78	99.11	2.38	0.03
95th-Percentile Queue Length [ft]	394.44	3659.69	4.49	630.79	13.04	119.38	2477.83	59.49	0.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.12	339.12	339.12	82.09	69.99	27.70	26.51	26.51	341.71	23.32	23.32	22.27
Movement LOS	F	F	F	F	F	C	C	C	F	C	C	C
d_A, Approach Delay [s/veh]	262.25			69.41			301.05			23.31		
Approach LOS	F			E			F			C		
d_I, Intersection Delay [s/veh]	219.18											
Intersection LOS	F											
Intersection V/C	1.663											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	208.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.539

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	495	447	7	142	706	71	69	104	481	6	106	92
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	511	1608	146	177	1515	87	84	109	499	100	113	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	141	444	40	49	419	24	23	30	138	28	31	32
Total Analysis Volume [veh/h]	565	1777	161	196	1674	96	93	120	551	110	125	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	61	0	14	44	0	26	34	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	57	57	10	40	40	9	30	30	7	28	28
g / C, Green / Cycle	0.22	0.48	0.48	0.08	0.33	0.33	0.07	0.25	0.25	0.06	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.35	0.56	0.11	0.12	0.52	0.07	0.06	0.07	0.39	0.07	0.07	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	359	1519	678	133	1067	476	115	417	355	93	395	336
d1, Uniform Delay [s]	46.50	31.44	18.58	55.00	39.94	28.51	54.90	36.45	45.06	56.50	37.88	38.55
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.50	0.44	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	270.83	83.82	0.82	248.77	260.55	0.95	12.73	0.38	262.22	143.62	0.46	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

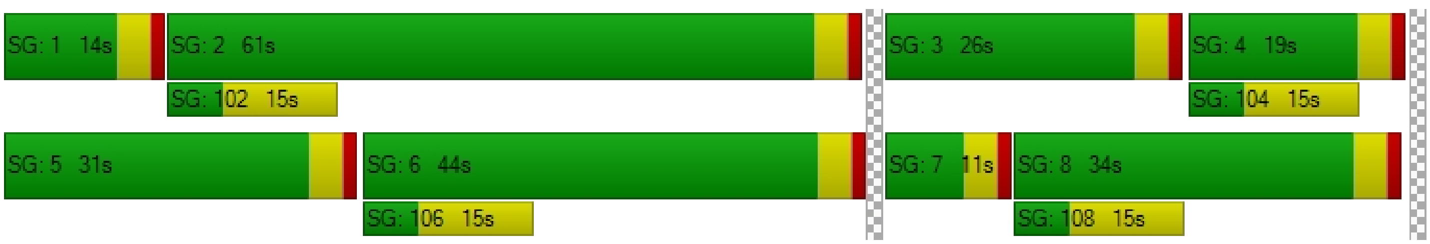
X, volume / capacity	1.57	1.17	0.24	1.47	1.57	0.20	0.81	0.29	1.55	1.18	0.32	0.38
d, Delay for Lane Group [s/veh]	317.33	115.26	19.40	303.77	300.50	29.46	67.62	36.82	307.28	200.11	38.34	39.27
Lane Group LOS	F	F	B	F	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	36.93	36.54	2.52	12.98	52.82	1.95	3.18	2.90	36.31	6.47	3.01	3.17
50th-Percentile Queue Length [ft]	923.14	913.42	62.90	324.57	1320.53	48.77	79.39	72.60	907.68	161.75	75.19	79.33
95th-Percentile Queue Length [veh]	57.29	52.01	4.53	21.25	81.62	3.51	5.72	5.23	56.57	11.16	5.41	5.71
95th-Percentile Queue Length [ft]	1432.27	1300.23	113.22	531.36	2040.57	87.78	142.91	130.69	1414.17	279.01	135.35	142.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	317.33	115.26	19.40	303.77	300.50	29.46	67.62	36.82	307.28	200.11	38.34	39.27
Movement LOS	F	F	B	F	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	154.71			287.59			235.63			87.55		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	208.06											
Intersection LOS	F											
Intersection V/C	1.539											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	152.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.316

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	618	10	416	777	0	0	0	0	9	0	331
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1873	188	502	1710	8	6	15	25	131	27	391
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	520	52	139	475	2	2	4	7	36	8	109
Total Analysis Volume [veh/h]	27	2081	209	558	1900	9	7	17	28	146	30	434
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	59	0	20	68	0	11	29	0	12	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	55	55	16	67	67	1	25	25	8	31	31
g / C, Green / Cycle	0.03	0.46	0.46	0.13	0.56	0.56	0.01	0.21	0.21	0.07	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.02	0.65	0.15	0.18	0.60	0.01	0.00	0.01	0.02	0.09	0.02	0.30
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	55	1468	655	413	1783	796	19	347	295	106	438	372
d1, Uniform Delay [s]	56.88	32.40	20.51	52.00	26.48	11.76	58.81	38.14	38.51	56.00	33.34	44.33
k, delay calibration	0.11	0.50	0.50	0.19	0.50	0.50	0.11	0.11	0.11	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.53	191.95	1.28	163.37	41.23	0.03	10.89	0.06	0.14	215.55	0.07	99.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	1.42	0.32	1.35	1.07	0.01	0.36	0.05	0.10	1.37	0.07	1.17
d, Delay for Lane Group [s/veh]	63.41	224.35	21.79	215.37	67.71	11.79	69.70	38.20	38.65	271.54	33.41	144.30
Lane Group LOS	E	F	C	F	F	B	E	D	D	F	C	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.87	58.18	3.66	15.31	31.86	0.10	0.27	0.41	0.69	9.59	0.67	21.28
50th-Percentile Queue Length [ft]	21.84	1454.43	91.60	382.82	796.51	2.57	6.79	10.34	17.25	239.85	16.78	532.03
95th-Percentile Queue Length [veh]	1.57	87.90	6.60	24.41	43.30	0.19	0.49	0.74	1.24	16.06	1.21	31.46
95th-Percentile Queue Length [ft]	39.31	2197.45	164.88	610.18	1082.46	4.63	12.22	18.61	31.05	401.60	30.21	786.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.41	224.35	21.79	215.37	67.71	11.79	69.70	38.20	38.65	271.54	33.41	144.30
Movement LOS	E	F	C	F	F	B	E	D	D	F	C	F
d_A, Approach Delay [s/veh]	204.21			100.91			42.68			169.30		
Approach LOS	F			F			D			F		
d_I, Intersection Delay [s/veh]	151.96											
Intersection LOS	F											
Intersection V/C	1.316											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.948

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	495	0	0	619	167	133	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	1827	5	2	1514	214	225	1	89	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	520	1	1	431	61	64	0	25	1	1	3
Total Analysis Volume [veh/h]	180	2081	6	2	1724	244	256	1	101	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	66	0	11	59	0	24	32	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	81	81	0	67	67	20	21	21	1	2	2
g / C, Green / Cycle	0.12	0.68	0.68	0.00	0.56	0.56	0.17	0.18	0.18	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.65	0.00	0.00	0.54	0.17	0.16	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	187	2154	961	7	1794	801	266	296	252	18	35	30
d1, Uniform Delay [s]	52.75	18.25	6.38	59.58	25.03	13.89	49.62	40.70	43.78	58.92	57.59	57.97
k, delay calibration	0.38	0.50	0.50	0.11	0.50	0.50	0.40	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	48.89	12.93	0.01	22.38	13.83	0.98	40.55	0.00	1.03	10.93	0.66	7.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.97	0.01	0.29	0.96	0.30	0.96	0.00	0.40	0.34	0.06	0.37
d, Delay for Lane Group [s/veh]	101.64	31.18	6.39	81.96	38.86	14.87	90.17	40.71	44.81	69.85	58.26	65.34
Lane Group LOS	F	C	A	F	D	B	F	D	D	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	7.69	24.22	0.04	0.10	23.25	3.33	10.59	0.02	2.74	0.23	0.07	0.39
50th-Percentile Queue Length [ft]	192.31	605.48	1.10	2.52	581.27	83.24	264.75	0.62	68.56	5.87	1.65	9.78
95th-Percentile Queue Length [veh]	12.24	32.29	0.08	0.18	31.16	5.99	15.93	0.04	4.94	0.42	0.12	0.70
95th-Percentile Queue Length [ft]	306.03	807.25	1.99	4.53	778.97	149.83	398.17	1.12	123.40	10.57	2.97	17.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	101.64	31.18	6.39	81.96	38.86	14.87	90.17	40.71	44.81	69.85	58.26	65.34
Movement LOS	F	C	A	F	D	B	F	D	D	E	E	E
d_A, Approach Delay [s/veh]	36.71			35.93			77.24			66.02		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	39.64											
Intersection LOS	D											
Intersection V/C	0.948											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	258.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.592

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	45	210	0	167	268	188	156	8	72	0	8	133
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	499	1612	208	196	1133	251	233	189	634	176	146	154
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	447	58	54	314	70	65	52	176	49	41	43
Total Analysis Volume [veh/h]	554	1789	231	218	1257	279	259	210	704	195	162	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	51	0	15	36	0	23	41	41	13	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	47	47	11	32	32	19	37	37	9	27
g / C, Green / Cycle	0.22	0.39	0.39	0.09	0.27	0.27	0.16	0.31	0.31	0.08	0.22
(v / s)_i Volume / Saturation Flow Rate	0.35	0.60	0.63	0.14	0.39	0.20	0.16	0.13	0.49	0.12	0.22
s, saturation flow rate [veh/h]	1597	1676	1611	1597	3192	1425	1597	1676	1425	1597	1537
c, Capacity [veh/h]	346	659	633	147	856	382	253	514	437	120	343
d1, Uniform Delay [s]	47.01	36.43	36.43	54.50	43.92	39.96	50.50	33.00	41.62	55.50	46.21
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.44	0.11	0.50	0.50	0.42
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	283.83	247.53	275.18	250.85	217.06	11.62	59.46	0.52	285.86	314.39	37.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

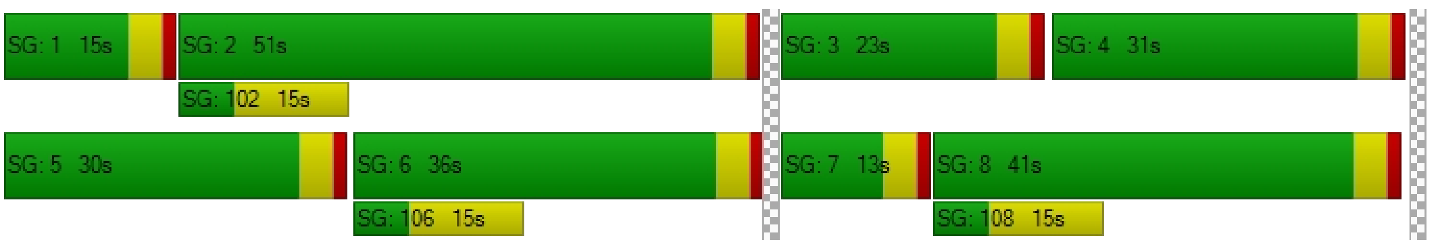
X, volume / capacity	1.60	1.53	1.60	1.48	1.47	0.73	1.02	0.41	1.61	1.62	0.97
d, Delay for Lane Group [s/veh]	330.84	283.97	311.61	305.35	260.98	51.58	109.96	33.52	327.48	369.89	83.83
Lane Group LOS	F	F	F	F	F	D	F	C	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	37.03	62.92	65.34	14.48	37.74	8.31	11.75	4.93	47.40	14.14	13.36
50th-Percentile Queue Length [ft]	925.82	1572.89	1633.43	361.88	943.62	207.75	293.69	123.15	1185.09	353.44	333.93
95th-Percentile Queue Length [veh]	57.58	96.39	101.15	23.48	57.85	13.04	17.57	8.57	74.01	23.20	19.35
95th-Percentile Queue Length [ft]	1439.53	2409.85	2528.78	586.89	1446.34	325.94	439.20	214.15	1850.32	579.92	483.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	330.84	296.00	311.61	305.35	260.98	51.58	109.96	33.52	327.48	369.89	83.83	83.83
Movement LOS	F	F	F	F	F	D	F	C	F	F	F	F
d_A, Approach Delay [s/veh]		304.90			233.18			226.82			189.48	
Approach LOS		F			F			F			F	
d_I, Intersection Delay [s/veh]						258.74						
Intersection LOS						F						
Intersection V/C						1.592						

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	175.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.530

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	116	0	174	166	0	139
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1724	408	501	1431	316	608
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	463	110	135	385	85	163
Total Analysis Volume [veh/h]	1854	439	539	1539	340	654
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	49	0	31	80	40	40
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	27	76	36	36
g / C, Green / Cycle	0.37	0.37	0.23	0.63	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.58	0.31	0.34	0.48	0.11	0.46
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1196	534	360	2022	930	427
d1, Uniform Delay [s]	37.49	33.88	46.46	15.57	33.01	41.98
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	251.58	13.34	238.63	2.77	0.24	250.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.55	0.82	1.50	0.76	0.37	1.53
d, Delay for Lane Group [s/veh]	289.07	47.22	285.09	18.33	33.25	292.14
Lane Group LOS	F	D	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	57.88	12.64	33.96	12.96	3.93	42.18
50th-Percentile Queue Length [ft]	1447.05	316.12	848.90	323.95	98.36	1054.54
95th-Percentile Queue Length [veh]	89.23	18.48	52.37	18.86	7.08	65.35
95th-Percentile Queue Length [ft]	2230.72	461.91	1309.16	471.54	177.05	1633.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	289.07	47.22	285.09	18.33	33.25	292.14
Movement LOS	F	D	F	B	C	F
d_A, Approach Delay [s/veh]	242.77		87.52		203.59	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	175.38					
Intersection LOS	F					
Intersection V/C	1.530					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	61.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	654	0	0	672
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	85	658	1	28	677
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	29	224	0	10	231
Total Analysis Volume [veh/h]	3	116	896	1	38	922
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.34	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	61.54	22.67	0.00	0.00	10.01	0.00
Movement LOS	F	C	A	A	B	A
95th-Percentile Queue Length [veh]	1.74	1.74	0.00	0.00	0.16	0.00
95th-Percentile Queue Length [ft]	43.52	43.52	0.00	0.00	3.96	0.00
d_A, Approach Delay [s/veh]	23.65		0.00		0.40	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.62					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	24.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.181

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	157	33	40	110	37	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	171	0	0	137	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	334	34	42	251	38	127
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	11	14	85	13	43
Total Analysis Volume [veh/h]	451	46	57	339	51	172
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.00	0.18	0.29
d_M, Delay for Movement [s/veh]	0.00	0.00	8.56	0.00	24.40	17.73
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.17	0.00	2.49	2.49
95th-Percentile Queue Length [ft]	0.00	0.00	4.23	0.00	62.14	62.14
d_A, Approach Delay [s/veh]	0.00		1.23		19.26	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	4.29					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	63.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	265	333	83	66	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	454	466	169	172	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	169	174	63	64	32
Total Analysis Volume [veh/h]	86	677	694	252	256	127
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.81	7.23	7.23	16.85	15.38	5.32	1.32
95th-Percentile Queue Length [ft]	20.26	180.65	180.65	421.29	384.44	133.05	32.96
Approach Delay [s/veh]	35.39			100.02		28.17	
Approach LOS	E			F		D	
Intersection Delay [s/veh]	63.29						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	81.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	133	0	0	167	87	70	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	389	7	3	351	145	150	4	103	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	117	2	1	105	44	45	1	31	2	1	0
Total Analysis Volume [veh/h]	169	468	8	4	422	174	180	5	124	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

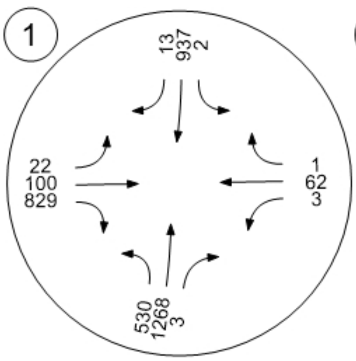
Lanes

Movement, Approach, & Intersection Results

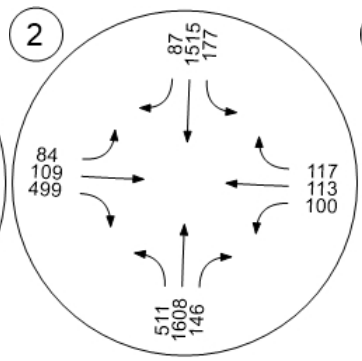
95th-Percentile Queue Length [veh]	22.54	17.04	1.96	0.03	0.93	0.08
95th-Percentile Queue Length [ft]	563.55	426.01	48.88	0.81	23.27	2.05
Approach Delay [s/veh]	118.44	77.54	14.48			11.96
Approach LOS	F	F	B			B
Intersection Delay [s/veh]	81.49					
Intersection LOS	F					

Traffic Volume - Future Total Volume

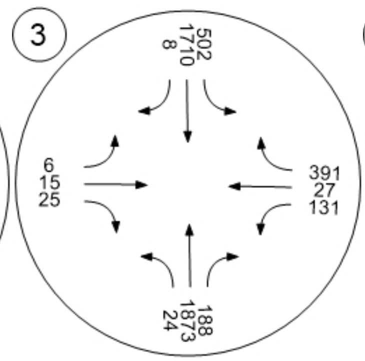
Winchester Road at Keller Ro



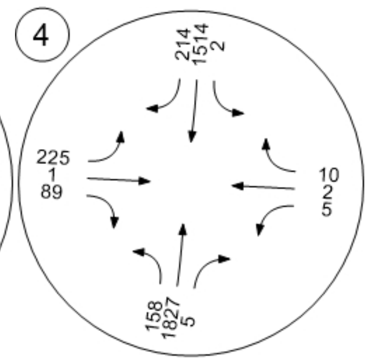
Winchester Road at Pourroy



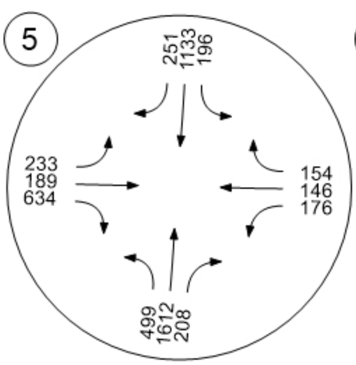
Winchester Road at Whisper



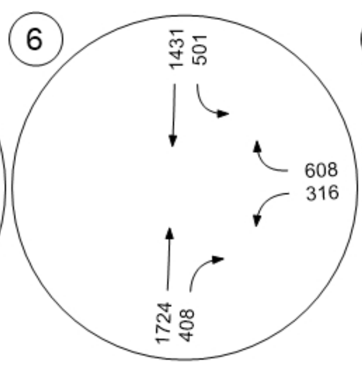
Winchester Road at Jean Nic



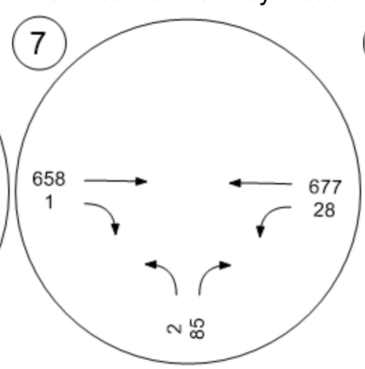
Winchester Road at Max Gilli



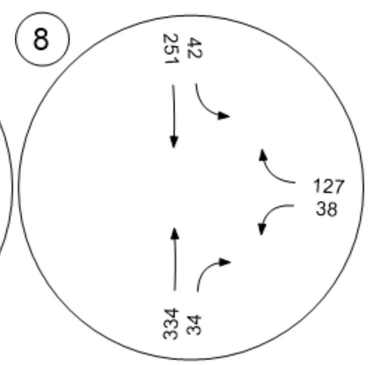
Winchester Road at Benton



Pat Road at Pourroy Road

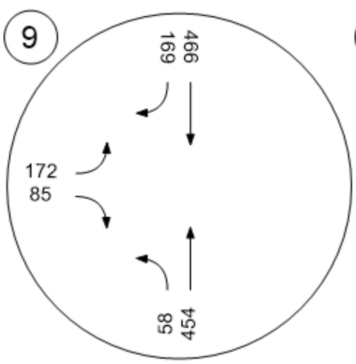


Jean Nicholas Road at Elliot

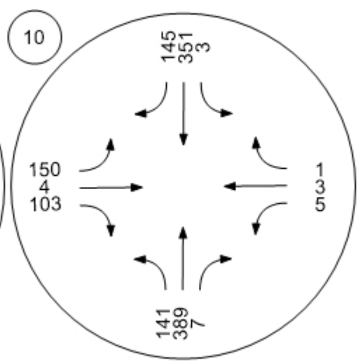


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 9: E+A+C AM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Left	0.704	20.7	C
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	1.075	71.5	E
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	0.863	32.3	C
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.934	29.0	C
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	NB Left	1.602	214.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.959	40.5	D
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	27.7	D
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.000	10.6	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		17.0	C
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		22.9	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	323	51	0	0	49	8	2	11	98	0	38	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	755	3	0	1149	11	3	12	102	8	38	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	211	1	0	321	3	1	3	28	2	11	1
Total Analysis Volume [veh/h]	362	843	3	0	1282	12	3	13	114	9	42	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	38	28	0	33	23	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	53	0	41	41	15	15	15	15
g / C, Green / Cycle	0.15	0.66	0.00	0.51	0.51	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.12	0.50	0.00	0.40	0.01	0.02	0.08	0.06	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	766	1425	801	1425
c, Capacity [veh/h]	463	1111	0	1640	732	197	266	203	266
d1, Uniform Delay [s]	32.77	9.18	0.00	15.81	9.54	27.11	28.74	27.65	26.50
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.92	4.95	0.00	3.79	0.04	0.18	1.09	0.64	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

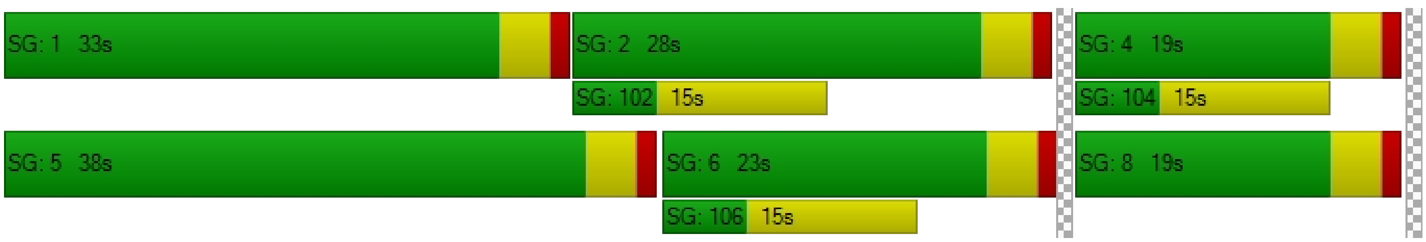
X, volume / capacity	0.78	0.76	0.00	0.78	0.02	0.08	0.43	0.25	0.01
d, Delay for Lane Group [s/veh]	35.68	14.12	0.00	19.60	9.58	27.28	29.83	28.29	26.51
Lane Group LOS	D	B	A	B	A	C	C	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.14	6.68	0.00	7.65	0.09	0.25	1.96	0.83	0.05
50th-Percentile Queue Length [ft]	78.59	167.06	0.00	191.27	2.13	6.37	49.03	20.86	1.17
95th-Percentile Queue Length [veh]	5.66	10.92	0.00	12.19	0.15	0.46	3.53	1.50	0.08
95th-Percentile Queue Length [ft]	141.47	273.04	0.00	304.68	3.83	11.46	88.25	37.56	2.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.68	14.12	14.12	0.00	19.60	9.58	27.28	27.28	29.83	28.29	28.29	26.51
Movement LOS	D	B	B	A	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.58			19.51			29.51			28.20		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	20.65											
Intersection LOS	C											
Intersection V/C	0.704											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	71.5
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.075

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	294	283	2	19	86	42	34	53	238	2	62	57
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	319	908	170	91	1081	99	74	68	270	185	74	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	251	47	25	299	27	20	19	75	51	20	32
Total Analysis Volume [veh/h]	352	1003	188	101	1194	109	82	75	298	204	82	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	56	0	18	45	0	27	28	0	18	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	57	57	9	41	41	8	24	24	14	30	30
g / C, Green / Cycle	0.21	0.47	0.47	0.08	0.34	0.34	0.06	0.20	0.20	0.12	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.22	0.31	0.13	0.06	0.37	0.08	0.05	0.04	0.21	0.13	0.05	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	333	1515	676	123	1096	489	102	332	283	186	421	358
d1, Uniform Delay [s]	47.51	24.15	19.08	54.58	39.41	28.02	55.42	40.38	48.11	53.00	35.39	37.01
k, delay calibration	0.48	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.47	0.47	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	64.73	2.29	1.02	12.66	55.01	1.05	13.42	0.34	67.21	91.10	0.22	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

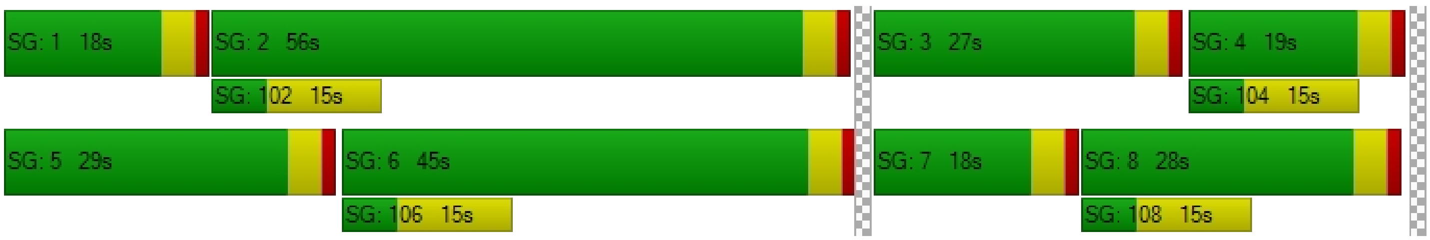
X, volume / capacity	1.06	0.66	0.28	0.82	1.09	0.22	0.80	0.23	1.05	1.09	0.19	0.36
d, Delay for Lane Group [s/veh]	112.23	26.44	20.10	67.24	94.42	29.08	68.84	40.72	115.32	144.10	35.61	37.62
Lane Group LOS	F	C	C	E	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	15.19	10.03	3.02	3.27	22.92	2.20	2.83	1.90	13.67	10.18	1.87	3.09
50th-Percentile Queue Length [ft]	379.72	250.75	75.49	81.68	572.99	55.03	70.72	47.53	341.72	254.55	46.72	77.31
95th-Percentile Queue Length [veh]	22.25	15.22	5.43	5.88	32.56	3.96	5.09	3.42	20.29	16.00	3.36	5.57
95th-Percentile Queue Length [ft]	556.30	380.60	135.87	147.02	813.92	99.06	127.30	85.55	507.33	399.90	84.10	139.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	112.23	26.44	20.10	67.24	94.42	29.08	68.84	40.72	115.32	144.10	35.61	37.62
Movement LOS	F	C	C	E	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	45.24			87.39			94.65			89.57		
Approach LOS	D			F			F			F		
d_I, Intersection Delay [s/veh]	71.45											
Intersection LOS	E											
Intersection V/C	1.075											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	379	2	114	212	0	0	0	0	2	0	200
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1108	79	162	1376	12	18	10	12	152	21	279
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	308	22	45	382	3	5	3	3	42	6	78
Total Analysis Volume [veh/h]	26	1231	88	180	1529	13	20	11	13	169	23	310
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	41	0	11	41	0	11	32	0	16	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	50	50	7	53	53	3	15	15	12	24	24
g / C, Green / Cycle	0.04	0.50	0.50	0.07	0.53	0.53	0.03	0.15	0.15	0.12	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.02	0.39	0.06	0.06	0.48	0.01	0.01	0.01	0.01	0.11	0.01	0.22
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	59	1591	710	220	1698	758	50	252	214	192	402	342
d1, Uniform Delay [s]	47.18	20.50	13.43	45.90	21.05	11.07	47.60	36.38	36.47	43.31	29.33	36.97
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.31	0.11	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.99	3.73	0.36	7.39	8.11	0.04	5.20	0.07	0.12	27.72	0.06	12.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

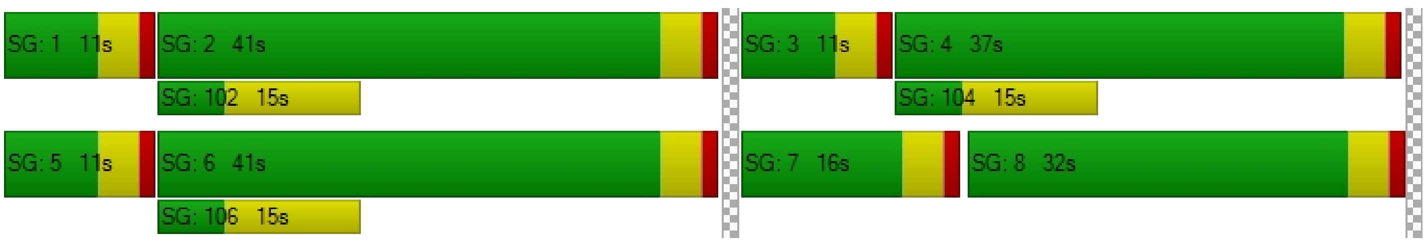
X, volume / capacity	0.44	0.77	0.12	0.82	0.90	0.02	0.40	0.04	0.06	0.88	0.06	0.91
d, Delay for Lane Group [s/veh]	52.17	24.24	13.78	53.29	29.16	11.11	52.80	36.45	36.59	71.03	29.39	49.34
Lane Group LOS	D	C	B	D	C	B	D	D	D	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.68	10.73	1.00	2.31	15.05	0.13	0.56	0.24	0.28	5.56	0.43	8.41
50th-Percentile Queue Length [ft]	17.10	268.30	24.95	57.76	376.16	3.15	14.09	5.93	7.05	138.97	10.80	210.16
95th-Percentile Queue Length [veh]	1.23	16.10	1.80	4.16	21.41	0.23	1.01	0.43	0.51	9.43	0.78	13.16
95th-Percentile Queue Length [ft]	30.78	402.61	44.92	103.96	535.20	5.68	25.36	10.67	12.70	235.64	19.45	329.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.17	24.24	13.78	53.29	29.16	11.11	52.80	36.45	36.59	71.03	29.39	49.34
Movement LOS	D	C	B	D	C	B	D	D	D	E	C	D
d_A, Approach Delay [s/veh]	24.09			31.55			43.92			55.73		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	32.28											
Intersection LOS	C											
Intersection V/C	0.863											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	29.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.934

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	301	0	0	169	45	80	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	988	4	6	1457	139	139	4	126	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	281	1	2	415	40	40	1	36	1	1	2
Total Analysis Volume [veh/h]	103	1125	5	7	1659	158	158	5	144	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	33	0	26	48	0	12	20	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	35	35	1	30	30	8	9	9	0	1	1
g / C, Green / Cycle	0.10	0.58	0.58	0.01	0.49	0.49	0.13	0.14	0.14	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.06	0.35	0.00	0.00	0.52	0.11	0.10	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	153	1836	820	22	1573	702	202	238	203	10	37	31
d1, Uniform Delay [s]	26.59	8.48	5.51	29.74	15.43	8.80	25.77	22.46	24.91	30.11	29.20	29.26
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.07	0.33	0.00	8.43	28.58	0.16	6.49	0.03	4.57	15.91	1.66	3.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

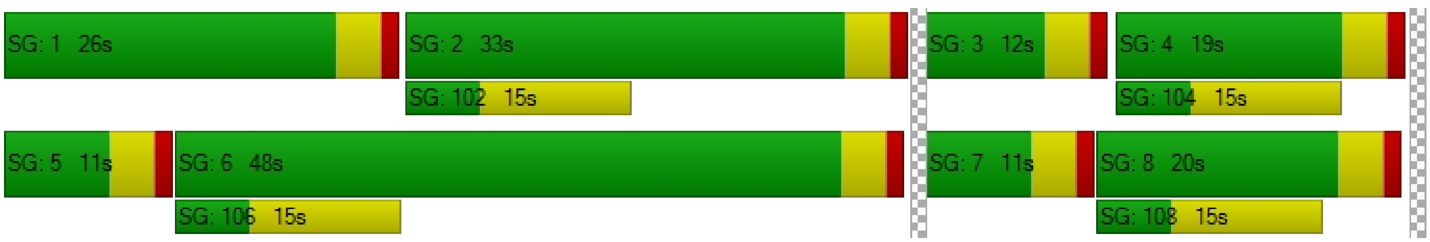
X, volume / capacity	0.67	0.61	0.01	0.32	1.05	0.22	0.78	0.02	0.71	0.30	0.14	0.22
d, Delay for Lane Group [s/veh]	31.66	8.81	5.51	38.18	44.01	8.96	32.26	22.50	29.48	46.02	30.86	32.83
Lane Group LOS	C	A	A	D	F	A	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.45	2.81	0.02	0.14	13.26	0.84	2.45	0.06	2.12	0.09	0.09	0.13
50th-Percentile Queue Length [ft]	36.33	70.18	0.41	3.48	331.57	20.88	61.14	1.51	52.90	2.15	2.13	3.17
95th-Percentile Queue Length [veh]	2.62	5.05	0.03	0.25	19.97	1.50	4.40	0.11	3.81	0.15	0.15	0.23
95th-Percentile Queue Length [ft]	65.40	126.33	0.74	6.27	499.18	37.58	110.05	2.72	95.22	3.87	3.84	5.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.66	8.81	5.51	38.18	44.01	8.96	32.26	22.50	29.48	46.02	30.86	32.83
Movement LOS	C	A	A	D	F	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	10.71			40.95			30.80			34.81		
Approach LOS	B			D			C			C		
d_I, Intersection Delay [s/veh]	28.97											
Intersection LOS	C											
Intersection V/C	0.934											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	214.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.602

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	59	136	0	45	74	51	86	3	22	0	3	80
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	432	816	99	67	1400	141	155	126	578	217	245	98
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	226	27	19	388	39	43	35	160	60	68	27
Total Analysis Volume [veh/h]	479	906	110	74	1554	156	172	140	642	241	272	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	26	34	0	32	40	0	28	38	38	16	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	51	51	7	36	36	15	34	34	12	31
g / C, Green / Cycle	0.18	0.43	0.43	0.06	0.30	0.30	0.12	0.28	0.28	0.10	0.26
(v / s)_i Volume / Saturation Flow Rate	0.30	0.31	0.31	0.05	0.49	0.11	0.11	0.08	0.45	0.15	0.24
s, saturation flow rate [veh/h]	1597	1676	1614	1597	3192	1425	1597	1676	1425	1597	1596
c, Capacity [veh/h]	293	715	688	93	961	429	198	473	402	160	412
d1, Uniform Delay [s]	49.00	28.49	28.63	55.82	41.93	32.91	51.60	33.74	43.08	54.00	43.39
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.39
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	301.32	6.18	6.64	14.31	282.28	2.38	10.93	0.35	280.16	258.38	24.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

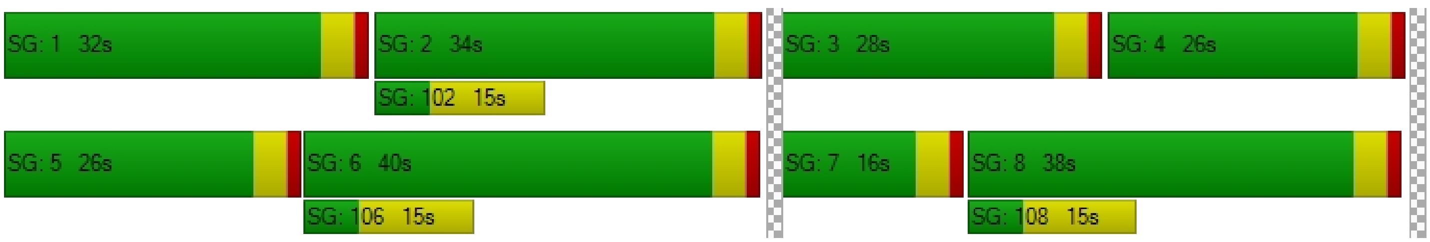
X, volume / capacity	1.64	0.72	0.73	0.80	1.62	0.36	0.87	0.30	1.60	1.51	0.92
d, Delay for Lane Group [s/veh]	350.32	34.67	35.27	70.13	324.22	35.28	62.52	34.09	323.24	312.38	67.98
Lane Group LOS	F	C	D	E	F	D	E	C	F	F	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	32.82	12.46	12.25	2.49	50.96	3.66	5.67	3.26	43.06	16.28	13.74
50th-Percentile Queue Length [ft]	820.51	311.52	306.37	62.33	1273.94	91.57	141.85	81.44	1076.46	407.03	343.47
95th-Percentile Queue Length [veh]	51.34	18.25	18.00	4.49	79.07	6.59	9.58	5.86	67.18	26.18	19.82
95th-Percentile Queue Length [ft]	1283.39	456.25	449.90	112.19	1976.84	164.83	239.51	146.58	1679.60	654.57	495.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	350.32	34.93	35.27	70.13	324.22	35.28	62.52	34.09	323.24	312.38	67.98	67.98
Movement LOS	F	C	D	E	F	D	E	C	F	F	E	E
d_A, Approach Delay [s/veh]	136.01			288.41			233.80			162.68		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	214.64											
Intersection LOS	F											
Intersection V/C	1.602											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.959

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	113	0	47	49	0	82
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1028	225	370	1813	389	335
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	276	60	99	487	105	90
Total Analysis Volume [veh/h]	1105	242	398	1949	418	360
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	38	0	41	79	41	41
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	44	44	32	80	32	32
g / C, Green / Cycle	0.37	0.37	0.26	0.67	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.35	0.17	0.25	0.61	0.13	0.25
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1172	523	423	2124	831	382
d1, Uniform Delay [s]	36.71	28.91	43.19	17.25	37.14	43.00
k, delay calibration	0.50	0.50	0.32	0.50	0.11	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.67	2.92	23.18	7.81	0.47	25.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

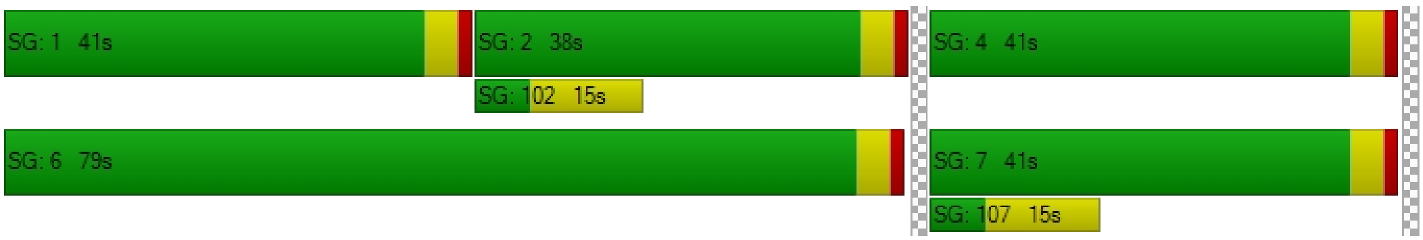
X, volume / capacity	0.94	0.46	0.94	0.92	0.50	0.94
d, Delay for Lane Group [s/veh]	52.38	31.84	66.37	25.05	37.62	68.42
Lane Group LOS	D	C	E	C	D	E
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	16.98	5.40	13.58	20.16	5.25	13.05
50th-Percentile Queue Length [ft]	424.49	135.05	339.41	504.07	131.23	326.37
95th-Percentile Queue Length [veh]	23.74	9.21	19.62	27.53	9.01	18.98
95th-Percentile Queue Length [ft]	593.44	230.35	490.48	688.17	225.16	474.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.38	31.84	66.37	25.05	37.62	68.42
Movement LOS	D	C	E	C	D	E
d_A, Approach Delay [s/veh]	48.69		32.06		51.87	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	40.51					
Intersection LOS	D					
Intersection V/C	0.959					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	27.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	325	0	0	398
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	82	329	3	92	401
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	28	112	1	31	137
Total Analysis Volume [veh/h]	3	112	448	4	125	546
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.18	0.00	0.00	0.11	0.01
d_M, Delay for Movement [s/veh]	27.74	12.49	0.00	0.00	8.66	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.75	0.75	0.00	0.00	0.38	0.00
95th-Percentile Queue Length [ft]	18.68	18.68	0.00	0.00	9.50	0.00
d_A, Approach Delay [s/veh]	12.89		0.00		1.61	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.07					
Intersection LOS	D					

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	49	0	0	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	46	0	0	81	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	0	51	81	0	14
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	0	17	27	0	5
Total Analysis Volume [veh/h]	62	0	69	109	0	19
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	7.45	0.00	10.58	8.66
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.14	0.00	0.06	0.06
95th-Percentile Queue Length [ft]	0.00	0.00	3.51	0.00	1.45	1.45
d_A, Approach Delay [s/veh]	0.00		2.89		8.66	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.62					
Intersection LOS	B					

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	17.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	160	91	23	40	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	279	244	123	158	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	104	91	46	59	37
Total Analysis Volume [veh/h]	119	416	364	183	235	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.05	2.16	2.16	3.47	3.08	3.09	1.17
95th-Percentile Queue Length [ft]	26.33	53.91	53.91	86.83	77.11	77.37	29.17
Approach Delay [s/veh]	15.31			18.43		17.15	
Approach LOS	C			C		C	
Intersection Delay [s/veh]	16.96						
Intersection LOS	C						

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	22.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	80	0	0	45	24	41	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	253	0	1	299	90	87	3	116	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	76	0	0	90	27	26	1	35	2	2	0
Total Analysis Volume [veh/h]	144	304	0	1	359	108	105	4	139	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.91	7.13	0.85	0.02	0.98	0.10
95th-Percentile Queue Length [ft]	172.80	178.13	21.32	0.60	24.51	2.62
Approach Delay [s/veh]	26.15	25.92	11.84			11.39
Approach LOS	D	D	B			B
Intersection Delay [s/veh]	22.86					
Intersection LOS	C					

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 10: E+A+C PM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	EB Right	1.663	219.2	F
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	1.539	208.1	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	1.316	152.0	F
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Thru	1.060	103.9	F
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.592	258.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.530	175.4	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.041	61.5	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.000	12.5	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		63.3	F
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		81.5	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	219.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.663

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	526	82	0	0	91	12	20	98	828	0	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	530	1268	3	2	937	13	22	100	829	3	62	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	354	1	1	261	4	6	28	231	1	17	0
Total Analysis Volume [veh/h]	592	1415	3	2	1046	15	25	112	925	3	69	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	58	0	11	43	0	0	51	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	61	0	39	39	47	47	47	47
g / C, Green / Cycle	0.18	0.50	0.00	0.33	0.33	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.19	0.85	0.00	0.33	0.01	0.15	0.65	0.04	0.00
s, saturation flow rate [veh/h]	3101	1676	1597	3192	1425	929	1425	1654	1425
c, Capacity [veh/h]	569	846	7	1039	464	399	557	678	557
d1, Uniform Delay [s]	48.97	29.70	59.55	40.46	27.58	26.00	36.54	23.25	22.27
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.15	309.42	22.54	29.53	0.13	0.51	305.17	0.07	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

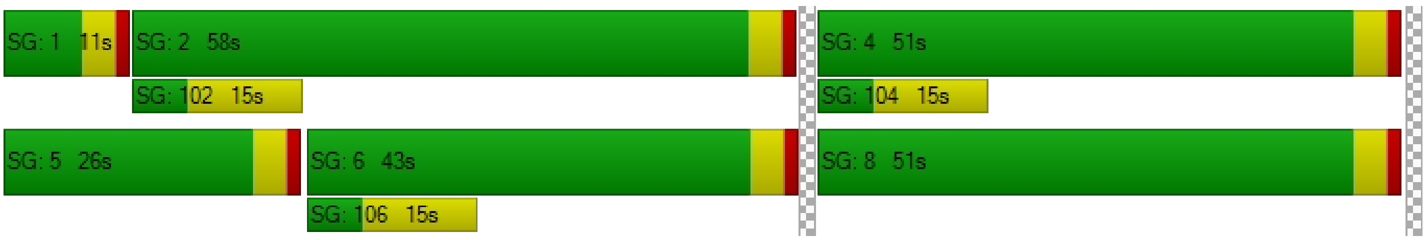
X, volume / capacity	1.04	1.68	0.30	1.01	0.03	0.34	1.66	0.11	0.00
d, Delay for Lane Group [s/veh]	78.12	339.12	82.09	69.99	27.70	26.51	341.71	23.32	22.27
Lane Group LOS	F	F	F	F	C	C	F	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	10.23	93.27	0.10	18.14	0.29	2.65	63.14	1.32	0.02
50th-Percentile Queue Length [ft]	255.67	2331.75	2.50	453.42	7.24	66.32	1578.39	33.05	0.44
95th-Percentile Queue Length [veh]	15.78	146.39	0.18	25.23	0.52	4.78	99.11	2.38	0.03
95th-Percentile Queue Length [ft]	394.44	3659.69	4.49	630.79	13.04	119.38	2477.83	59.49	0.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.12	339.12	339.12	82.09	69.99	27.70	26.51	26.51	341.71	23.32	23.32	22.27
Movement LOS	F	F	F	F	F	C	C	C	F	C	C	C
d_A, Approach Delay [s/veh]	262.25			69.41			301.05			23.31		
Approach LOS	F			E			F			C		
d_I, Intersection Delay [s/veh]	219.18											
Intersection LOS	F											
Intersection V/C	1.663											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	208.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.539

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	495	447	7	142	706	71	69	104	481	6	106	92
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	511	1608	146	177	1515	87	84	109	499	100	113	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	141	444	40	49	419	24	23	30	138	28	31	32
Total Analysis Volume [veh/h]	565	1777	161	196	1674	96	93	120	551	110	125	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	61	0	14	44	0	26	34	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	57	57	10	40	40	9	30	30	7	28	28
g / C, Green / Cycle	0.22	0.48	0.48	0.08	0.33	0.33	0.07	0.25	0.25	0.06	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.35	0.56	0.11	0.12	0.52	0.07	0.06	0.07	0.39	0.07	0.07	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	359	1519	678	133	1067	476	115	417	355	93	395	336
d1, Uniform Delay [s]	46.50	31.44	18.58	55.00	39.94	28.51	54.90	36.45	45.06	56.50	37.88	38.55
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.50	0.44	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	270.83	83.82	0.82	248.77	260.55	0.95	12.73	0.38	262.22	143.62	0.46	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.57	1.17	0.24	1.47	1.57	0.20	0.81	0.29	1.55	1.18	0.32	0.38
d, Delay for Lane Group [s/veh]	317.33	115.26	19.40	303.77	300.50	29.46	67.62	36.82	307.28	200.11	38.34	39.27
Lane Group LOS	F	F	B	F	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	36.93	36.54	2.52	12.98	52.82	1.95	3.18	2.90	36.31	6.47	3.01	3.17
50th-Percentile Queue Length [ft]	923.14	913.42	62.90	324.57	1320.53	48.77	79.39	72.60	907.68	161.75	75.19	79.33
95th-Percentile Queue Length [veh]	57.29	52.01	4.53	21.25	81.62	3.51	5.72	5.23	56.57	11.16	5.41	5.71
95th-Percentile Queue Length [ft]	1432.27	1300.23	113.22	531.36	2040.57	87.78	142.91	130.69	1414.17	279.01	135.35	142.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	317.33	115.26	19.40	303.77	300.50	29.46	67.62	36.82	307.28	200.11	38.34	39.27
Movement LOS	F	F	B	F	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	154.71			287.59			235.63			87.55		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	208.06											
Intersection LOS	F											
Intersection V/C	1.539											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	152.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.316

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	618	10	416	777	0	0	0	0	9	0	331
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1873	188	502	1710	8	6	15	25	131	27	391
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	520	52	139	475	2	2	4	7	36	8	109
Total Analysis Volume [veh/h]	27	2081	209	558	1900	9	7	17	28	146	30	434
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	59	0	20	68	0	11	29	0	12	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO

Version 4.00-03

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	55	55	16	67	67	1	25	25	8	31	31
g / C, Green / Cycle	0.03	0.46	0.46	0.13	0.56	0.56	0.01	0.21	0.21	0.07	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.02	0.65	0.15	0.18	0.60	0.01	0.00	0.01	0.02	0.09	0.02	0.30
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	55	1468	655	413	1783	796	19	347	295	106	438	372
d1, Uniform Delay [s]	56.88	32.40	20.51	52.00	26.48	11.76	58.81	38.14	38.51	56.00	33.34	44.33
k, delay calibration	0.11	0.50	0.50	0.19	0.50	0.50	0.11	0.11	0.11	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.53	191.95	1.28	163.37	41.23	0.03	10.89	0.06	0.14	215.55	0.07	99.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	1.42	0.32	1.35	1.07	0.01	0.36	0.05	0.10	1.37	0.07	1.17
d, Delay for Lane Group [s/veh]	63.41	224.35	21.79	215.37	67.71	11.79	69.70	38.20	38.65	271.54	33.41	144.30
Lane Group LOS	E	F	C	F	F	B	E	D	D	F	C	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.87	58.18	3.66	15.31	31.86	0.10	0.27	0.41	0.69	9.59	0.67	21.28
50th-Percentile Queue Length [ft]	21.84	1454.43	91.60	382.82	796.51	2.57	6.79	10.34	17.25	239.85	16.78	532.03
95th-Percentile Queue Length [veh]	1.57	87.90	6.60	24.41	43.30	0.19	0.49	0.74	1.24	16.06	1.21	31.46
95th-Percentile Queue Length [ft]	39.31	2197.45	164.88	610.18	1082.46	4.63	12.22	18.61	31.05	401.60	30.21	786.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.41	224.35	21.79	215.37	67.71	11.79	69.70	38.20	38.65	271.54	33.41	144.30
Movement LOS	E	F	C	F	F	B	E	D	D	F	C	F
d_A, Approach Delay [s/veh]	204.21			100.91			42.68			169.30		
Approach LOS	F			F			D			F		
d_I, Intersection Delay [s/veh]	151.96											
Intersection LOS	F											
Intersection V/C	1.316											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	103.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.060

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	495	0	0	619	167	133	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	1827	5	2	1514	214	225	1	89	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	520	1	1	431	61	64	0	25	1	1	3
Total Analysis Volume [veh/h]	180	2081	6	2	1724	244	256	1	101	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO

Version 4.00-03

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	40	40	0	30	30	14	14	14	1	2	2
g / C, Green / Cycle	0.14	0.56	0.56	0.00	0.42	0.42	0.19	0.20	0.20	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.65	0.00	0.00	0.54	0.17	0.16	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	223	1778	794	7	1346	601	304	339	288	18	38	33
d1, Uniform Delay [s]	29.67	15.75	7.00	35.31	20.57	14.35	27.74	22.66	24.37	34.88	33.99	34.22
k, delay calibration	0.11	0.28	0.11	0.11	0.19	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.75	80.32	0.00	22.12	128.59	0.44	6.21	0.00	0.73	9.86	0.55	5.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	1.17	0.01	0.29	1.28	0.41	0.84	0.00	0.35	0.33	0.05	0.34
d, Delay for Lane Group [s/veh]	36.42	96.07	7.01	57.42	149.16	14.79	33.95	22.66	25.10	44.75	34.55	40.13
Lane Group LOS	D	F	A	E	F	B	C	C	C	D	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.05	29.28	0.03	0.07	32.61	2.24	4.51	0.01	1.46	0.15	0.04	0.24
50th-Percentile Queue Length [ft]	76.16	731.98	0.73	1.83	815.34	56.06	112.87	0.33	36.41	3.76	0.97	5.88
95th-Percentile Queue Length [veh]	5.48	42.86	0.05	0.13	49.11	4.04	8.00	0.02	2.62	0.27	0.07	0.42
95th-Percentile Queue Length [ft]	137.09	1071.46	1.31	3.29	1227.63	100.92	199.99	0.59	65.54	6.78	1.74	10.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.42	96.07	7.01	57.42	149.16	14.79	33.95	22.66	25.10	44.75	34.55	40.13
Movement LOS	D	F	A	E	F	B	C	C	C	D	C	D
d_A, Approach Delay [s/veh]	91.10			132.43			31.42			41.00		
Approach LOS	F			F			C			D		
d_I, Intersection Delay [s/veh]	103.91											
Intersection LOS	F											
Intersection V/C	1.060											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	258.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.592

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	45	210	0	167	268	188	156	8	72	0	8	133
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	499	1612	208	196	1133	251	233	189	634	176	146	154
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	447	58	54	314	70	65	52	176	49	41	43
Total Analysis Volume [veh/h]	554	1789	231	218	1257	279	259	210	704	195	162	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	51	0	15	36	0	23	41	41	13	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	47	47	11	32	32	19	37	37	9	27
g / C, Green / Cycle	0.22	0.39	0.39	0.09	0.27	0.27	0.16	0.31	0.31	0.08	0.22
(v / s)_i Volume / Saturation Flow Rate	0.35	0.60	0.63	0.14	0.39	0.20	0.16	0.13	0.49	0.12	0.22
s, saturation flow rate [veh/h]	1597	1676	1611	1597	3192	1425	1597	1676	1425	1597	1537
c, Capacity [veh/h]	346	659	633	147	856	382	253	514	437	120	343
d1, Uniform Delay [s]	47.01	36.43	36.43	54.50	43.92	39.96	50.50	33.00	41.62	55.50	46.21
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.44	0.11	0.50	0.50	0.42
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	283.83	247.53	275.18	250.85	217.06	11.62	59.46	0.52	285.86	314.39	37.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

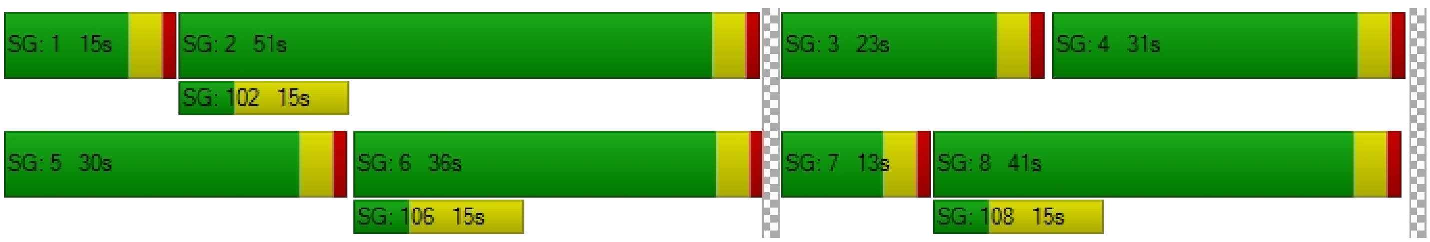
X, volume / capacity	1.60	1.53	1.60	1.48	1.47	0.73	1.02	0.41	1.61	1.62	0.97
d, Delay for Lane Group [s/veh]	330.84	283.97	311.61	305.35	260.98	51.58	109.96	33.52	327.48	369.89	83.83
Lane Group LOS	F	F	F	F	F	D	F	C	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	37.03	62.92	65.34	14.48	37.74	8.31	11.75	4.93	47.40	14.14	13.36
50th-Percentile Queue Length [ft]	925.82	1572.89	1633.43	361.88	943.62	207.75	293.69	123.15	1185.09	353.44	333.93
95th-Percentile Queue Length [veh]	57.58	96.39	101.15	23.48	57.85	13.04	17.57	8.57	74.01	23.20	19.35
95th-Percentile Queue Length [ft]	1439.53	2409.85	2528.78	586.89	1446.34	325.94	439.20	214.15	1850.32	579.92	483.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	330.84	296.00	311.61	305.35	260.98	51.58	109.96	33.52	327.48	369.89	83.83	83.83
Movement LOS	F	F	F	F	F	D	F	C	F	F	F	F
d_A, Approach Delay [s/veh]	304.90			233.18			226.82			189.48		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	258.74											
Intersection LOS	F											
Intersection V/C	1.592											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized		Delay (sec / veh):	175.4
Analysis Method:	HCM 2010		Level Of Service:	F
Analysis Period:	15 minutes		Volume to Capacity (v/c):	1.530

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	116	0	174	166	0	139
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1724	408	501	1431	316	608
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	463	110	135	385	85	163
Total Analysis Volume [veh/h]	1854	439	539	1539	340	654
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	49	0	31	80	40	40
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	27	76	36	36
g / C, Green / Cycle	0.37	0.37	0.23	0.63	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.58	0.31	0.34	0.48	0.11	0.46
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1196	534	360	2022	930	427
d1, Uniform Delay [s]	37.49	33.88	46.46	15.57	33.01	41.98
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	251.58	13.34	238.63	2.77	0.24	250.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.55	0.82	1.50	0.76	0.37	1.53
d, Delay for Lane Group [s/veh]	289.07	47.22	285.09	18.33	33.25	292.14
Lane Group LOS	F	D	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	57.88	12.64	33.96	12.96	3.93	42.18
50th-Percentile Queue Length [ft]	1447.05	316.12	848.90	323.95	98.36	1054.54
95th-Percentile Queue Length [veh]	89.23	18.48	52.37	18.86	7.08	65.35
95th-Percentile Queue Length [ft]	2230.72	461.91	1309.16	471.54	177.05	1633.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	289.07	47.22	285.09	18.33	33.25	292.14
Movement LOS	F	D	F	B	C	F
d_A, Approach Delay [s/veh]	242.77		87.52		203.59	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	175.38					
Intersection LOS	F					
Intersection V/C	1.530					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	61.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	654	0	0	672
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	85	658	1	28	677
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	29	224	0	10	231
Total Analysis Volume [veh/h]	3	116	896	1	38	922
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.34	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	61.54	22.67	0.00	0.00	10.01	0.00
Movement LOS	F	C	A	A	B	A
95th-Percentile Queue Length [veh]	1.74	1.74	0.00	0.00	0.16	0.00
95th-Percentile Queue Length [ft]	43.52	43.52	0.00	0.00	3.96	0.00
d_A, Approach Delay [s/veh]	23.65		0.00		0.40	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.62					
Intersection LOS	F					

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	12.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	37	0	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	171	0	0	137	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	0	38	137	0	34
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	0	13	46	0	11
Total Analysis Volume [veh/h]	231	0	51	185	0	46
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.00	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	7.80	0.00	12.50	9.72
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.12	0.00	0.18	0.18
95th-Percentile Queue Length [ft]	0.00	0.00	2.97	0.00	4.52	4.52
d_A, Approach Delay [s/veh]	0.00		1.69		9.72	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.65					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	63.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	265	333	83	66	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	454	466	169	172	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	169	174	63	64	32
Total Analysis Volume [veh/h]	86	677	694	252	256	127
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.81	7.23	7.23	16.85	15.38	5.32	1.32
95th-Percentile Queue Length [ft]	20.26	180.65	180.65	421.29	384.44	133.05	32.96
Approach Delay [s/veh]	35.39			100.02		28.17	
Approach LOS	E			F		D	
Intersection Delay [s/veh]	63.29						
Intersection LOS	F						

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	81.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	133	0	0	167	87	70	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	389	7	3	351	145	150	4	103	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	117	2	1	105	44	45	1	31	2	1	0
Total Analysis Volume [veh/h]	169	468	8	4	422	174	180	5	124	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

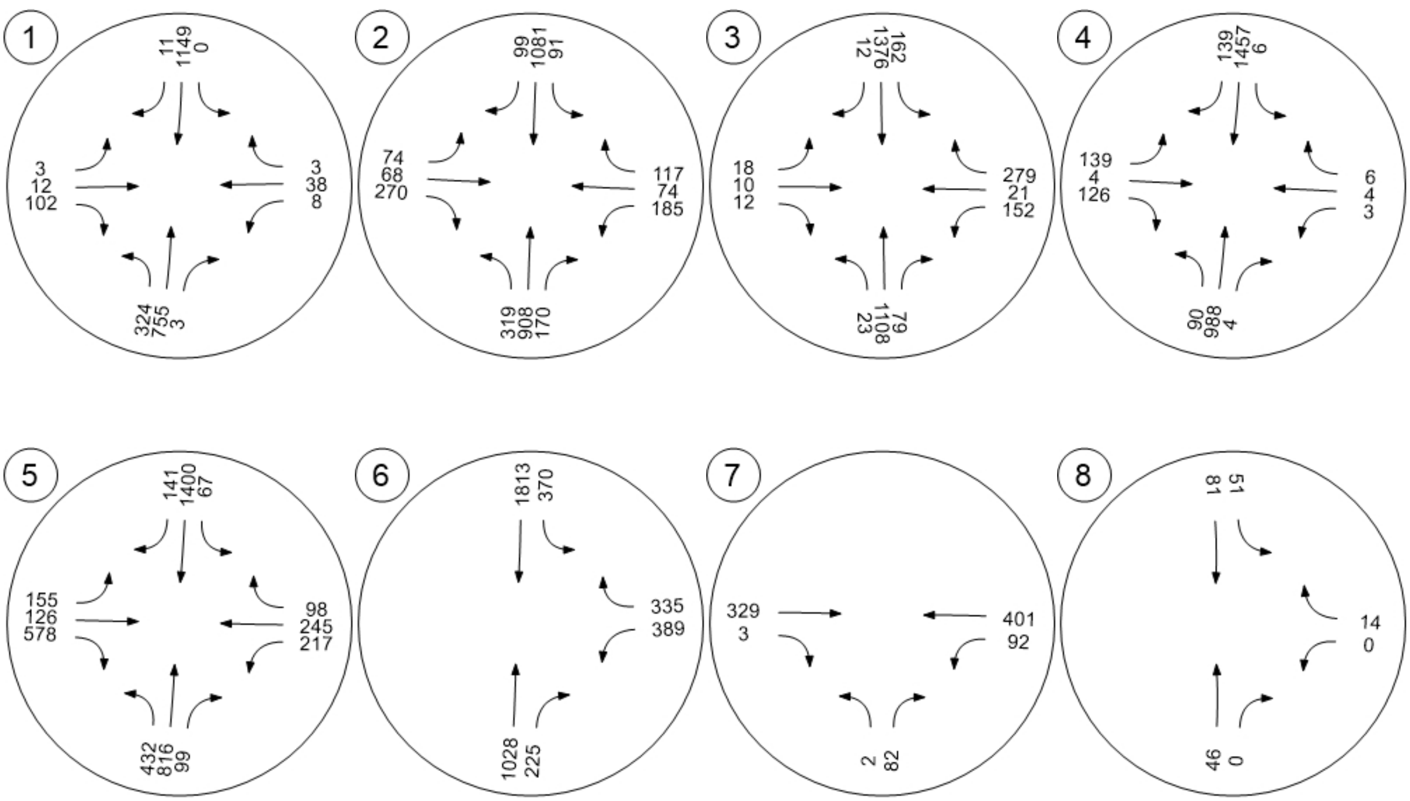
Intersection Settings

Lanes

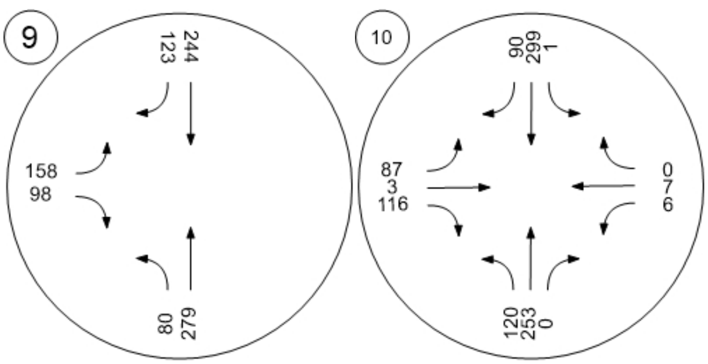
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	22.54	17.04	1.96	0.03	0.93	0.08
95th-Percentile Queue Length [ft]	563.55	426.01	48.88	0.81	23.27	2.05
Approach Delay [s/veh]	118.44	77.54	14.48			11.96
Approach LOS	F	F	B			B
Intersection Delay [s/veh]	81.49					
Intersection LOS	F					

Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+A+C AM_new.pdf

Scenario 9: E+A+C AM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Left	0.704	20.5	C
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	1.075	71.5	E
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	0.863	32.3	C
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	NB Left	0.819	19.6	B
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	NB Left	1.602	214.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.959	40.5	D
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	27.7	D
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.252	25.4	D
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		17.0	C
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		22.9	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	323	51	0	0	49	8	2	11	98	0	38	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	755	3	0	1149	11	3	12	102	8	38	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	211	1	0	321	3	1	3	28	2	11	1
Total Analysis Volume [veh/h]	362	843	3	0	1282	12	3	13	114	9	42	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	42	23	0	38	19	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	53	0	41	41	15	15	15	15
g / C, Green / Cycle	0.15	0.66	0.00	0.51	0.51	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.12	0.50	0.00	0.40	0.01	0.02	0.08	0.06	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	770	1425	805	1425
c, Capacity [veh/h]	464	1113	0	1644	734	196	264	202	264
d1, Uniform Delay [s]	32.75	9.09	0.00	15.73	9.49	27.20	28.85	27.75	26.60
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.89	4.89	0.00	3.74	0.04	0.18	1.11	0.65	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

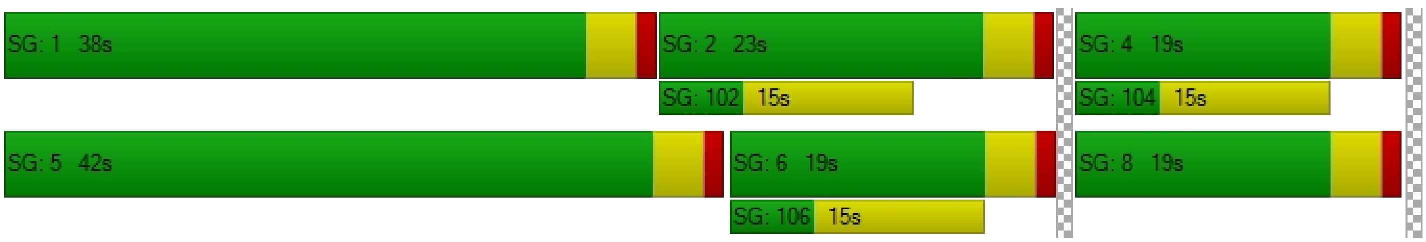
X, volume / capacity	0.78	0.76	0.00	0.78	0.02	0.08	0.43	0.25	0.01
d, Delay for Lane Group [s/veh]	35.64	13.98	0.00	19.47	9.53	27.38	29.96	28.39	26.61
Lane Group LOS	D	B	A	B	A	C	C	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.14	6.64	0.00	7.63	0.08	0.26	1.96	0.84	0.05
50th-Percentile Queue Length [ft]	78.54	165.98	0.00	190.71	2.12	6.38	49.11	20.89	1.17
95th-Percentile Queue Length [veh]	5.65	10.86	0.00	12.16	0.15	0.46	3.54	1.50	0.08
95th-Percentile Queue Length [ft]	141.37	271.62	0.00	303.95	3.82	11.48	88.40	37.60	2.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.64	13.98	13.98	0.00	19.47	9.53	27.38	27.38	29.96	28.39	28.39	26.61
Movement LOS	D	B	B	A	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.47			19.37			29.64			28.29		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	20.55											
Intersection LOS	C											
Intersection V/C	0.704											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	71.5
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.075

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	294	283	2	19	86	42	34	53	238	2	62	57
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	319	908	170	91	1081	99	74	68	270	185	74	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	251	47	25	299	27	20	19	75	51	20	32
Total Analysis Volume [veh/h]	352	1003	188	101	1194	109	82	75	298	204	82	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	56	0	18	45	0	27	28	0	18	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	57	57	9	41	41	8	24	24	14	30	30
g / C, Green / Cycle	0.21	0.47	0.47	0.08	0.34	0.34	0.06	0.20	0.20	0.12	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.22	0.31	0.13	0.06	0.37	0.08	0.05	0.04	0.21	0.13	0.05	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	333	1515	676	123	1096	489	102	332	283	186	421	358
d1, Uniform Delay [s]	47.51	24.15	19.08	54.58	39.41	28.02	55.42	40.38	48.11	53.00	35.39	37.01
k, delay calibration	0.48	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.47	0.47	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	64.73	2.29	1.02	12.66	55.01	1.05	13.42	0.34	67.21	91.10	0.22	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

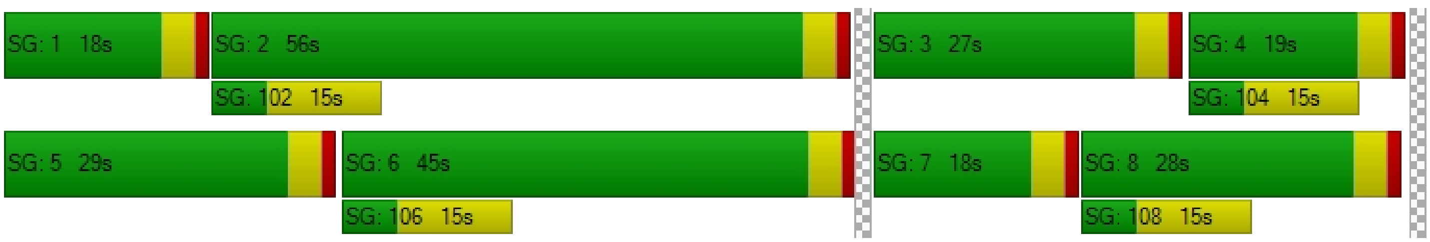
X, volume / capacity	1.06	0.66	0.28	0.82	1.09	0.22	0.80	0.23	1.05	1.09	0.19	0.36
d, Delay for Lane Group [s/veh]	112.23	26.44	20.10	67.24	94.42	29.08	68.84	40.72	115.32	144.10	35.61	37.62
Lane Group LOS	F	C	C	E	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	15.19	10.03	3.02	3.27	22.92	2.20	2.83	1.90	13.67	10.18	1.87	3.09
50th-Percentile Queue Length [ft]	379.72	250.75	75.49	81.68	572.99	55.03	70.72	47.53	341.72	254.55	46.72	77.31
95th-Percentile Queue Length [veh]	22.25	15.22	5.43	5.88	32.56	3.96	5.09	3.42	20.29	16.00	3.36	5.57
95th-Percentile Queue Length [ft]	556.30	380.60	135.87	147.02	813.92	99.06	127.30	85.55	507.33	399.90	84.10	139.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	112.23	26.44	20.10	67.24	94.42	29.08	68.84	40.72	115.32	144.10	35.61	37.62
Movement LOS	F	C	C	E	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	45.24			87.39			94.65			89.57		
Approach LOS	D			F			F			F		
d_I, Intersection Delay [s/veh]	71.45											
Intersection LOS	E											
Intersection V/C	1.075											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	379	2	114	212	0	0	0	0	2	0	200
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1108	79	162	1376	12	18	10	12	152	21	279
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	308	22	45	382	3	5	3	3	42	6	78
Total Analysis Volume [veh/h]	26	1231	88	180	1529	13	20	11	13	169	23	310
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	41	0	11	41	0	11	32	0	16	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	50	50	7	53	53	3	15	15	12	24	24
g / C, Green / Cycle	0.04	0.50	0.50	0.07	0.53	0.53	0.03	0.15	0.15	0.12	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.02	0.39	0.06	0.06	0.48	0.01	0.01	0.01	0.01	0.11	0.01	0.22
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	59	1591	710	220	1698	758	50	252	214	192	402	342
d1, Uniform Delay [s]	47.18	20.50	13.43	45.90	21.05	11.07	47.60	36.38	36.47	43.31	29.33	36.97
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.31	0.11	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.99	3.73	0.36	7.39	8.11	0.04	5.20	0.07	0.12	27.72	0.06	12.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

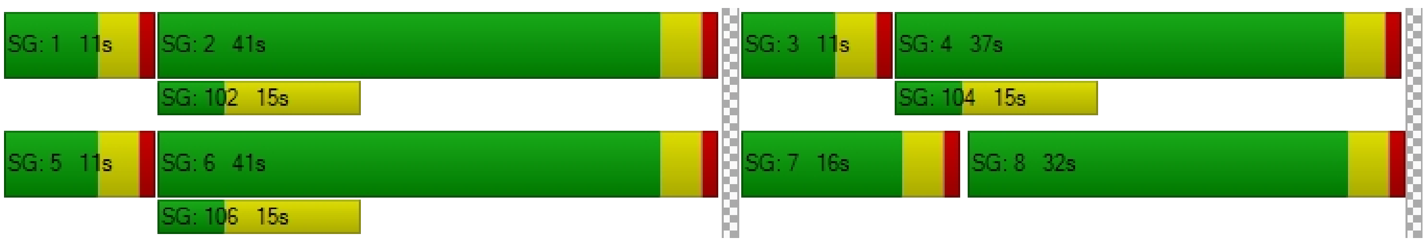
X, volume / capacity	0.44	0.77	0.12	0.82	0.90	0.02	0.40	0.04	0.06	0.88	0.06	0.91
d, Delay for Lane Group [s/veh]	52.17	24.24	13.78	53.29	29.16	11.11	52.80	36.45	36.59	71.03	29.39	49.34
Lane Group LOS	D	C	B	D	C	B	D	D	D	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.68	10.73	1.00	2.31	15.05	0.13	0.56	0.24	0.28	5.56	0.43	8.41
50th-Percentile Queue Length [ft]	17.10	268.30	24.95	57.76	376.16	3.15	14.09	5.93	7.05	138.97	10.80	210.16
95th-Percentile Queue Length [veh]	1.23	16.10	1.80	4.16	21.41	0.23	1.01	0.43	0.51	9.43	0.78	13.16
95th-Percentile Queue Length [ft]	30.78	402.61	44.92	103.96	535.20	5.68	25.36	10.67	12.70	235.64	19.45	329.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.17	24.24	13.78	53.29	29.16	11.11	52.80	36.45	36.59	71.03	29.39	49.34
Movement LOS	D	C	B	D	C	B	D	D	D	E	C	D
d_A, Approach Delay [s/veh]	24.09			31.55			43.92			55.73		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	32.28											
Intersection LOS	C											
Intersection V/C	0.863											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.819

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	301	0	0	169	45	80	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	988	4	6	1457	139	139	4	126	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	281	1	2	415	40	40	1	36	1	1	2
Total Analysis Volume [veh/h]	103	1125	5	7	1659	158	158	5	144	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	41	0	11	40	0	29	37	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	69	69	1	62	62	12	13	13	1	2	2
g / C, Green / Cycle	0.08	0.69	0.69	0.01	0.62	0.62	0.12	0.13	0.13	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.06	0.35	0.00	0.00	0.52	0.11	0.10	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	127	2197	981	21	1985	886	189	223	189	10	34	29
d1, Uniform Delay [s]	45.34	7.51	4.88	48.96	14.89	8.05	43.15	37.75	41.86	49.51	48.15	48.24
k, delay calibration	0.22	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.89	0.86	0.01	9.27	4.36	0.44	9.27	0.04	6.20	16.26	1.92	4.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

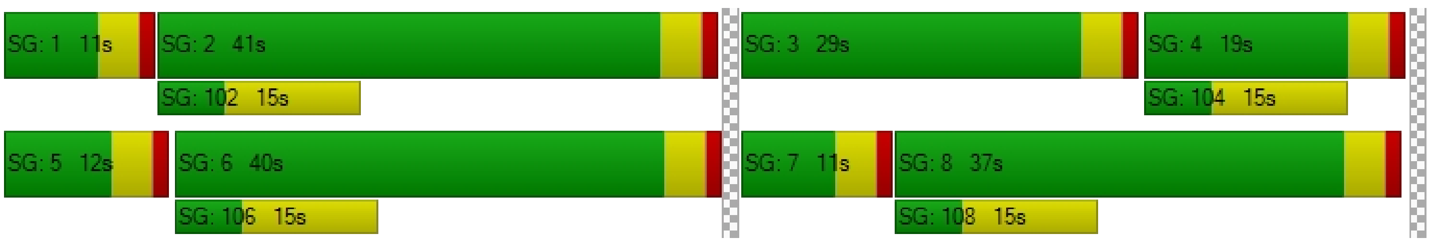
X, volume / capacity	0.81	0.51	0.01	0.34	0.84	0.18	0.84	0.02	0.76	0.30	0.15	0.24
d, Delay for Lane Group [s/veh]	67.24	8.37	4.89	58.23	19.25	8.49	52.42	37.79	48.06	65.77	50.07	52.40
Lane Group LOS	E	A	A	E	B	A	D	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.14	4.28	0.03	0.22	12.37	1.26	4.28	0.11	3.73	0.12	0.14	0.20
50th-Percentile Queue Length [ft]	78.62	106.91	0.64	5.45	309.19	31.43	106.94	2.72	93.13	2.98	3.51	5.12
95th-Percentile Queue Length [veh]	5.66	7.67	0.05	0.39	18.14	2.26	7.67	0.20	6.71	0.21	0.25	0.37
95th-Percentile Queue Length [ft]	141.52	191.69	1.16	9.81	453.38	56.58	191.74	4.90	167.63	5.36	6.32	9.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.24	8.37	4.89	58.23	19.25	8.49	52.42	37.79	48.06	65.77	50.07	52.40
Movement LOS	E	A	A	E	B	A	D	D	D	E	D	D
d_A, Approach Delay [s/veh]	13.27			18.47			50.14			54.30		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	19.61											
Intersection LOS	B											
Intersection V/C	0.819											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	214.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.602

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	59	136	0	45	74	51	86	3	22	0	3	80
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	432	816	99	67	1400	141	155	126	578	217	245	98
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	226	27	19	388	39	43	35	160	60	68	27
Total Analysis Volume [veh/h]	479	906	110	74	1554	156	172	140	642	241	272	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	26	34	0	32	40	0	28	38	38	16	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	51	51	7	36	36	15	34	34	12	31
g / C, Green / Cycle	0.18	0.43	0.43	0.06	0.30	0.30	0.12	0.28	0.28	0.10	0.26
(v / s)_i Volume / Saturation Flow Rate	0.30	0.31	0.31	0.05	0.49	0.11	0.11	0.08	0.45	0.15	0.24
s, saturation flow rate [veh/h]	1597	1676	1614	1597	3192	1425	1597	1676	1425	1597	1596
c, Capacity [veh/h]	293	715	688	93	961	429	198	473	402	160	412
d1, Uniform Delay [s]	49.00	28.49	28.63	55.82	41.93	32.91	51.60	33.74	43.08	54.00	43.39
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.39
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	301.32	6.18	6.64	14.31	282.28	2.38	10.93	0.35	280.16	258.38	24.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

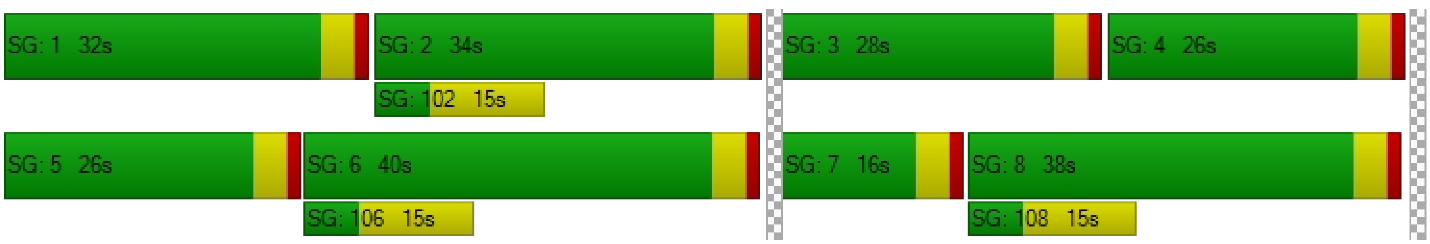
X, volume / capacity	1.64	0.72	0.73	0.80	1.62	0.36	0.87	0.30	1.60	1.51	0.92
d, Delay for Lane Group [s/veh]	350.32	34.67	35.27	70.13	324.22	35.28	62.52	34.09	323.24	312.38	67.98
Lane Group LOS	F	C	D	E	F	D	E	C	F	F	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	32.82	12.46	12.25	2.49	50.96	3.66	5.67	3.26	43.06	16.28	13.74
50th-Percentile Queue Length [ft]	820.51	311.52	306.37	62.33	1273.94	91.57	141.85	81.44	1076.46	407.03	343.47
95th-Percentile Queue Length [veh]	51.34	18.25	18.00	4.49	79.07	6.59	9.58	5.86	67.18	26.18	19.82
95th-Percentile Queue Length [ft]	1283.39	456.25	449.90	112.19	1976.84	164.83	239.51	146.58	1679.60	654.57	495.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	350.32	34.93	35.27	70.13	324.22	35.28	62.52	34.09	323.24	312.38	67.98	67.98
Movement LOS	F	C	D	E	F	D	E	C	F	F	E	E
d_A, Approach Delay [s/veh]	136.01			288.41			233.80			162.68		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	214.64											
Intersection LOS	F											
Intersection V/C	1.602											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.959

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	113	0	47	49	0	82
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1028	225	370	1813	389	335
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	276	60	99	487	105	90
Total Analysis Volume [veh/h]	1105	242	398	1949	418	360
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	38	0	41	79	41	41
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	44	44	32	80	32	32
g / C, Green / Cycle	0.37	0.37	0.26	0.67	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.35	0.17	0.25	0.61	0.13	0.25
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1172	523	423	2124	831	382
d1, Uniform Delay [s]	36.71	28.91	43.19	17.25	37.14	43.00
k, delay calibration	0.50	0.50	0.32	0.50	0.11	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.67	2.92	23.18	7.81	0.47	25.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

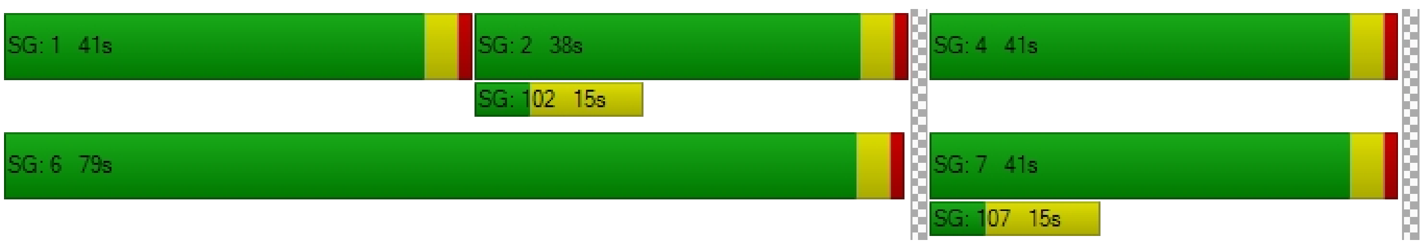
X, volume / capacity	0.94	0.46	0.94	0.92	0.50	0.94
d, Delay for Lane Group [s/veh]	52.38	31.84	66.37	25.05	37.62	68.42
Lane Group LOS	D	C	E	C	D	E
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	16.98	5.40	13.58	20.16	5.25	13.05
50th-Percentile Queue Length [ft]	424.49	135.05	339.41	504.07	131.23	326.37
95th-Percentile Queue Length [veh]	23.74	9.21	19.62	27.53	9.01	18.98
95th-Percentile Queue Length [ft]	593.44	230.35	490.48	688.17	225.16	474.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.38	31.84	66.37	25.05	37.62	68.42
Movement LOS	D	C	E	C	D	E
d_A, Approach Delay [s/veh]	48.69		32.06		51.87	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	40.51					
Intersection LOS	D					
Intersection V/C	0.959					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	27.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	325	0	0	398
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	82	329	3	92	401
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	28	112	1	31	137
Total Analysis Volume [veh/h]	3	112	448	4	125	546
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.18	0.00	0.00	0.11	0.01
d_M, Delay for Movement [s/veh]	27.74	12.49	0.00	0.00	8.66	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.75	0.75	0.00	0.00	0.38	0.00
95th-Percentile Queue Length [ft]	18.68	18.68	0.00	0.00	9.50	0.00
d_A, Approach Delay [s/veh]	12.89		0.00		1.61	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.07					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	25.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.252

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	189	13	94	138	49	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	46	0	0	81	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	243	14	98	225	51	132
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	5	33	76	17	45
Total Analysis Volume [veh/h]	328	19	132	304	69	178
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.11	0.00	0.25	0.25
d_M, Delay for Movement [s/veh]	0.00	0.00	8.33	0.00	25.44	17.38
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.37	0.00	2.80	2.80
95th-Percentile Queue Length [ft]	0.00	0.00	9.14	0.00	70.04	70.04
d_A, Approach Delay [s/veh]	0.00		2.52		19.63	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	5.78					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	17.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	160	91	23	40	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	279	244	123	158	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	104	91	46	59	37
Total Analysis Volume [veh/h]	119	416	364	183	235	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.05	2.16	2.16	3.47	3.08	3.09	1.17
95th-Percentile Queue Length [ft]	26.33	53.91	53.91	86.83	77.11	77.37	29.17
Approach Delay [s/veh]	15.31			18.43		17.15	
Approach LOS	C			C		C	
Intersection Delay [s/veh]	16.96						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	22.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	80	0	0	45	24	41	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	253	0	1	299	90	87	3	116	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	76	0	0	90	27	26	1	35	2	2	0
Total Analysis Volume [veh/h]	144	304	0	1	359	108	105	4	139	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

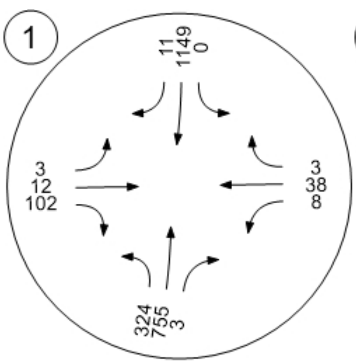
Lanes

Movement, Approach, & Intersection Results

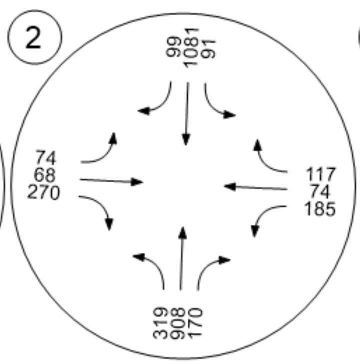
95th-Percentile Queue Length [veh]	6.91	7.13	0.85	0.02	0.98	0.10
95th-Percentile Queue Length [ft]	172.80	178.13	21.32	0.60	24.51	2.62
Approach Delay [s/veh]	26.15	25.92	11.84			11.39
Approach LOS	D	D	B			B
Intersection Delay [s/veh]	22.86					
Intersection LOS	C					

Traffic Volume - Future Total Volume

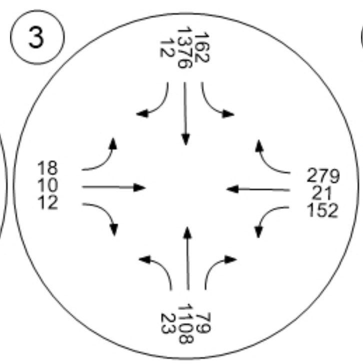
Winchester Road at Keller Ro



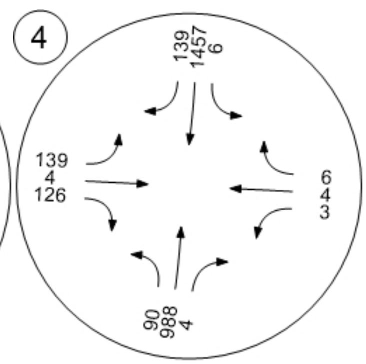
Winchester Road at Pourroy



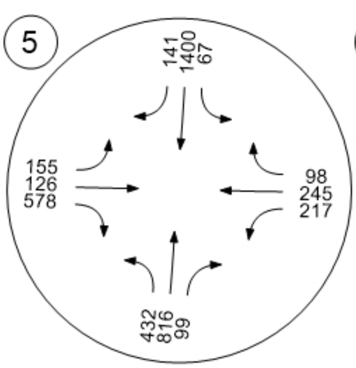
Winchester Road at Whisper



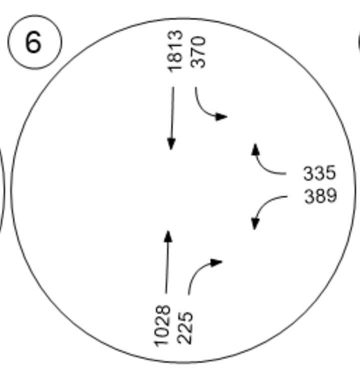
Winchester Road at Jean Nic



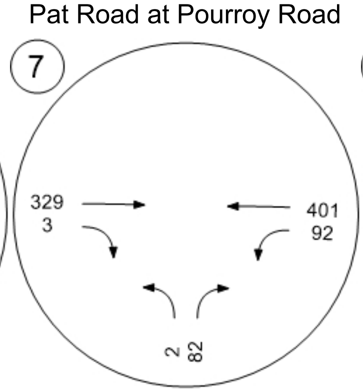
Winchester Road at Max Gilli



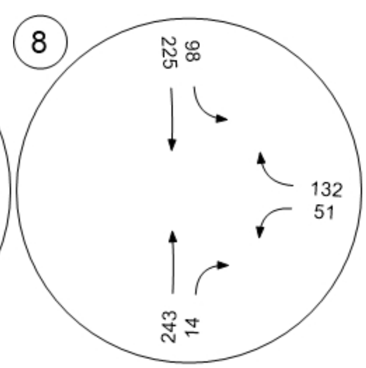
Winchester Road at Benton



Pat Road at Pourroy Road

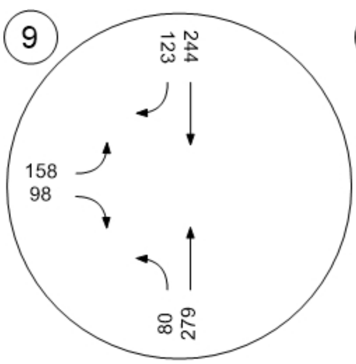


Jean Nicholas Road at Elliot

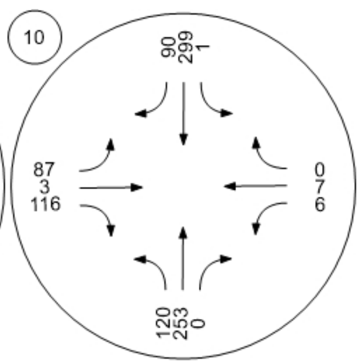


Traffic Volume - Future Total Volume

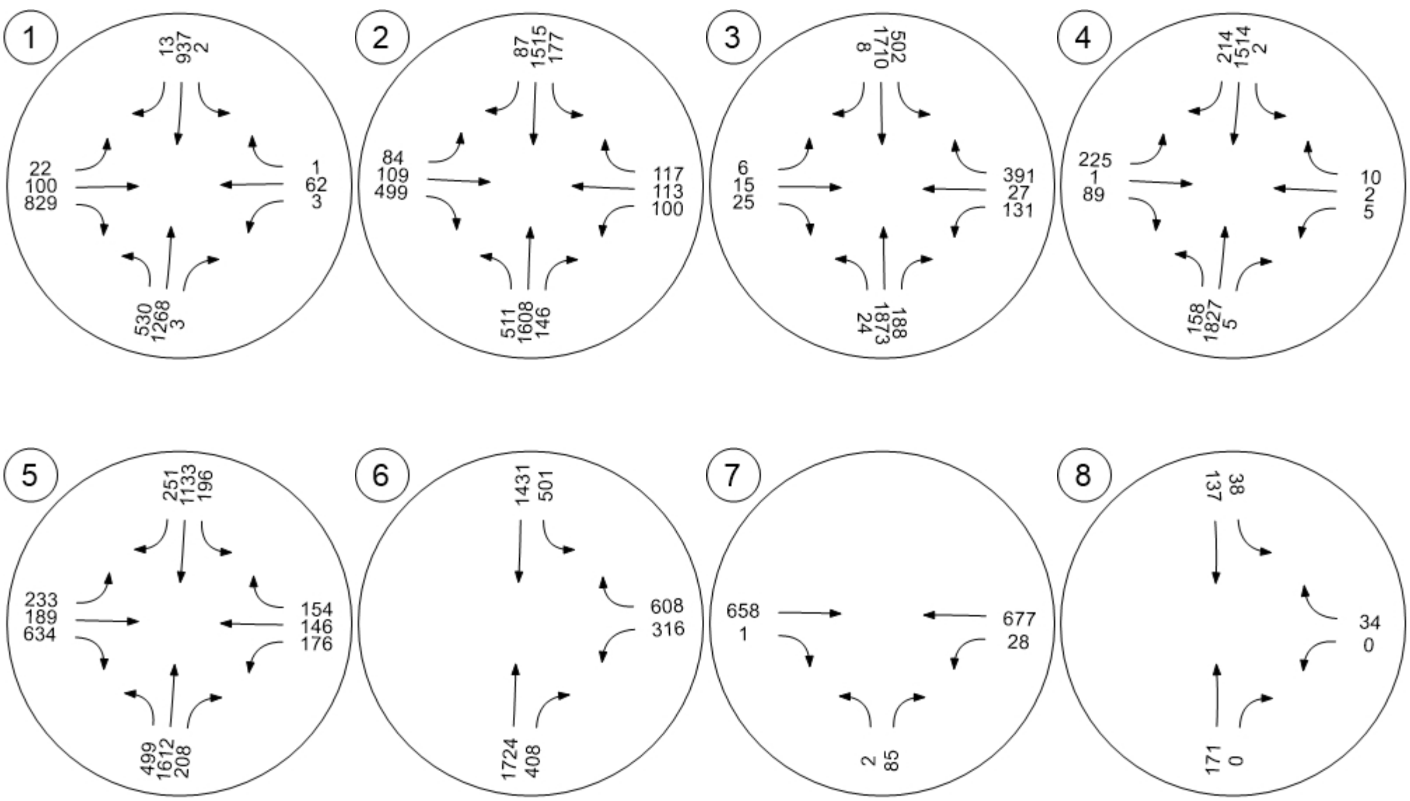
Pourroy Road at Skyview Ro



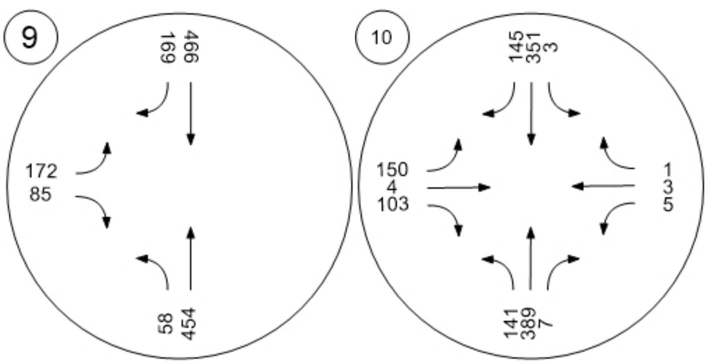
Pourroy Road at Thompson



Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\E+A+C PM_new.pdf

Scenario 10: E+A+C PM
12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	EB Right	1.663	219.2	F
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	1.539	208.1	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	1.316	152.0	F
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	NB Left	0.948	39.6	D
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.592	258.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.530	175.4	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.041	61.5	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.181	24.4	C
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		63.3	F
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		81.5	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	219.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.663

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	526	82	0	0	91	12	20	98	828	0	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	530	1268	3	2	937	13	22	100	829	3	62	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	354	1	1	261	4	6	28	231	1	17	0
Total Analysis Volume [veh/h]	592	1415	3	2	1046	15	25	112	925	3	69	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	58	0	11	43	0	0	51	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	61	0	39	39	47	47	47	47
g / C, Green / Cycle	0.18	0.50	0.00	0.33	0.33	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.19	0.85	0.00	0.33	0.01	0.15	0.65	0.04	0.00
s, saturation flow rate [veh/h]	3101	1676	1597	3192	1425	929	1425	1654	1425
c, Capacity [veh/h]	569	846	7	1039	464	399	557	678	557
d1, Uniform Delay [s]	48.97	29.70	59.55	40.46	27.58	26.00	36.54	23.25	22.27
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.15	309.42	22.54	29.53	0.13	0.51	305.17	0.07	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

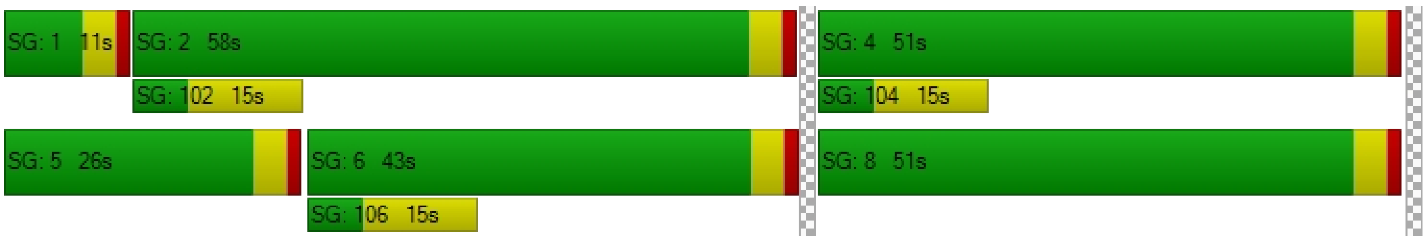
X, volume / capacity	1.04	1.68	0.30	1.01	0.03	0.34	1.66	0.11	0.00
d, Delay for Lane Group [s/veh]	78.12	339.12	82.09	69.99	27.70	26.51	341.71	23.32	22.27
Lane Group LOS	F	F	F	F	C	C	F	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	10.23	93.27	0.10	18.14	0.29	2.65	63.14	1.32	0.02
50th-Percentile Queue Length [ft]	255.67	2331.75	2.50	453.42	7.24	66.32	1578.39	33.05	0.44
95th-Percentile Queue Length [veh]	15.78	146.39	0.18	25.23	0.52	4.78	99.11	2.38	0.03
95th-Percentile Queue Length [ft]	394.44	3659.69	4.49	630.79	13.04	119.38	2477.83	59.49	0.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.12	339.12	339.12	82.09	69.99	27.70	26.51	26.51	341.71	23.32	23.32	22.27
Movement LOS	F	F	F	F	F	C	C	C	F	C	C	C
d_A, Approach Delay [s/veh]	262.25			69.41			301.05			23.31		
Approach LOS	F			E			F			C		
d_I, Intersection Delay [s/veh]	219.18											
Intersection LOS	F											
Intersection V/C	1.663											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	208.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.539

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	495	447	7	142	706	71	69	104	481	6	106	92
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	511	1608	146	177	1515	87	84	109	499	100	113	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	141	444	40	49	419	24	23	30	138	28	31	32
Total Analysis Volume [veh/h]	565	1777	161	196	1674	96	93	120	551	110	125	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	61	0	14	44	0	26	34	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	57	57	10	40	40	9	30	30	7	28	28
g / C, Green / Cycle	0.22	0.48	0.48	0.08	0.33	0.33	0.07	0.25	0.25	0.06	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.35	0.56	0.11	0.12	0.52	0.07	0.06	0.07	0.39	0.07	0.07	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	359	1519	678	133	1067	476	115	417	355	93	395	336
d1, Uniform Delay [s]	46.50	31.44	18.58	55.00	39.94	28.51	54.90	36.45	45.06	56.50	37.88	38.55
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.50	0.44	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	270.83	83.82	0.82	248.77	260.55	0.95	12.73	0.38	262.22	143.62	0.46	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.57	1.17	0.24	1.47	1.57	0.20	0.81	0.29	1.55	1.18	0.32	0.38
d, Delay for Lane Group [s/veh]	317.33	115.26	19.40	303.77	300.50	29.46	67.62	36.82	307.28	200.11	38.34	39.27
Lane Group LOS	F	F	B	F	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	36.93	36.54	2.52	12.98	52.82	1.95	3.18	2.90	36.31	6.47	3.01	3.17
50th-Percentile Queue Length [ft]	923.14	913.42	62.90	324.57	1320.53	48.77	79.39	72.60	907.68	161.75	75.19	79.33
95th-Percentile Queue Length [veh]	57.29	52.01	4.53	21.25	81.62	3.51	5.72	5.23	56.57	11.16	5.41	5.71
95th-Percentile Queue Length [ft]	1432.27	1300.23	113.22	531.36	2040.57	87.78	142.91	130.69	1414.17	279.01	135.35	142.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	317.33	115.26	19.40	303.77	300.50	29.46	67.62	36.82	307.28	200.11	38.34	39.27
Movement LOS	F	F	B	F	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	154.71			287.59			235.63			87.55		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	208.06											
Intersection LOS	F											
Intersection V/C	1.539											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	152.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.316

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	618	10	416	777	0	0	0	0	9	0	331
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1873	188	502	1710	8	6	15	25	131	27	391
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	520	52	139	475	2	2	4	7	36	8	109
Total Analysis Volume [veh/h]	27	2081	209	558	1900	9	7	17	28	146	30	434
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	59	0	20	68	0	11	29	0	12	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	55	55	16	67	67	1	25	25	8	31	31
g / C, Green / Cycle	0.03	0.46	0.46	0.13	0.56	0.56	0.01	0.21	0.21	0.07	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.02	0.65	0.15	0.18	0.60	0.01	0.00	0.01	0.02	0.09	0.02	0.30
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	55	1468	655	413	1783	796	19	347	295	106	438	372
d1, Uniform Delay [s]	56.88	32.40	20.51	52.00	26.48	11.76	58.81	38.14	38.51	56.00	33.34	44.33
k, delay calibration	0.11	0.50	0.50	0.19	0.50	0.50	0.11	0.11	0.11	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.53	191.95	1.28	163.37	41.23	0.03	10.89	0.06	0.14	215.55	0.07	99.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	1.42	0.32	1.35	1.07	0.01	0.36	0.05	0.10	1.37	0.07	1.17
d, Delay for Lane Group [s/veh]	63.41	224.35	21.79	215.37	67.71	11.79	69.70	38.20	38.65	271.54	33.41	144.30
Lane Group LOS	E	F	C	F	F	B	E	D	D	F	C	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.87	58.18	3.66	15.31	31.86	0.10	0.27	0.41	0.69	9.59	0.67	21.28
50th-Percentile Queue Length [ft]	21.84	1454.43	91.60	382.82	796.51	2.57	6.79	10.34	17.25	239.85	16.78	532.03
95th-Percentile Queue Length [veh]	1.57	87.90	6.60	24.41	43.30	0.19	0.49	0.74	1.24	16.06	1.21	31.46
95th-Percentile Queue Length [ft]	39.31	2197.45	164.88	610.18	1082.46	4.63	12.22	18.61	31.05	401.60	30.21	786.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.41	224.35	21.79	215.37	67.71	11.79	69.70	38.20	38.65	271.54	33.41	144.30
Movement LOS	E	F	C	F	F	B	E	D	D	F	C	F
d_A, Approach Delay [s/veh]	204.21			100.91			42.68			169.30		
Approach LOS	F			F			D			F		
d_I, Intersection Delay [s/veh]	151.96											
Intersection LOS	F											
Intersection V/C	1.316											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.948

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	495	0	0	619	167	133	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	1827	5	2	1514	214	225	1	89	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	520	1	1	431	61	64	0	25	1	1	3
Total Analysis Volume [veh/h]	180	2081	6	2	1724	244	256	1	101	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	66	0	11	59	0	24	32	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	81	81	0	67	67	20	21	21	1	2	2
g / C, Green / Cycle	0.12	0.68	0.68	0.00	0.56	0.56	0.17	0.18	0.18	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.65	0.00	0.00	0.54	0.17	0.16	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	187	2154	961	7	1794	801	266	296	252	18	35	30
d1, Uniform Delay [s]	52.75	18.25	6.38	59.58	25.03	13.89	49.62	40.70	43.78	58.92	57.59	57.97
k, delay calibration	0.38	0.50	0.50	0.11	0.50	0.50	0.40	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	48.89	12.93	0.01	22.38	13.83	0.98	40.55	0.00	1.03	10.93	0.66	7.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.97	0.01	0.29	0.96	0.30	0.96	0.00	0.40	0.34	0.06	0.37
d, Delay for Lane Group [s/veh]	101.64	31.18	6.39	81.96	38.86	14.87	90.17	40.71	44.81	69.85	58.26	65.34
Lane Group LOS	F	C	A	F	D	B	F	D	D	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	7.69	24.22	0.04	0.10	23.25	3.33	10.59	0.02	2.74	0.23	0.07	0.39
50th-Percentile Queue Length [ft]	192.31	605.48	1.10	2.52	581.27	83.24	264.75	0.62	68.56	5.87	1.65	9.78
95th-Percentile Queue Length [veh]	12.24	32.29	0.08	0.18	31.16	5.99	15.93	0.04	4.94	0.42	0.12	0.70
95th-Percentile Queue Length [ft]	306.03	807.25	1.99	4.53	778.97	149.83	398.17	1.12	123.40	10.57	2.97	17.60

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	101.64	31.18	6.39	81.96	38.86	14.87	90.17	40.71	44.81	69.85	58.26	65.34
Movement LOS	F	C	A	F	D	B	F	D	D	E	E	E
d_A, Approach Delay [s/veh]	36.71			35.93			77.24			66.02		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	39.64											
Intersection LOS	D											
Intersection V/C	0.948											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	258.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.592

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	45	210	0	167	268	188	156	8	72	0	8	133
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	499	1612	208	196	1133	251	233	189	634	176	146	154
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	447	58	54	314	70	65	52	176	49	41	43
Total Analysis Volume [veh/h]	554	1789	231	218	1257	279	259	210	704	195	162	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	51	0	15	36	0	23	41	41	13	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	47	47	11	32	32	19	37	37	9	27
g / C, Green / Cycle	0.22	0.39	0.39	0.09	0.27	0.27	0.16	0.31	0.31	0.08	0.22
(v / s)_i Volume / Saturation Flow Rate	0.35	0.60	0.63	0.14	0.39	0.20	0.16	0.13	0.49	0.12	0.22
s, saturation flow rate [veh/h]	1597	1676	1611	1597	3192	1425	1597	1676	1425	1597	1537
c, Capacity [veh/h]	346	659	633	147	856	382	253	514	437	120	343
d1, Uniform Delay [s]	47.01	36.43	36.43	54.50	43.92	39.96	50.50	33.00	41.62	55.50	46.21
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.44	0.11	0.50	0.50	0.42
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	283.83	247.53	275.18	250.85	217.06	11.62	59.46	0.52	285.86	314.39	37.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

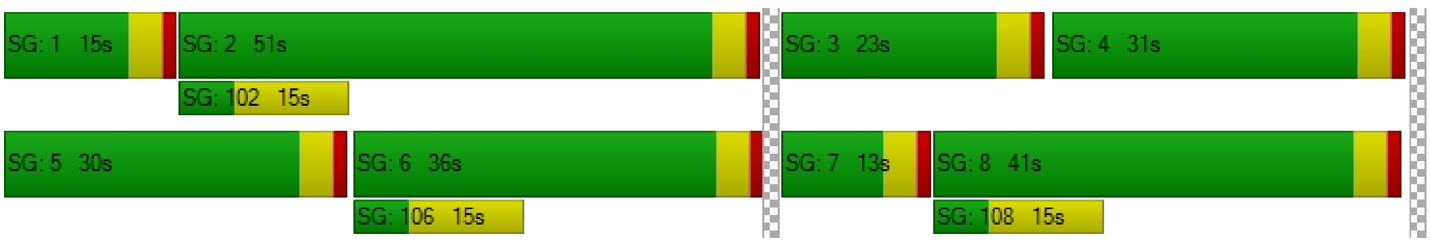
X, volume / capacity	1.60	1.53	1.60	1.48	1.47	0.73	1.02	0.41	1.61	1.62	0.97
d, Delay for Lane Group [s/veh]	330.84	283.97	311.61	305.35	260.98	51.58	109.96	33.52	327.48	369.89	83.83
Lane Group LOS	F	F	F	F	F	D	F	C	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	37.03	62.92	65.34	14.48	37.74	8.31	11.75	4.93	47.40	14.14	13.36
50th-Percentile Queue Length [ft]	925.82	1572.89	1633.43	361.88	943.62	207.75	293.69	123.15	1185.09	353.44	333.93
95th-Percentile Queue Length [veh]	57.58	96.39	101.15	23.48	57.85	13.04	17.57	8.57	74.01	23.20	19.35
95th-Percentile Queue Length [ft]	1439.53	2409.85	2528.78	586.89	1446.34	325.94	439.20	214.15	1850.32	579.92	483.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	330.84	296.00	311.61	305.35	260.98	51.58	109.96	33.52	327.48	369.89	83.83	83.83
Movement LOS	F	F	F	F	F	D	F	C	F	F	F	F
d_A, Approach Delay [s/veh]	304.90			233.18			226.82			189.48		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	258.74											
Intersection LOS	F											
Intersection V/C	1.592											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	175.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.530

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	116	0	174	166	0	139
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1724	408	501	1431	316	608
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	463	110	135	385	85	163
Total Analysis Volume [veh/h]	1854	439	539	1539	340	654
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	49	0	31	80	40	40
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	27	76	36	36
g / C, Green / Cycle	0.37	0.37	0.23	0.63	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.58	0.31	0.34	0.48	0.11	0.46
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1196	534	360	2022	930	427
d1, Uniform Delay [s]	37.49	33.88	46.46	15.57	33.01	41.98
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	251.58	13.34	238.63	2.77	0.24	250.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.55	0.82	1.50	0.76	0.37	1.53
d, Delay for Lane Group [s/veh]	289.07	47.22	285.09	18.33	33.25	292.14
Lane Group LOS	F	D	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	57.88	12.64	33.96	12.96	3.93	42.18
50th-Percentile Queue Length [ft]	1447.05	316.12	848.90	323.95	98.36	1054.54
95th-Percentile Queue Length [veh]	89.23	18.48	52.37	18.86	7.08	65.35
95th-Percentile Queue Length [ft]	2230.72	461.91	1309.16	471.54	177.05	1633.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	289.07	47.22	285.09	18.33	33.25	292.14
Movement LOS	F	D	F	B	C	F
d_A, Approach Delay [s/veh]	242.77		87.52		203.59	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	175.38					
Intersection LOS	F					
Intersection V/C	1.530					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	61.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	654	0	0	672
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	85	658	1	28	677
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	29	224	0	10	231
Total Analysis Volume [veh/h]	3	116	896	1	38	922
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.34	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	61.54	22.67	0.00	0.00	10.01	0.00
Movement LOS	F	C	A	A	B	A
95th-Percentile Queue Length [veh]	1.74	1.74	0.00	0.00	0.16	0.00
95th-Percentile Queue Length [ft]	43.52	43.52	0.00	0.00	3.96	0.00
d_A, Approach Delay [s/veh]	23.65		0.00		0.40	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.62					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	24.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.181

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	157	33	40	110	37	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	171	0	0	137	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	334	34	42	251	38	127
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	11	14	85	13	43
Total Analysis Volume [veh/h]	451	46	57	339	51	172
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.05	0.00	0.18	0.29
d_M, Delay for Movement [s/veh]	0.00	0.00	8.56	0.00	24.40	17.73
Movement LOS	A	A	A	A	C	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.17	0.00	2.49	2.49
95th-Percentile Queue Length [ft]	0.00	0.00	4.23	0.00	62.14	62.14
d_A, Approach Delay [s/veh]	0.00		1.23		19.26	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	4.29					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	63.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	265	333	83	66	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	454	466	169	172	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	169	174	63	64	32
Total Analysis Volume [veh/h]	86	677	694	252	256	127
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.81	7.23	7.23	16.85	15.38	5.32	1.32
95th-Percentile Queue Length [ft]	20.26	180.65	180.65	421.29	384.44	133.05	32.96
Approach Delay [s/veh]	35.39			100.02		28.17	
Approach LOS	E			F		D	
Intersection Delay [s/veh]	63.29						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	81.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	133	0	0	167	87	70	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	389	7	3	351	145	150	4	103	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	117	2	1	105	44	45	1	31	2	1	0
Total Analysis Volume [veh/h]	169	468	8	4	422	174	180	5	124	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

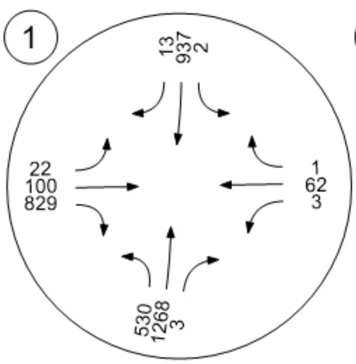
Lanes

Movement, Approach, & Intersection Results

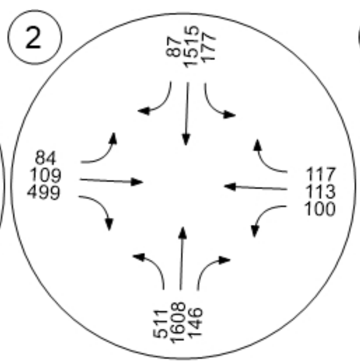
95th-Percentile Queue Length [veh]	22.54	17.04	1.96	0.03	0.93	0.08
95th-Percentile Queue Length [ft]	563.55	426.01	48.88	0.81	23.27	2.05
Approach Delay [s/veh]	118.44	77.54	14.48			11.96
Approach LOS	F	F	B			B
Intersection Delay [s/veh]	81.49					
Intersection LOS	F					

Traffic Volume - Future Total Volume

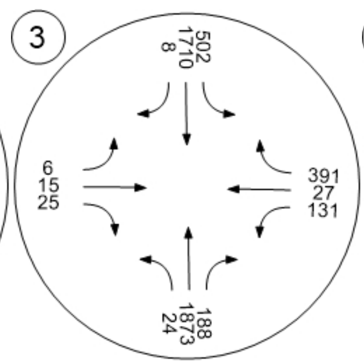
Winchester Road at Keller Ro



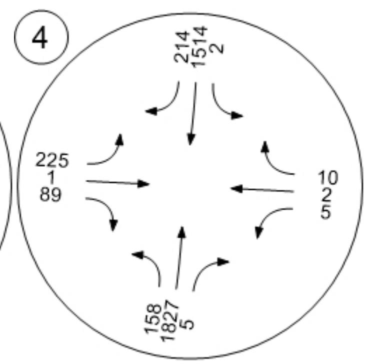
Winchester Road at Pourroy



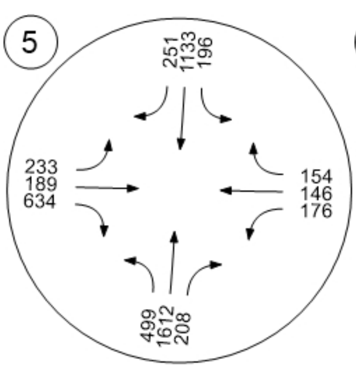
Winchester Road at Whisper



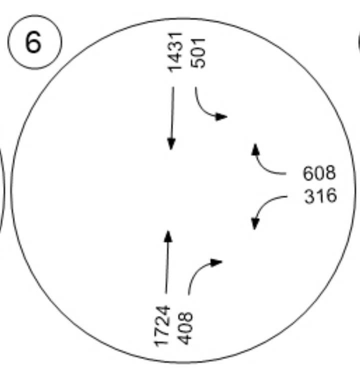
Winchester Road at Jean Nic



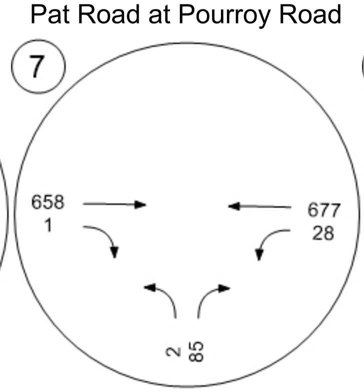
Winchester Road at Max Gilli



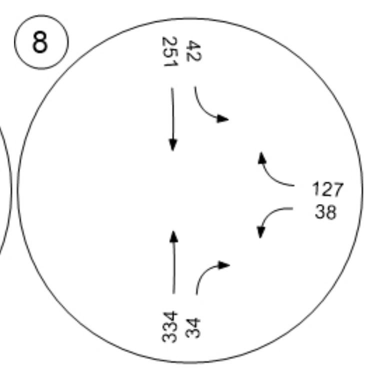
Winchester Road at Benton



Pat Road at Pourroy Road

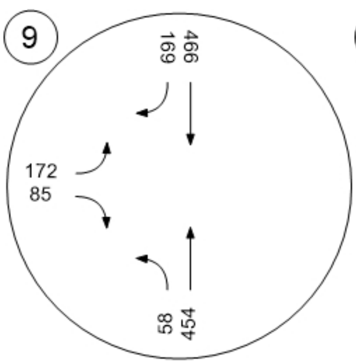


Jean Nicholas Road at Elliot

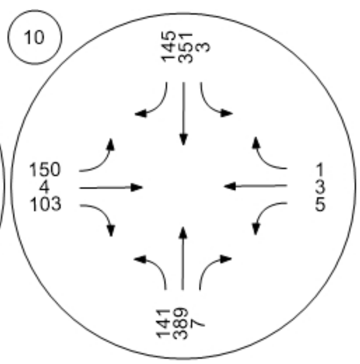


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Vistro File: Q:\...\tvcs1.vistro | Scenario 9: E+A+C AM
Report File: Q:\...\intersections.pdf | 11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Left	0.704	20.7	C
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	1.075	71.5	E
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	0.863	32.3	C
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	WB Left	0.934	29.0	C
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	NB Left	1.602	214.6	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.959	40.5	D
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.018	27.7	D
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.000	10.6	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	EB Left		17.0	C
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		22.9	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	323	51	0	0	49	8	2	11	98	0	38	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	755	3	0	1149	11	3	12	102	8	38	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	211	1	0	321	3	1	3	28	2	11	1
Total Analysis Volume [veh/h]	362	843	3	0	1282	12	3	13	114	9	42	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	38	28	0	33	23	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	53	0	41	41	15	15	15	15
g / C, Green / Cycle	0.15	0.66	0.00	0.51	0.51	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.12	0.50	0.00	0.40	0.01	0.02	0.08	0.06	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	766	1425	801	1425
c, Capacity [veh/h]	463	1111	0	1640	732	197	266	203	266
d1, Uniform Delay [s]	32.77	9.18	0.00	15.81	9.54	27.11	28.74	27.65	26.50
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.92	4.95	0.00	3.79	0.04	0.18	1.09	0.64	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.76	0.00	0.78	0.02	0.08	0.43	0.25	0.01
d, Delay for Lane Group [s/veh]	35.68	14.12	0.00	19.60	9.58	27.28	29.83	28.29	26.51
Lane Group LOS	D	B	A	B	A	C	C	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.14	6.68	0.00	7.65	0.09	0.25	1.96	0.83	0.05
50th-Percentile Queue Length [ft]	78.59	167.06	0.00	191.27	2.13	6.37	49.03	20.86	1.17
95th-Percentile Queue Length [veh]	5.66	10.92	0.00	12.19	0.15	0.46	3.53	1.50	0.08
95th-Percentile Queue Length [ft]	141.47	273.04	0.00	304.68	3.83	11.46	88.25	37.56	2.11

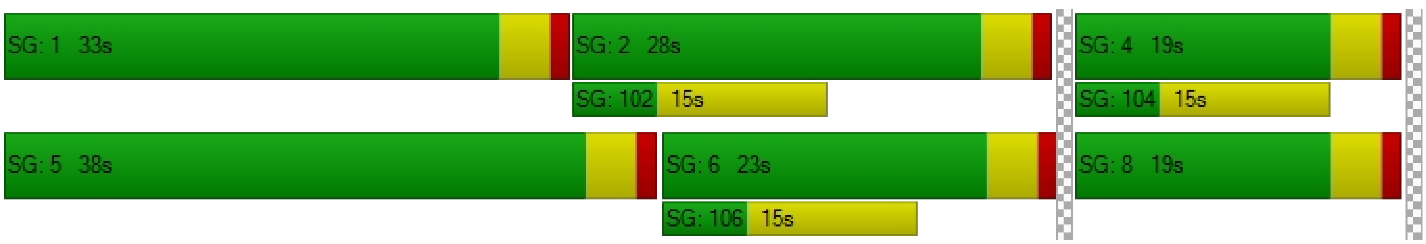
Generated with PTV VISTRO
Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.68	14.12	14.12	0.00	19.60	9.58	27.28	27.28	29.83	28.29	28.29	26.51
Movement LOS	D	B	B	A	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.58			19.51			29.51			28.20		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	20.65											
Intersection LOS	C											
Intersection V/C	0.704											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	71.5
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.075

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	294	283	2	19	86	42	34	53	238	2	62	57
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	319	908	170	91	1081	99	74	68	270	185	74	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	251	47	25	299	27	20	19	75	51	20	32
Total Analysis Volume [veh/h]	352	1003	188	101	1194	109	82	75	298	204	82	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	56	0	18	45	0	27	28	0	18	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	57	57	9	41	41	8	24	24	14	30	30
g / C, Green / Cycle	0.21	0.47	0.47	0.08	0.34	0.34	0.06	0.20	0.20	0.12	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.22	0.31	0.13	0.06	0.37	0.08	0.05	0.04	0.21	0.13	0.05	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	333	1515	676	123	1096	489	102	332	283	186	421	358
d1, Uniform Delay [s]	47.51	24.15	19.08	54.58	39.41	28.02	55.42	40.38	48.11	53.00	35.39	37.01
k, delay calibration	0.48	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.47	0.47	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	64.73	2.29	1.02	12.66	55.01	1.05	13.42	0.34	67.21	91.10	0.22	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

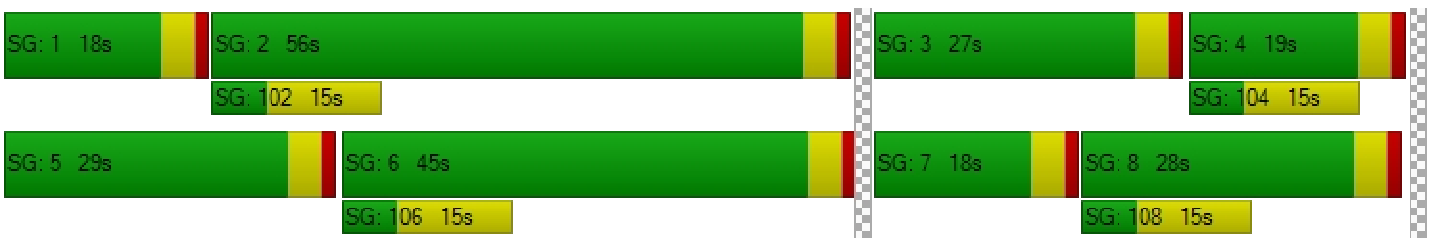
X, volume / capacity	1.06	0.66	0.28	0.82	1.09	0.22	0.80	0.23	1.05	1.09	0.19	0.36
d, Delay for Lane Group [s/veh]	112.23	26.44	20.10	67.24	94.42	29.08	68.84	40.72	115.32	144.10	35.61	37.62
Lane Group LOS	F	C	C	E	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	15.19	10.03	3.02	3.27	22.92	2.20	2.83	1.90	13.67	10.18	1.87	3.09
50th-Percentile Queue Length [ft]	379.72	250.75	75.49	81.68	572.99	55.03	70.72	47.53	341.72	254.55	46.72	77.31
95th-Percentile Queue Length [veh]	22.25	15.22	5.43	5.88	32.56	3.96	5.09	3.42	20.29	16.00	3.36	5.57
95th-Percentile Queue Length [ft]	556.30	380.60	135.87	147.02	813.92	99.06	127.30	85.55	507.33	399.90	84.10	139.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	112.23	26.44	20.10	67.24	94.42	29.08	68.84	40.72	115.32	144.10	35.61	37.62
Movement LOS	F	C	C	E	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	45.24			87.39			94.65			89.57		
Approach LOS	D			F			F			F		
d_I, Intersection Delay [s/veh]	71.45											
Intersection LOS	E											
Intersection V/C	1.075											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	379	2	114	212	0	0	0	0	2	0	200
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1108	79	162	1376	12	18	10	12	152	21	279
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	308	22	45	382	3	5	3	3	42	6	78
Total Analysis Volume [veh/h]	26	1231	88	180	1529	13	20	11	13	169	23	310
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	41	0	11	41	0	11	32	0	16	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	50	50	7	53	53	3	15	15	12	24	24
g / C, Green / Cycle	0.04	0.50	0.50	0.07	0.53	0.53	0.03	0.15	0.15	0.12	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.02	0.39	0.06	0.06	0.48	0.01	0.01	0.01	0.01	0.11	0.01	0.22
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	59	1591	710	220	1698	758	50	252	214	192	402	342
d1, Uniform Delay [s]	47.18	20.50	13.43	45.90	21.05	11.07	47.60	36.38	36.47	43.31	29.33	36.97
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.31	0.11	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.99	3.73	0.36	7.39	8.11	0.04	5.20	0.07	0.12	27.72	0.06	12.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

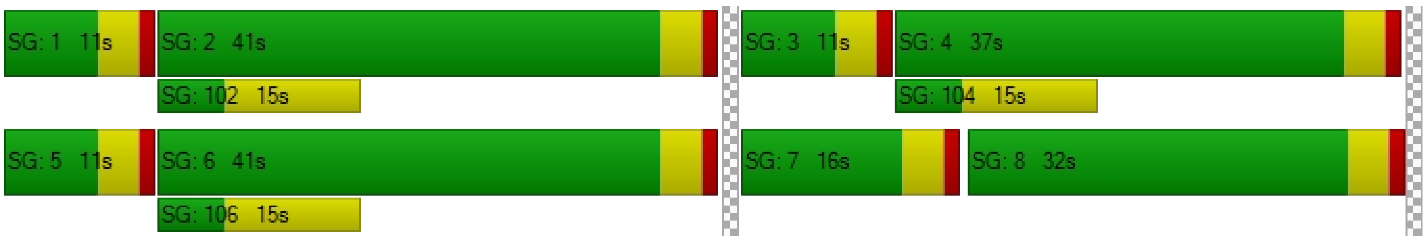
X, volume / capacity	0.44	0.77	0.12	0.82	0.90	0.02	0.40	0.04	0.06	0.88	0.06	0.91
d, Delay for Lane Group [s/veh]	52.17	24.24	13.78	53.29	29.16	11.11	52.80	36.45	36.59	71.03	29.39	49.34
Lane Group LOS	D	C	B	D	C	B	D	D	D	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.68	10.73	1.00	2.31	15.05	0.13	0.56	0.24	0.28	5.56	0.43	8.41
50th-Percentile Queue Length [ft]	17.10	268.30	24.95	57.76	376.16	3.15	14.09	5.93	7.05	138.97	10.80	210.16
95th-Percentile Queue Length [veh]	1.23	16.10	1.80	4.16	21.41	0.23	1.01	0.43	0.51	9.43	0.78	13.16
95th-Percentile Queue Length [ft]	30.78	402.61	44.92	103.96	535.20	5.68	25.36	10.67	12.70	235.64	19.45	329.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.17	24.24	13.78	53.29	29.16	11.11	52.80	36.45	36.59	71.03	29.39	49.34
Movement LOS	D	C	B	D	C	B	D	D	D	E	C	D
d_A, Approach Delay [s/veh]	24.09			31.55			43.92			55.73		
Approach LOS	C			C			D			E		
d_I, Intersection Delay [s/veh]	32.28											
Intersection LOS	C											
Intersection V/C	0.863											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	29.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.934

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	301	0	0	169	45	80	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	988	4	6	1457	139	139	4	126	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	281	1	2	415	40	40	1	36	1	1	2
Total Analysis Volume [veh/h]	103	1125	5	7	1659	158	158	5	144	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	33	0	26	48	0	12	20	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	35	35	1	30	30	8	9	9	0	1	1
g / C, Green / Cycle	0.10	0.58	0.58	0.01	0.49	0.49	0.13	0.14	0.14	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.06	0.35	0.00	0.00	0.52	0.11	0.10	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	153	1836	820	22	1573	702	202	238	203	10	37	31
d1, Uniform Delay [s]	26.59	8.48	5.51	29.74	15.43	8.80	25.77	22.46	24.91	30.11	29.20	29.26
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.07	0.33	0.00	8.43	28.58	0.16	6.49	0.03	4.57	15.91	1.66	3.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

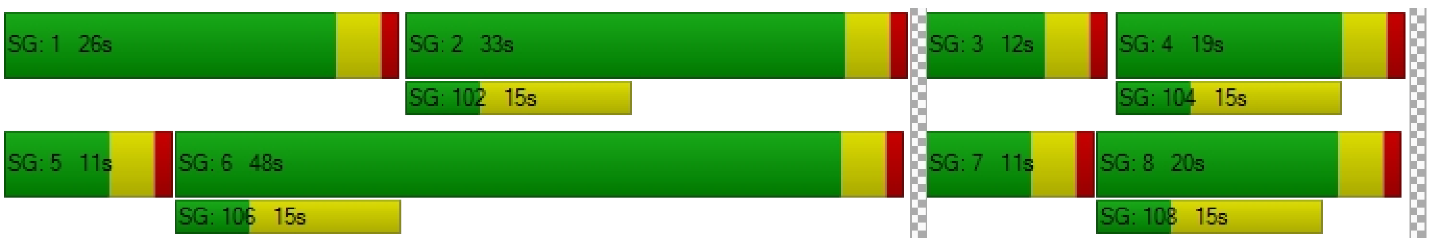
X, volume / capacity	0.67	0.61	0.01	0.32	1.05	0.22	0.78	0.02	0.71	0.30	0.14	0.22
d, Delay for Lane Group [s/veh]	31.66	8.81	5.51	38.18	44.01	8.96	32.26	22.50	29.48	46.02	30.86	32.83
Lane Group LOS	C	A	A	D	F	A	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.45	2.81	0.02	0.14	13.26	0.84	2.45	0.06	2.12	0.09	0.09	0.13
50th-Percentile Queue Length [ft]	36.33	70.18	0.41	3.48	331.57	20.88	61.14	1.51	52.90	2.15	2.13	3.17
95th-Percentile Queue Length [veh]	2.62	5.05	0.03	0.25	19.97	1.50	4.40	0.11	3.81	0.15	0.15	0.23
95th-Percentile Queue Length [ft]	65.40	126.33	0.74	6.27	499.18	37.58	110.05	2.72	95.22	3.87	3.84	5.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.66	8.81	5.51	38.18	44.01	8.96	32.26	22.50	29.48	46.02	30.86	32.83
Movement LOS	C	A	A	D	F	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]		10.71			40.95			30.80			34.81	
Approach LOS		B			D			C			C	
d_I, Intersection Delay [s/veh]	28.97											
Intersection LOS	C											
Intersection V/C	0.934											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	214.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.602

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	59	136	0	45	74	51	86	3	22	0	3	80
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	432	816	99	67	1400	141	155	126	578	217	245	98
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	226	27	19	388	39	43	35	160	60	68	27
Total Analysis Volume [veh/h]	479	906	110	74	1554	156	172	140	642	241	272	109
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	26	34	0	32	40	0	28	38	38	16	26	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	51	51	7	36	36	15	34	34	12	31
g / C, Green / Cycle	0.18	0.43	0.43	0.06	0.30	0.30	0.12	0.28	0.28	0.10	0.26
(v / s)_i Volume / Saturation Flow Rate	0.30	0.31	0.31	0.05	0.49	0.11	0.11	0.08	0.45	0.15	0.24
s, saturation flow rate [veh/h]	1597	1676	1614	1597	3192	1425	1597	1676	1425	1597	1596
c, Capacity [veh/h]	293	715	688	93	961	429	198	473	402	160	412
d1, Uniform Delay [s]	49.00	28.49	28.63	55.82	41.93	32.91	51.60	33.74	43.08	54.00	43.39
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.39
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	301.32	6.18	6.64	14.31	282.28	2.38	10.93	0.35	280.16	258.38	24.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.64	0.72	0.73	0.80	1.62	0.36	0.87	0.30	1.60	1.51	0.92
d, Delay for Lane Group [s/veh]	350.32	34.67	35.27	70.13	324.22	35.28	62.52	34.09	323.24	312.38	67.98
Lane Group LOS	F	C	D	E	F	D	E	C	F	F	E
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	32.82	12.46	12.25	2.49	50.96	3.66	5.67	3.26	43.06	16.28	13.74
50th-Percentile Queue Length [ft]	820.51	311.52	306.37	62.33	1273.94	91.57	141.85	81.44	1076.46	407.03	343.47
95th-Percentile Queue Length [veh]	51.34	18.25	18.00	4.49	79.07	6.59	9.58	5.86	67.18	26.18	19.82
95th-Percentile Queue Length [ft]	1283.39	456.25	449.90	112.19	1976.84	164.83	239.51	146.58	1679.60	654.57	495.44

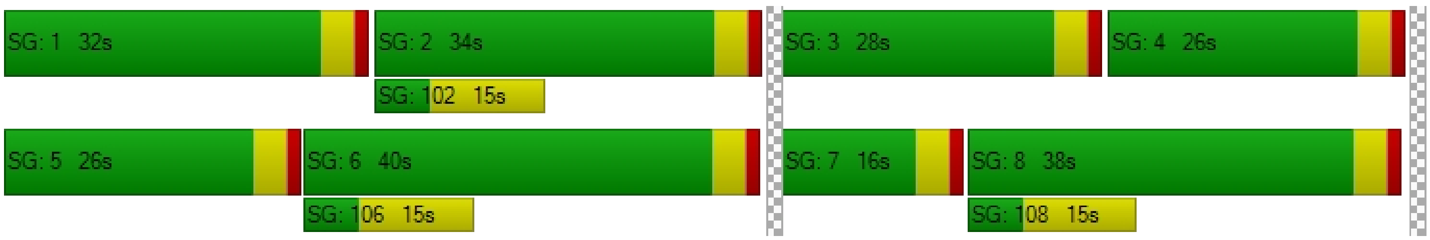
Generated with PTV VISTRO
Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	350.32	34.93	35.27	70.13	324.22	35.28	62.52	34.09	323.24	312.38	67.98	67.98
Movement LOS	F	C	D	E	F	D	E	C	F	F	E	E
d_A, Approach Delay [s/veh]	136.01			288.41			233.80			162.68		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	214.64											
Intersection LOS	F											
Intersection V/C	1.602											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.959

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	113	0	47	49	0	82
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1028	225	370	1813	389	335
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	276	60	99	487	105	90
Total Analysis Volume [veh/h]	1105	242	398	1949	418	360
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	38	0	41	79	41	41
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	44	44	32	80	32	32
g / C, Green / Cycle	0.37	0.37	0.26	0.67	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.35	0.17	0.25	0.61	0.13	0.25
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1172	523	423	2124	831	382
d1, Uniform Delay [s]	36.71	28.91	43.19	17.25	37.14	43.00
k, delay calibration	0.50	0.50	0.32	0.50	0.11	0.33
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.67	2.92	23.18	7.81	0.47	25.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

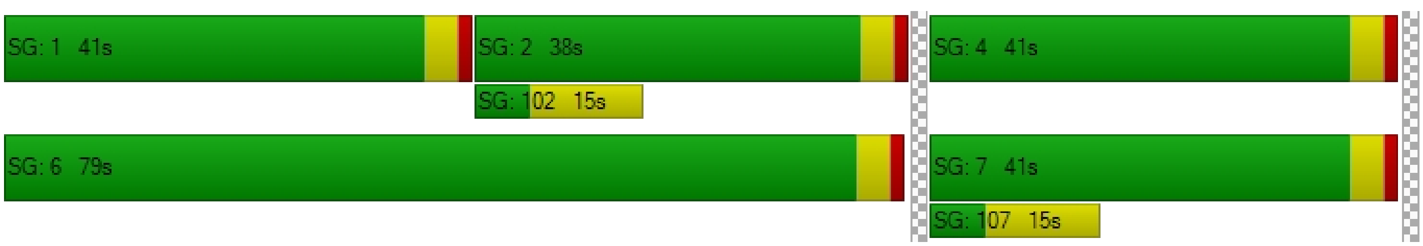
X, volume / capacity	0.94	0.46	0.94	0.92	0.50	0.94
d, Delay for Lane Group [s/veh]	52.38	31.84	66.37	25.05	37.62	68.42
Lane Group LOS	D	C	E	C	D	E
Critical Lane Group	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh]	16.98	5.40	13.58	20.16	5.25	13.05
50th-Percentile Queue Length [ft]	424.49	135.05	339.41	504.07	131.23	326.37
95th-Percentile Queue Length [veh]	23.74	9.21	19.62	27.53	9.01	18.98
95th-Percentile Queue Length [ft]	593.44	230.35	490.48	688.17	225.16	474.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.38	31.84	66.37	25.05	37.62	68.42
Movement LOS	D	C	E	C	D	E
d_A, Approach Delay [s/veh]	48.69		32.06		51.87	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	40.51					
Intersection LOS	D					
Intersection V/C	0.959					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	27.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.018

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	325	0	0	398
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	82	329	3	92	401
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	28	112	1	31	137
Total Analysis Volume [veh/h]	3	112	448	4	125	546
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.18	0.00	0.00	0.11	0.01
d_M, Delay for Movement [s/veh]	27.74	12.49	0.00	0.00	8.66	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.75	0.75	0.00	0.00	0.38	0.00
95th-Percentile Queue Length [ft]	18.68	18.68	0.00	0.00	9.50	0.00
d_A, Approach Delay [s/veh]	12.89		0.00		1.61	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.07					
Intersection LOS	D					

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	49	0	0	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	46	0	0	81	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	0	51	81	0	14
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	0	17	27	0	5
Total Analysis Volume [veh/h]	62	0	69	109	0	19
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	7.45	0.00	10.58	8.66
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.14	0.00	0.06	0.06
95th-Percentile Queue Length [ft]	0.00	0.00	3.51	0.00	1.45	1.45
d_A, Approach Delay [s/veh]	0.00		2.89		8.66	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.62					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	17.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	160	91	23	40	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	279	244	123	158	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	104	91	46	59	37
Total Analysis Volume [veh/h]	119	416	364	183	235	146
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.05	2.16	2.16	3.47	3.08	3.09	1.17
95th-Percentile Queue Length [ft]	26.33	53.91	53.91	86.83	77.11	77.37	29.17
Approach Delay [s/veh]	15.31			18.43		17.15	
Approach LOS	C			C		C	
Intersection Delay [s/veh]	16.96						
Intersection LOS	C						

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	22.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	80	0	0	45	24	41	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	253	0	1	299	90	87	3	116	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	76	0	0	90	27	26	1	35	2	2	0
Total Analysis Volume [veh/h]	144	304	0	1	359	108	105	4	139	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.91	7.13	0.85	0.02	0.98	0.10
95th-Percentile Queue Length [ft]	172.80	178.13	21.32	0.60	24.51	2.62
Approach Delay [s/veh]	26.15	25.92	11.84			11.39
Approach LOS	D	D	B			B
Intersection Delay [s/veh]	22.86					
Intersection LOS	C					

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 10: E+A+C PM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	EB Right	1.663	219.2	F
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	1.539	208.1	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	1.316	152.0	F
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Thru	1.060	103.9	F
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.592	258.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.530	175.4	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.041	61.5	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.000	12.5	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		63.3	F
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		81.5	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	219.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.663

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	526	82	0	0	91	12	20	98	828	0	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	530	1268	3	2	937	13	22	100	829	3	62	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	354	1	1	261	4	6	28	231	1	17	0
Total Analysis Volume [veh/h]	592	1415	3	2	1046	15	25	112	925	3	69	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	58	0	11	43	0	0	51	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	61	0	39	39	47	47	47	47
g / C, Green / Cycle	0.18	0.50	0.00	0.33	0.33	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.19	0.85	0.00	0.33	0.01	0.15	0.65	0.04	0.00
s, saturation flow rate [veh/h]	3101	1676	1597	3192	1425	929	1425	1654	1425
c, Capacity [veh/h]	569	846	7	1039	464	399	557	678	557
d1, Uniform Delay [s]	48.97	29.70	59.55	40.46	27.58	26.00	36.54	23.25	22.27
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.15	309.42	22.54	29.53	0.13	0.51	305.17	0.07	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

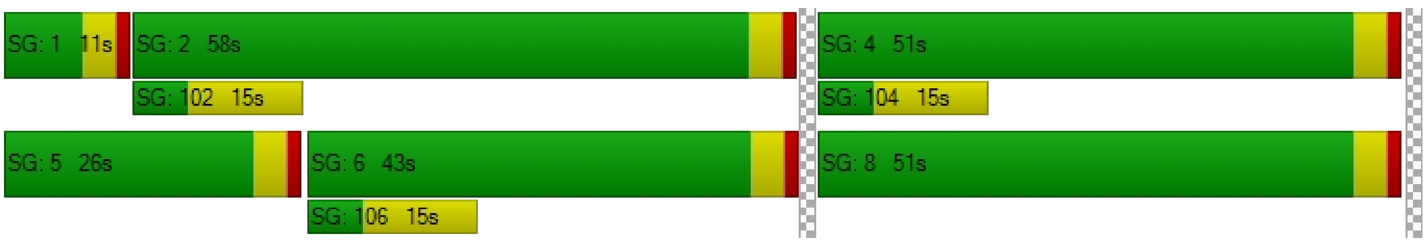
X, volume / capacity	1.04	1.68	0.30	1.01	0.03	0.34	1.66	0.11	0.00
d, Delay for Lane Group [s/veh]	78.12	339.12	82.09	69.99	27.70	26.51	341.71	23.32	22.27
Lane Group LOS	F	F	F	F	C	C	F	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	10.23	93.27	0.10	18.14	0.29	2.65	63.14	1.32	0.02
50th-Percentile Queue Length [ft]	255.67	2331.75	2.50	453.42	7.24	66.32	1578.39	33.05	0.44
95th-Percentile Queue Length [veh]	15.78	146.39	0.18	25.23	0.52	4.78	99.11	2.38	0.03
95th-Percentile Queue Length [ft]	394.44	3659.69	4.49	630.79	13.04	119.38	2477.83	59.49	0.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.12	339.12	339.12	82.09	69.99	27.70	26.51	26.51	341.71	23.32	23.32	22.27
Movement LOS	F	F	F	F	F	C	C	C	F	C	C	C
d_A, Approach Delay [s/veh]	262.25			69.41			301.05			23.31		
Approach LOS	F			E			F			C		
d_I, Intersection Delay [s/veh]	219.18											
Intersection LOS	F											
Intersection V/C	1.663											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	208.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.539

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	495	447	7	142	706	71	69	104	481	6	106	92
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	511	1608	146	177	1515	87	84	109	499	100	113	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	141	444	40	49	419	24	23	30	138	28	31	32
Total Analysis Volume [veh/h]	565	1777	161	196	1674	96	93	120	551	110	125	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	61	0	14	44	0	26	34	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	57	57	10	40	40	9	30	30	7	28	28
g / C, Green / Cycle	0.22	0.48	0.48	0.08	0.33	0.33	0.07	0.25	0.25	0.06	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.35	0.56	0.11	0.12	0.52	0.07	0.06	0.07	0.39	0.07	0.07	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	359	1519	678	133	1067	476	115	417	355	93	395	336
d1, Uniform Delay [s]	46.50	31.44	18.58	55.00	39.94	28.51	54.90	36.45	45.06	56.50	37.88	38.55
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.50	0.44	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	270.83	83.82	0.82	248.77	260.55	0.95	12.73	0.38	262.22	143.62	0.46	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.57	1.17	0.24	1.47	1.57	0.20	0.81	0.29	1.55	1.18	0.32	0.38
d, Delay for Lane Group [s/veh]	317.33	115.26	19.40	303.77	300.50	29.46	67.62	36.82	307.28	200.11	38.34	39.27
Lane Group LOS	F	F	B	F	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	36.93	36.54	2.52	12.98	52.82	1.95	3.18	2.90	36.31	6.47	3.01	3.17
50th-Percentile Queue Length [ft]	923.14	913.42	62.90	324.57	1320.53	48.77	79.39	72.60	907.68	161.75	75.19	79.33
95th-Percentile Queue Length [veh]	57.29	52.01	4.53	21.25	81.62	3.51	5.72	5.23	56.57	11.16	5.41	5.71
95th-Percentile Queue Length [ft]	1432.27	1300.23	113.22	531.36	2040.57	87.78	142.91	130.69	1414.17	279.01	135.35	142.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	317.33	115.26	19.40	303.77	300.50	29.46	67.62	36.82	307.28	200.11	38.34	39.27
Movement LOS	F	F	B	F	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	154.71			287.59			235.63			87.55		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	208.06											
Intersection LOS	F											
Intersection V/C	1.539											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	152.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.316

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	618	10	416	777	0	0	0	0	9	0	331
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1873	188	502	1710	8	6	15	25	131	27	391
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	520	52	139	475	2	2	4	7	36	8	109
Total Analysis Volume [veh/h]	27	2081	209	558	1900	9	7	17	28	146	30	434
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	59	0	20	68	0	11	29	0	12	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	55	55	16	67	67	1	25	25	8	31	31
g / C, Green / Cycle	0.03	0.46	0.46	0.13	0.56	0.56	0.01	0.21	0.21	0.07	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.02	0.65	0.15	0.18	0.60	0.01	0.00	0.01	0.02	0.09	0.02	0.30
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	55	1468	655	413	1783	796	19	347	295	106	438	372
d1, Uniform Delay [s]	56.88	32.40	20.51	52.00	26.48	11.76	58.81	38.14	38.51	56.00	33.34	44.33
k, delay calibration	0.11	0.50	0.50	0.19	0.50	0.50	0.11	0.11	0.11	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.53	191.95	1.28	163.37	41.23	0.03	10.89	0.06	0.14	215.55	0.07	99.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	1.42	0.32	1.35	1.07	0.01	0.36	0.05	0.10	1.37	0.07	1.17
d, Delay for Lane Group [s/veh]	63.41	224.35	21.79	215.37	67.71	11.79	69.70	38.20	38.65	271.54	33.41	144.30
Lane Group LOS	E	F	C	F	F	B	E	D	D	F	C	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.87	58.18	3.66	15.31	31.86	0.10	0.27	0.41	0.69	9.59	0.67	21.28
50th-Percentile Queue Length [ft]	21.84	1454.43	91.60	382.82	796.51	2.57	6.79	10.34	17.25	239.85	16.78	532.03
95th-Percentile Queue Length [veh]	1.57	87.90	6.60	24.41	43.30	0.19	0.49	0.74	1.24	16.06	1.21	31.46
95th-Percentile Queue Length [ft]	39.31	2197.45	164.88	610.18	1082.46	4.63	12.22	18.61	31.05	401.60	30.21	786.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.41	224.35	21.79	215.37	67.71	11.79	69.70	38.20	38.65	271.54	33.41	144.30
Movement LOS	E	F	C	F	F	B	E	D	D	F	C	F
d_A, Approach Delay [s/veh]	204.21			100.91			42.68			169.30		
Approach LOS	F			F			D			F		
d_I, Intersection Delay [s/veh]	151.96											
Intersection LOS	F											
Intersection V/C	1.316											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	103.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.060

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	495	0	0	619	167	133	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	1827	5	2	1514	214	225	1	89	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	520	1	1	431	61	64	0	25	1	1	3
Total Analysis Volume [veh/h]	180	2081	6	2	1724	244	256	1	101	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	40	40	0	30	30	14	14	14	1	2	2
g / C, Green / Cycle	0.14	0.56	0.56	0.00	0.42	0.42	0.19	0.20	0.20	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.65	0.00	0.00	0.54	0.17	0.16	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	223	1778	794	7	1346	601	304	339	288	18	38	33
d1, Uniform Delay [s]	29.67	15.75	7.00	35.31	20.57	14.35	27.74	22.66	24.37	34.88	33.99	34.22
k, delay calibration	0.11	0.28	0.11	0.11	0.19	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.75	80.32	0.00	22.12	128.59	0.44	6.21	0.00	0.73	9.86	0.55	5.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	1.17	0.01	0.29	1.28	0.41	0.84	0.00	0.35	0.33	0.05	0.34
d, Delay for Lane Group [s/veh]	36.42	96.07	7.01	57.42	149.16	14.79	33.95	22.66	25.10	44.75	34.55	40.13
Lane Group LOS	D	F	A	E	F	B	C	C	C	D	C	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.05	29.28	0.03	0.07	32.61	2.24	4.51	0.01	1.46	0.15	0.04	0.24
50th-Percentile Queue Length [ft]	76.16	731.98	0.73	1.83	815.34	56.06	112.87	0.33	36.41	3.76	0.97	5.88
95th-Percentile Queue Length [veh]	5.48	42.86	0.05	0.13	49.11	4.04	8.00	0.02	2.62	0.27	0.07	0.42
95th-Percentile Queue Length [ft]	137.09	1071.46	1.31	3.29	1227.63	100.92	199.99	0.59	65.54	6.78	1.74	10.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.42	96.07	7.01	57.42	149.16	14.79	33.95	22.66	25.10	44.75	34.55	40.13
Movement LOS	D	F	A	E	F	B	C	C	C	D	C	D
d_A, Approach Delay [s/veh]	91.10			132.43			31.42			41.00		
Approach LOS	F			F			C			D		
d_I, Intersection Delay [s/veh]	103.91											
Intersection LOS	F											
Intersection V/C	1.060											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	258.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.592

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	45	210	0	167	268	188	156	8	72	0	8	133
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	499	1612	208	196	1133	251	233	189	634	176	146	154
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	447	58	54	314	70	65	52	176	49	41	43
Total Analysis Volume [veh/h]	554	1789	231	218	1257	279	259	210	704	195	162	171
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	51	0	15	36	0	23	41	41	13	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	47	47	11	32	32	19	37	37	9	27
g / C, Green / Cycle	0.22	0.39	0.39	0.09	0.27	0.27	0.16	0.31	0.31	0.08	0.22
(v / s)_i Volume / Saturation Flow Rate	0.35	0.60	0.63	0.14	0.39	0.20	0.16	0.13	0.49	0.12	0.22
s, saturation flow rate [veh/h]	1597	1676	1611	1597	3192	1425	1597	1676	1425	1597	1537
c, Capacity [veh/h]	346	659	633	147	856	382	253	514	437	120	343
d1, Uniform Delay [s]	47.01	36.43	36.43	54.50	43.92	39.96	50.50	33.00	41.62	55.50	46.21
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.44	0.11	0.50	0.50	0.42
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	283.83	247.53	275.18	250.85	217.06	11.62	59.46	0.52	285.86	314.39	37.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.60	1.53	1.60	1.48	1.47	0.73	1.02	0.41	1.61	1.62	0.97
d, Delay for Lane Group [s/veh]	330.84	283.97	311.61	305.35	260.98	51.58	109.96	33.52	327.48	369.89	83.83
Lane Group LOS	F	F	F	F	F	D	F	C	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	37.03	62.92	65.34	14.48	37.74	8.31	11.75	4.93	47.40	14.14	13.36
50th-Percentile Queue Length [ft]	925.82	1572.89	1633.43	361.88	943.62	207.75	293.69	123.15	1185.09	353.44	333.93
95th-Percentile Queue Length [veh]	57.58	96.39	101.15	23.48	57.85	13.04	17.57	8.57	74.01	23.20	19.35
95th-Percentile Queue Length [ft]	1439.53	2409.85	2528.78	586.89	1446.34	325.94	439.20	214.15	1850.32	579.92	483.78

Generated with PTV VISTRO

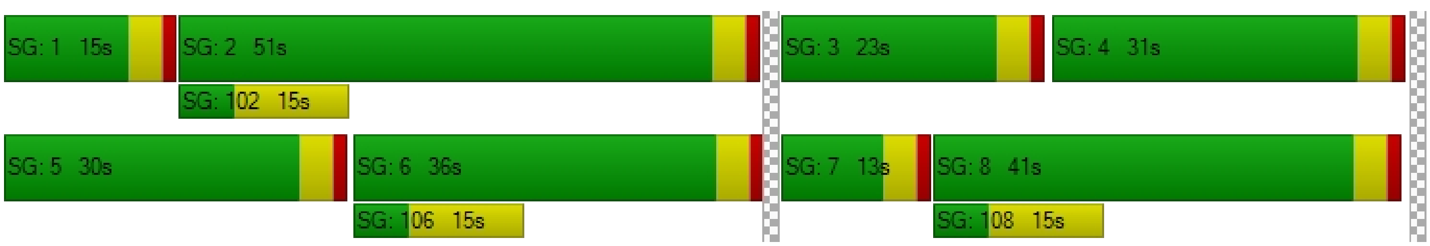
Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	330.84	296.00	311.61	305.35	260.98	51.58	109.96	33.52	327.48	369.89	83.83	83.83
Movement LOS	F	F	F	F	F	D	F	C	F	F	F	F
d_A, Approach Delay [s/veh]		304.90			233.18			226.82			189.48	
Approach LOS		F			F			F			F	
d_I, Intersection Delay [s/veh]	258.74											
Intersection LOS	F											
Intersection V/C	1.592											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	175.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.530

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	116	0	174	166	0	139
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1724	408	501	1431	316	608
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	463	110	135	385	85	163
Total Analysis Volume [veh/h]	1854	439	539	1539	340	654
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	49	0	31	80	40	40
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	27	76	36	36
g / C, Green / Cycle	0.37	0.37	0.23	0.63	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.58	0.31	0.34	0.48	0.11	0.46
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1196	534	360	2022	930	427
d1, Uniform Delay [s]	37.49	33.88	46.46	15.57	33.01	41.98
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	251.58	13.34	238.63	2.77	0.24	250.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.55	0.82	1.50	0.76	0.37	1.53
d, Delay for Lane Group [s/veh]	289.07	47.22	285.09	18.33	33.25	292.14
Lane Group LOS	F	D	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	57.88	12.64	33.96	12.96	3.93	42.18
50th-Percentile Queue Length [ft]	1447.05	316.12	848.90	323.95	98.36	1054.54
95th-Percentile Queue Length [veh]	89.23	18.48	52.37	18.86	7.08	65.35
95th-Percentile Queue Length [ft]	2230.72	461.91	1309.16	471.54	177.05	1633.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	289.07	47.22	285.09	18.33	33.25	292.14
Movement LOS	F	D	F	B	C	F
d_A, Approach Delay [s/veh]	242.77		87.52		203.59	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	175.38					
Intersection LOS	F					
Intersection V/C	1.530					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	61.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	654	0	0	672
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	85	658	1	28	677
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	29	224	0	10	231
Total Analysis Volume [veh/h]	3	116	896	1	38	922
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.34	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	61.54	22.67	0.00	0.00	10.01	0.00
Movement LOS	F	C	A	A	B	A
95th-Percentile Queue Length [veh]	1.74	1.74	0.00	0.00	0.16	0.00
95th-Percentile Queue Length [ft]	43.52	43.52	0.00	0.00	3.96	0.00
d_A, Approach Delay [s/veh]	23.65		0.00		0.40	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.62					
Intersection LOS	F					

Intersection Level Of Service Report

Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	12.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	37	0	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	171	0	0	137	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	0	38	137	0	34
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	0	13	46	0	11
Total Analysis Volume [veh/h]	231	0	51	185	0	46
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.00	0.06
d_M, Delay for Movement [s/veh]	0.00	0.00	7.80	0.00	12.50	9.72
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.12	0.00	0.18	0.18
95th-Percentile Queue Length [ft]	0.00	0.00	2.97	0.00	4.52	4.52
d_A, Approach Delay [s/veh]	0.00		1.69		9.72	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.65					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	63.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	265	333	83	66	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	454	466	169	172	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	169	174	63	64	32
Total Analysis Volume [veh/h]	86	677	694	252	256	127
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.81	7.23	7.23	16.85	15.38	5.32	1.32
95th-Percentile Queue Length [ft]	20.26	180.65	180.65	421.29	384.44	133.05	32.96
Approach Delay [s/veh]	35.39			100.02		28.17	
Approach LOS	E			F		D	
Intersection Delay [s/veh]	63.29						
Intersection LOS	F						

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	81.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	133	0	0	167	87	70	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	389	7	3	351	145	150	4	103	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	117	2	1	105	44	45	1	31	2	1	0
Total Analysis Volume [veh/h]	169	468	8	4	422	174	180	5	124	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	22.54	17.04	1.96	0.03	0.93	0.08
95th-Percentile Queue Length [ft]	563.55	426.01	48.88	0.81	23.27	2.05
Approach Delay [s/veh]	118.44	77.54	14.48			11.96
Approach LOS	F	F	B			B
Intersection Delay [s/veh]	81.49					
Intersection LOS	F					

Appendix H. Intersection Volumes, Delay, and LOS Calculation Outputs, 2018 Cumulative Plus Project Conditions

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 7: E+A+P+C AM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Left	0.850	21.4	C
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	1.329	132.5	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	0.934	49.5	D
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Thru	0.971	40.3	D
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.617	218.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.993	47.3	D
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	1.250	357.4	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.015	11.5	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		21.6	C
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		28.9	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	323	75	12	0	79	8	2	11	98	15	38	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	779	15	0	1179	11	3	12	102	23	38	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	217	4	0	329	3	1	3	28	6	11	1
Total Analysis Volume [veh/h]	362	869	17	0	1316	12	3	13	114	26	42	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	24	47	0	14	37	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	53	0	41	41	15	15	15	15
g / C, Green / Cycle	0.15	0.66	0.00	0.52	0.52	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.12	0.53	0.00	0.41	0.01	0.02	0.08	0.19	0.00
s, saturation flow rate [veh/h]	3101	1671	1597	3192	1425	768	1425	354	1425
c, Capacity [veh/h]	454	1109	0	1652	737	196	265	128	265
d1, Uniform Delay [s]	32.99	9.62	0.00	15.85	9.39	27.16	28.81	28.48	26.56
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.25	6.03	0.00	4.09	0.04	0.18	1.10	3.39	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

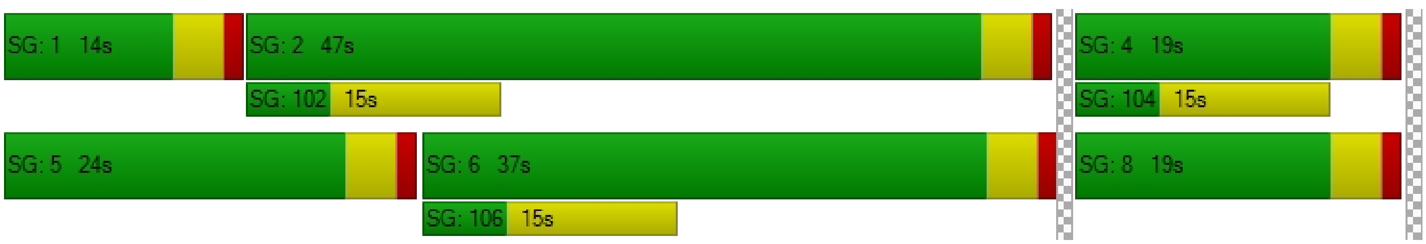
X, volume / capacity	0.80	0.80	0.00	0.80	0.02	0.08	0.43	0.53	0.01
d, Delay for Lane Group [s/veh]	36.24	15.65	0.00	19.94	9.43	27.34	29.91	31.87	26.57
Lane Group LOS	D	B	A	B	A	C	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	3.17	7.53	0.00	7.95	0.08	0.25	1.96	1.20	0.05
50th-Percentile Queue Length [ft]	79.35	188.26	0.00	198.71	2.10	6.37	49.08	29.92	1.17
95th-Percentile Queue Length [veh]	5.71	12.03	0.00	12.57	0.15	0.46	3.53	2.15	0.08
95th-Percentile Queue Length [ft]	142.83	300.76	0.00	314.30	3.78	11.47	88.34	53.86	2.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.24	15.65	15.65	0.00	19.94	9.43	27.34	27.34	29.91	31.87	31.87	26.57
Movement LOS	D	B	B	A	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	21.62			19.84			29.59			31.65		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	21.40											
Intersection LOS	C											
Intersection V/C	0.850											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	132.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.329

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	459	283	2	19	86	87	70	77	374	2	92	57
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	484	908	170	91	1081	144	110	92	406	185	104	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	134	251	47	25	299	40	30	25	112	51	29	32
Total Analysis Volume [veh/h]	535	1003	188	101	1194	159	122	102	449	204	115	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	53	0	18	37	0	30	33	0	16	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	54	54	9	33	33	11	29	29	12	30	30
g / C, Green / Cycle	0.25	0.45	0.45	0.08	0.28	0.28	0.09	0.24	0.24	0.10	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.34	0.31	0.13	0.06	0.37	0.11	0.08	0.06	0.32	0.13	0.07	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	399	1434	640	123	881	393	147	404	343	160	417	355
d1, Uniform Delay [s]	45.00	26.55	20.98	54.59	43.45	35.41	53.58	36.83	45.56	54.00	36.34	37.22
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	169.23	2.86	1.17	12.76	167.50	3.07	11.40	0.33	158.51	164.21	0.35	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

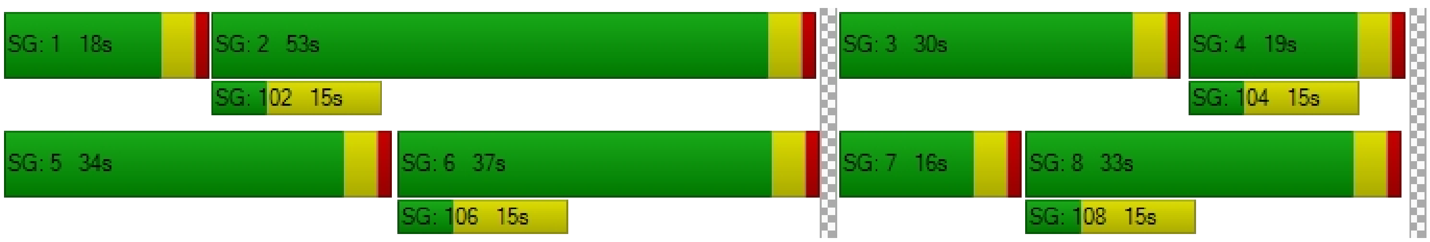
X, volume / capacity	1.34	0.70	0.29	0.82	1.36	0.40	0.83	0.25	1.31	1.28	0.28	0.36
d, Delay for Lane Group [s/veh]	214.24	29.42	22.14	67.35	210.95	38.48	64.97	37.16	204.06	218.21	36.70	37.85
Lane Group LOS	F	C	C	E	F	D	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	29.69	10.74	3.22	3.27	32.45	3.86	4.08	2.47	25.23	11.98	2.69	3.11
50th-Percentile Queue Length [ft]	742.15	268.38	80.44	81.75	811.36	96.42	102.05	61.76	630.71	299.42	67.26	77.63
95th-Percentile Queue Length [veh]	44.89	16.11	5.79	5.89	49.09	6.94	7.35	4.45	38.38	19.26	4.84	5.59
95th-Percentile Queue Length [ft]	1122.22	402.71	144.79	147.15	1227.29	173.55	183.69	111.17	959.48	481.59	121.07	139.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	214.24	29.42	22.14	67.35	210.95	38.48	64.97	37.16	204.06	218.21	36.70	37.85
Movement LOS	F	C	C	E	F	D	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	85.91			182.11			153.55			119.68		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	132.54											
Intersection LOS	F											
Intersection V/C	1.329											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	49.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.934

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	469	2	175	287	0	0	0	0	2	0	275
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1198	79	223	1451	12	18	10	12	152	21	354
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	333	22	62	403	3	5	3	3	42	6	98
Total Analysis Volume [veh/h]	26	1331	88	248	1612	13	20	11	13	169	23	393
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	59	0	14	62	0	11	30	0	17	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	56	56	10	62	62	3	25	25	13	35	35
g / C, Green / Cycle	0.03	0.47	0.47	0.08	0.52	0.52	0.03	0.21	0.21	0.11	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.02	0.42	0.06	0.08	0.51	0.01	0.01	0.01	0.01	0.11	0.01	0.28
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	54	1491	666	258	1649	736	45	348	296	173	482	410
d1, Uniform Delay [s]	56.94	29.22	18.16	54.80	28.32	14.15	57.36	37.90	38.00	53.35	30.86	42.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.38	0.11	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.49	8.53	0.41	17.97	17.42	0.04	6.59	0.04	0.06	53.99	0.04	30.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

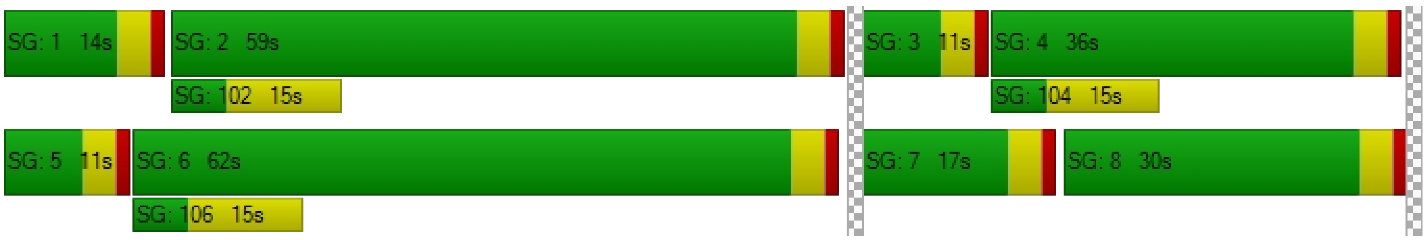
X, volume / capacity	0.48	0.89	0.13	0.96	0.98	0.02	0.44	0.03	0.04	0.98	0.05	0.96
d, Delay for Lane Group [s/veh]	63.43	37.75	18.57	72.77	45.74	14.19	63.94	37.94	38.06	107.34	30.90	72.99
Lane Group LOS	E	D	B	E	D	B	E	D	D	F	C	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.84	17.48	1.37	4.22	23.72	0.17	0.69	0.27	0.32	7.67	0.49	14.83
50th-Percentile Queue Length [ft]	21.06	436.97	34.18	105.53	592.92	4.20	17.13	6.66	7.91	191.67	12.28	370.80
95th-Percentile Queue Length [veh]	1.52	24.34	2.46	7.59	31.70	0.30	1.23	0.48	0.57	12.21	0.88	21.15
95th-Percentile Queue Length [ft]	37.91	608.38	61.52	189.77	792.59	7.56	30.83	11.98	14.23	305.19	22.11	528.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.43	37.75	18.57	72.77	45.74	14.19	63.94	37.94	38.06	107.34	30.90	72.99
Movement LOS	E	D	B	E	D	B	E	D	D	F	C	E
d_A, Approach Delay [s/veh]	37.04			49.10			49.80			81.26		
Approach LOS	D			D			D			F		
d_I, Intersection Delay [s/veh]	49.46											
Intersection LOS	D											
Intersection V/C	0.934											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	40.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.971

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	391	0	0	244	45	80	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	1078	4	6	1532	139	139	4	126	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	307	1	2	436	40	40	1	36	1	1	2
Total Analysis Volume [veh/h]	103	1228	5	7	1745	158	158	5	144	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	48	0	11	46	0	12	20	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	35	35	1	30	30	8	9	9	0	1	1
g / C, Green / Cycle	0.10	0.58	0.58	0.01	0.49	0.49	0.13	0.14	0.14	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.06	0.38	0.00	0.00	0.55	0.11	0.10	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	153	1836	820	22	1573	702	202	238	203	10	37	31
d1, Uniform Delay [s]	26.59	8.92	5.51	29.74	15.43	8.80	25.77	22.46	24.91	30.11	29.20	29.26
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.07	0.43	0.00	8.44	51.80	0.16	6.49	0.03	4.57	15.91	1.66	3.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.67	0.01	0.32	1.11	0.22	0.78	0.02	0.71	0.30	0.14	0.22
d, Delay for Lane Group [s/veh]	31.66	9.35	5.51	38.18	67.23	8.96	32.26	22.50	29.48	46.02	30.86	32.83
Lane Group LOS	C	A	A	D	F	A	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.45	3.24	0.02	0.14	18.34	0.84	2.45	0.06	2.12	0.09	0.09	0.13
50th-Percentile Queue Length [ft]	36.33	80.90	0.41	3.48	458.40	20.88	61.14	1.51	52.90	2.15	2.13	3.17
95th-Percentile Queue Length [veh]	2.62	5.82	0.03	0.25	27.28	1.50	4.40	0.11	3.81	0.15	0.15	0.23
95th-Percentile Queue Length [ft]	65.40	145.61	0.74	6.27	682.04	37.58	110.05	2.72	95.22	3.87	3.84	5.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.66	9.35	5.51	38.18	67.23	8.96	32.26	22.50	29.48	46.02	30.86	32.83
Movement LOS	C	A	A	D	F	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	11.06			62.30			30.80			34.81		
Approach LOS	B			E			C			C		
d_I, Intersection Delay [s/veh]	40.29											
Intersection LOS	D											
Intersection V/C	0.971											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	218.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.617

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	59	181	0	69	113	63	101	3	22	0	3	110
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	432	861	99	91	1439	153	170	126	578	217	245	128
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	239	27	25	399	42	47	35	160	60	68	36
Total Analysis Volume [veh/h]	479	956	110	101	1597	170	189	140	642	241	272	142
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	26	49	0	18	41	0	30	38	38	15	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	50	50	9	37	37	16	34	34	11	29
g / C, Green / Cycle	0.18	0.42	0.42	0.08	0.31	0.31	0.13	0.28	0.28	0.09	0.24
(v / s)_i Volume / Saturation Flow Rate	0.30	0.32	0.33	0.06	0.50	0.12	0.12	0.08	0.45	0.15	0.26
s, saturation flow rate [veh/h]	1597	1676	1617	1597	3192	1425	1597	1676	1425	1597	1581
c, Capacity [veh/h]	293	698	673	123	989	441	216	472	402	147	377
d1, Uniform Delay [s]	49.00	30.15	30.33	54.58	41.42	32.46	50.92	33.78	43.10	54.50	45.69
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	301.24	8.14	8.83	12.65	281.56	2.53	11.23	0.35	281.03	318.37	75.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

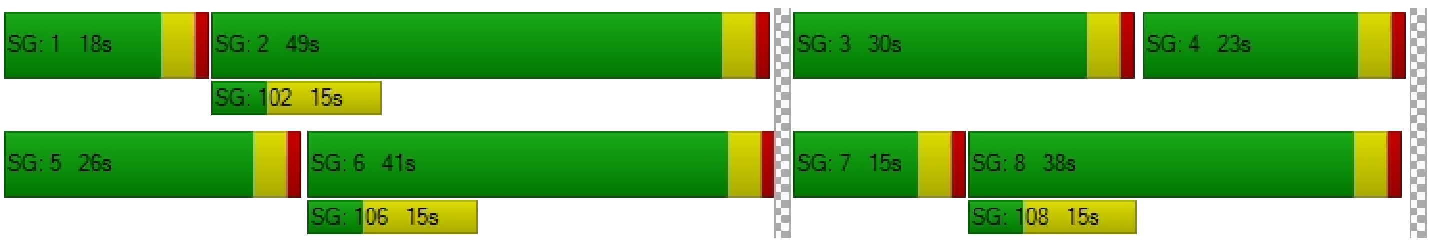
X, volume / capacity	1.64	0.77	0.78	0.82	1.62	0.39	0.88	0.30	1.60	1.64	1.10
d, Delay for Lane Group [s/veh]	350.24	38.29	39.16	67.24	322.98	35.00	62.15	34.12	324.13	372.87	121.08
Lane Group LOS	F	D	D	E	F	C	E	C	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	32.82	13.87	13.73	3.32	52.28	3.98	6.24	3.26	43.10	17.39	19.02
50th-Percentile Queue Length [ft]	820.45	346.77	343.16	82.91	1306.98	99.50	155.89	81.47	1077.52	434.63	475.62
95th-Percentile Queue Length [veh]	51.33	19.98	19.80	5.97	81.11	7.16	10.33	5.87	67.26	28.09	27.60
95th-Percentile Queue Length [ft]	1283.27	499.46	495.06	149.23	2027.71	179.10	258.28	146.64	1681.62	702.26	690.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	350.24	38.67	39.16	67.24	322.98	35.00	62.15	34.12	324.13	372.87	121.08	121.08
Movement LOS	F	D	D	E	F	C	E	C	F	F	F	F
d_A, Approach Delay [s/veh]	135.30			282.94			231.32			213.72		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	218.73											
Intersection LOS	F											
Intersection V/C	1.617											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	47.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.993

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	128	0	74	61	0	112
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1043	225	397	1825	389	365
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	280	60	107	491	105	98
Total Analysis Volume [veh/h]	1122	242	427	1962	418	392
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	47	0	36	83	37	37
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	43	43	32	79	33	33
g / C, Green / Cycle	0.36	0.36	0.27	0.66	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.35	0.17	0.27	0.61	0.13	0.28
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1143	510	426	2101	853	392
d1, Uniform Delay [s]	38.09	29.75	43.97	18.17	36.43	43.47
k, delay calibration	0.50	0.50	0.46	0.50	0.11	0.46
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.49	3.14	42.30	9.22	0.44	43.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.47	1.00	0.93	0.49	1.00
d, Delay for Lane Group [s/veh]	60.57	32.89	86.27	27.39	36.87	86.91
Lane Group LOS	E	C	F	C	D	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	18.59	5.51	16.86	21.44	5.19	16.23
50th-Percentile Queue Length [ft]	464.81	137.66	421.50	536.07	129.78	405.72
95th-Percentile Queue Length [veh]	25.66	9.35	23.63	29.04	8.93	22.84
95th-Percentile Queue Length [ft]	641.59	233.87	590.85	725.92	223.19	570.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.57	32.89	86.27	27.39	36.87	86.91
Movement LOS	E	C	F	C	D	F
d_A, Approach Delay [s/veh]	55.66		37.92		61.08	
Approach LOS	E		D		E	
d_I, Intersection Delay [s/veh]	47.33					
Intersection LOS	D					
Intersection V/C	0.993					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	357.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.250

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	521	47	0	638
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	82	525	50	92	641
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	28	179	17	31	218
Total Analysis Volume [veh/h]	84	112	715	68	125	873
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.25	0.27	0.01	0.00	0.15	0.01
d_M, Delay for Movement [s/veh]	357.38	312.56	0.00	0.00	10.07	0.00
Movement LOS	F	F	A	A	B	A
95th-Percentile Queue Length [veh]	13.75	13.75	0.00	0.00	0.53	0.00
95th-Percentile Queue Length [ft]	343.66	343.66	0.00	0.00	13.13	0.00
d_A, Approach Delay [s/veh]	331.77		0.00		1.26	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	33.53					
Intersection LOS	F					

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.015

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	49	0	0	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	46	9	24	81	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	9	75	81	7	33
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	3	25	27	2	11
Total Analysis Volume [veh/h]	62	12	101	109	9	45
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.07	0.00	0.02	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	7.53	0.00	11.45	8.88
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.21	0.00	0.19	0.19
95th-Percentile Queue Length [ft]	0.00	0.00	5.31	0.00	4.84	4.84
d_A, Approach Delay [s/veh]	0.00		3.62		9.31	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.74					
Intersection LOS	B					

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	21.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	214	135	35	55	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	333	288	135	173	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	124	107	50	64	37
Total Analysis Volume [veh/h]	119	496	429	201	258	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.13	3.21	3.21	5.19	4.61	4.17	1.29
95th-Percentile Queue Length [ft]	28.21	80.31	80.31	129.82	115.13	104.18	32.28
Approach Delay [s/veh]	18.73			24.77		21.01	
Approach LOS	C			C		C	
Intersection Delay [s/veh]	21.60						
Intersection LOS	C						

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	28.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	104	0	0	64	34	53	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	277	0	1	318	100	99	3	116	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	83	0	0	96	30	30	1	35	2	2	0
Total Analysis Volume [veh/h]	144	333	0	1	382	120	119	4	139	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.68	9.21	1.04	0.02	1.02	0.11
95th-Percentile Queue Length [ft]	217.03	230.29	25.94	0.62	25.56	2.73
Approach Delay [s/veh]	33.15	33.92	12.44			11.76
Approach LOS	D	D	B			B
Intersection Delay [s/veh]	28.88					
Intersection LOS	D					

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 8: E+A+P+C PM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Thru	1.671	221.5	F
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	1.585	236.2	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Right	1.357	143.1	F
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Thru	1.067	108.0	F
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.598	261.2	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.537	176.8	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.229	86.7	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.006	12.7	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		68.5	F
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		85.1	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	221.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.671

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	526	88	3	0	95	12	20	98	828	2	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	530	1274	6	2	941	13	22	100	829	5	62	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	355	2	1	263	4	6	28	231	1	17	0
Total Analysis Volume [veh/h]	592	1422	7	2	1050	15	25	112	925	6	69	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	58	0	11	43	0	0	51	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	61	0	39	39	47	47	47	47
g / C, Green / Cycle	0.18	0.50	0.00	0.33	0.33	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.19	0.85	0.00	0.33	0.01	0.13	0.65	0.05	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	1081	1425	1477	1425
c, Capacity [veh/h]	569	846	7	1039	464	458	557	610	557
d1, Uniform Delay [s]	48.97	29.70	59.55	40.46	27.58	25.27	36.54	23.40	22.27
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.15	315.59	22.54	30.51	0.13	0.36	305.17	0.09	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

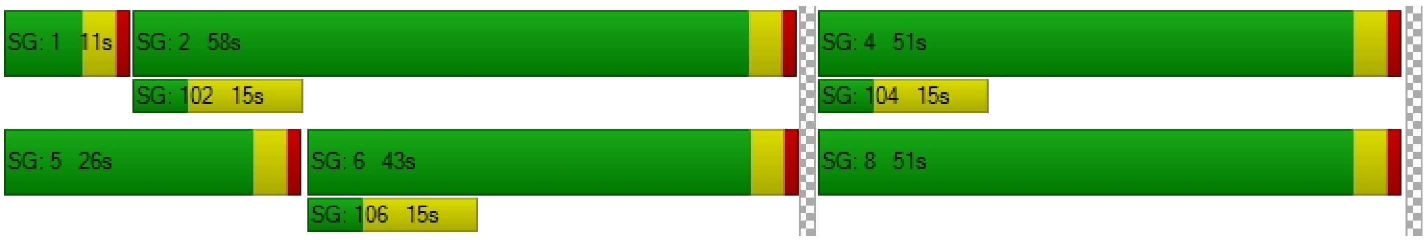
X, volume / capacity	1.04	1.69	0.30	1.01	0.03	0.30	1.66	0.12	0.00
d, Delay for Lane Group [s/veh]	78.12	345.29	82.09	70.96	27.70	25.63	341.71	23.49	22.27
Lane Group LOS	F	F	F	F	C	C	F	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	10.23	94.67	0.10	18.28	0.29	2.64	63.14	1.38	0.02
50th-Percentile Queue Length [ft]	255.67	2366.82	2.50	456.95	7.24	66.06	1578.39	34.54	0.44
95th-Percentile Queue Length [veh]	15.78	148.83	0.18	25.47	0.52	4.76	99.11	2.49	0.03
95th-Percentile Queue Length [ft]	394.44	3720.75	4.49	636.63	13.04	118.91	2477.83	62.17	0.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.12	345.29	345.29	82.09	70.96	27.70	25.63	25.63	341.71	23.49	23.49	22.27
Movement LOS	F	F	F	F	F	C	C	C	F	C	C	C
d_A, Approach Delay [s/veh]	267.03			70.38			300.93			23.47		
Approach LOS	F			E			F			C		
d_I, Intersection Delay [s/veh]	221.52											
Intersection LOS	F											
Intersection V/C	1.671											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	236.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.585

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	519	447	7	142	706	77	78	110	511	6	110	92
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	535	1608	146	177	1515	93	93	115	529	100	117	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	444	40	49	419	26	26	32	146	28	32	32
Total Analysis Volume [veh/h]	591	1777	161	196	1674	103	103	127	585	110	129	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	45	0	29	43	0	18	35	0	11	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	49	49	17	39	39	9	31	31	7	29	29
g / C, Green / Cycle	0.22	0.41	0.41	0.14	0.33	0.33	0.08	0.26	0.26	0.06	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.37	0.56	0.11	0.12	0.52	0.07	0.06	0.08	0.41	0.07	0.08	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	359	1317	588	222	1043	466	125	430	366	93	397	337
d1, Uniform Delay [s]	46.50	35.25	23.34	50.69	40.40	29.32	54.50	35.88	44.60	56.50	37.86	38.43
k, delay calibration	0.50	0.50	0.50	0.14	0.50	0.50	0.11	0.11	0.50	0.44	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	302.57	162.30	1.15	13.87	276.91	1.10	12.65	0.38	282.45	143.44	0.47	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

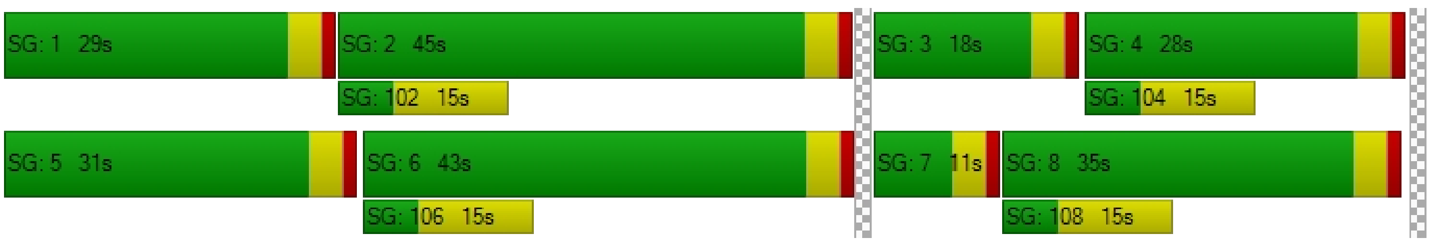
X, volume / capacity	1.65	1.35	0.27	0.88	1.61	0.22	0.82	0.30	1.60	1.18	0.32	0.38
d, Delay for Lane Group [s/veh]	349.07	197.54	24.49	64.57	317.31	30.42	67.15	36.25	327.06	199.94	38.33	39.14
Lane Group LOS	F	F	C	E	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	40.09	46.65	2.93	6.27	54.04	2.14	3.50	3.05	39.45	6.47	3.11	3.17
50th-Percentile Queue Length [ft]	1002.32	1166.18	73.35	156.69	1350.95	53.49	87.61	76.25	986.18	161.70	77.63	79.14
95th-Percentile Queue Length [veh]	62.48	69.67	5.28	10.37	83.80	3.85	6.31	5.49	61.65	11.16	5.59	5.70
95th-Percentile Queue Length [ft]	1561.95	1741.76	132.03	259.33	2094.93	96.27	157.70	137.25	1541.18	278.92	139.74	142.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	349.07	197.54	24.49	64.57	317.31	30.42	67.15	36.25	327.06	199.94	38.33	39.14
Movement LOS	F	F	C	E	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	221.94			277.22			248.89			86.92		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	236.25											
Intersection LOS	F											
Intersection V/C	1.585											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	143.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.357

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	630	10	430	793	0	0	0	0	9	0	343
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1885	188	516	1726	8	6	15	25	131	27	403
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	524	52	143	479	2	2	4	7	36	8	112
Total Analysis Volume [veh/h]	27	2094	209	573	1918	9	7	17	28	146	30	448
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	56	0	19	64	0	11	21	0	14	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	52	52	15	63	63	1	17	17	10	26	26
g / C, Green / Cycle	0.04	0.47	0.47	0.14	0.57	0.57	0.01	0.15	0.15	0.09	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.02	0.66	0.15	0.18	0.60	0.01	0.00	0.01	0.02	0.09	0.02	0.31
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	57	1514	676	423	1835	819	20	257	218	145	388	330
d1, Uniform Delay [s]	52.01	28.92	17.82	47.50	23.39	10.01	53.89	39.86	40.25	50.00	33.06	42.26
k, delay calibration	0.11	0.50	0.50	0.18	0.50	0.50	0.11	0.11	0.11	0.37	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.93	176.75	1.19	165.52	34.02	0.02	10.53	0.11	0.26	65.93	0.08	179.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	1.38	0.31	1.35	1.05	0.01	0.36	0.07	0.13	1.01	0.08	1.36
d, Delay for Lane Group [s/veh]	57.95	205.67	19.01	213.02	57.41	10.03	64.42	39.97	40.51	115.94	33.15	221.53
Lane Group LOS	E	F	B	F	F	B	E	D	D	F	C	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.79	54.52	3.18	15.20	28.07	0.09	0.25	0.41	0.68	6.64	0.64	25.28
50th-Percentile Queue Length [ft]	19.83	1363.12	79.47	379.96	701.74	2.18	6.28	10.15	16.96	165.90	15.94	631.93
95th-Percentile Queue Length [veh]	1.43	82.05	5.72	24.30	38.13	0.16	0.45	0.73	1.22	10.88	1.15	38.91
95th-Percentile Queue Length [ft]	35.69	2051.27	143.04	607.42	953.27	3.92	11.30	18.27	30.53	272.07	28.68	972.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.95	205.67	19.01	213.02	57.41	10.03	64.42	39.97	40.51	115.94	33.15	221.53
Movement LOS	E	F	B	F	F	B	E	D	D	F	C	F
d_A, Approach Delay [s/veh]	187.22			92.91			43.55			187.77		
Approach LOS	F			F			D			F		
d_I, Intersection Delay [s/veh]	143.10											
Intersection LOS	F											
Intersection V/C	1.357											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	108.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.067

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	507	0	0	635	167	133	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	1839	5	2	1530	214	225	1	89	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	524	1	1	436	61	64	0	25	1	1	3
Total Analysis Volume [veh/h]	180	2095	6	2	1743	244	256	1	101	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO
Version 4.00-03

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	40	40	0	30	30	14	14	14	1	2	2
g / C, Green / Cycle	0.14	0.56	0.56	0.00	0.42	0.42	0.19	0.20	0.20	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.66	0.00	0.00	0.55	0.17	0.16	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	223	1778	794	7	1346	601	304	339	288	18	38	33
d1, Uniform Delay [s]	29.67	15.75	7.00	35.31	20.57	14.35	27.74	22.66	24.37	34.88	33.99	34.22
k, delay calibration	0.11	0.29	0.11	0.11	0.19	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.75	83.79	0.00	22.11	134.93	0.44	6.21	0.00	0.73	9.86	0.55	5.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	1.18	0.01	0.29	1.29	0.41	0.84	0.00	0.35	0.33	0.05	0.34
d, Delay for Lane Group [s/veh]	36.42	99.54	7.01	57.42	155.50	14.79	33.95	22.66	25.10	44.75	34.55	40.13
Lane Group LOS	D	F	A	E	F	B	C	C	C	D	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.05	30.13	0.03	0.07	33.80	2.24	4.51	0.01	1.46	0.15	0.04	0.24
50th-Percentile Queue Length [ft]	76.16	753.36	0.73	1.83	844.97	56.07	112.87	0.33	36.41	3.76	0.97	5.88
95th-Percentile Queue Length [veh]	5.48	44.17	0.05	0.13	50.99	4.04	8.00	0.02	2.62	0.27	0.07	0.42
95th-Percentile Queue Length [ft]	137.09	1104.17	1.31	3.29	1274.77	100.92	199.99	0.59	65.54	6.78	1.74	10.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.42	99.54	7.01	57.42	155.50	14.79	33.95	22.66	25.10	44.75	34.55	40.13
Movement LOS	D	F	A	E	F	B	C	C	C	D	C	D
d_A, Approach Delay [s/veh]	94.31			138.14			31.42			41.00		
Approach LOS	F			F			C			D		
d_I, Intersection Delay [s/veh]	108.01											
Intersection LOS	F											
Intersection V/C	1.067											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	261.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.598

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	45	216	0	173	275	191	158	8	72	0	8	137
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	499	1618	208	202	1140	254	235	189	634	176	146	158
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	449	58	56	316	70	65	52	176	49	41	44
Total Analysis Volume [veh/h]	554	1796	231	224	1265	282	261	210	704	195	162	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	51	0	15	36	0	23	41	41	13	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO
Version 4.00-03

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	47	47	11	32	32	19	37	37	9	27
g / C, Green / Cycle	0.22	0.39	0.39	0.09	0.27	0.27	0.16	0.31	0.31	0.08	0.22
(v / s)_i Volume / Saturation Flow Rate	0.35	0.60	0.63	0.14	0.40	0.20	0.16	0.13	0.49	0.12	0.22
s, saturation flow rate [veh/h]	1597	1676	1612	1597	3192	1425	1597	1676	1425	1597	1536
c, Capacity [veh/h]	346	659	633	147	856	382	253	514	437	120	343
d1, Uniform Delay [s]	47.01	36.43	36.43	54.50	43.92	40.07	50.50	33.00	41.62	55.50	46.38
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.45	0.11	0.50	0.50	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	283.83	249.88	277.53	267.99	221.19	12.02	61.98	0.52	285.86	314.39	40.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

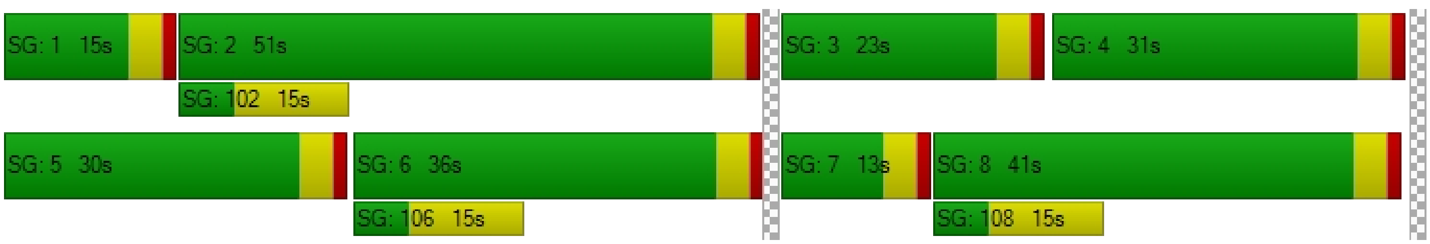
X, volume / capacity	1.60	1.54	1.60	1.53	1.48	0.74	1.03	0.41	1.61	1.62	0.98
d, Delay for Lane Group [s/veh]	330.84	286.31	313.96	322.49	265.10	52.09	112.49	33.52	327.48	369.89	87.26
Lane Group LOS	F	F	F	F	F	D	F	C	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	37.03	63.34	65.76	15.17	38.24	8.45	11.93	4.93	47.40	14.14	13.82
50th-Percentile Queue Length [ft]	925.82	1583.62	1643.99	379.36	955.88	211.20	298.13	123.15	1185.09	353.44	345.45
95th-Percentile Queue Length [veh]	57.58	97.12	101.87	24.60	58.66	13.21	17.86	8.57	74.01	23.20	19.91
95th-Percentile Queue Length [ft]	1439.53	2428.04	2546.68	614.90	1466.53	330.37	446.41	214.15	1850.32	579.92	497.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	330.84	298.36	313.96	322.49	265.10	52.09	112.49	33.52	327.48	369.89	87.26	87.26
Movement LOS	F	F	F	F	F	D	F	C	F	F	F	F
d_A, Approach Delay [s/veh]	306.73			238.44			227.19			190.86		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	261.17											
Intersection LOS	F											
Intersection V/C	1.598											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	176.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.537

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	118	0	178	169	0	143
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1726	408	505	1434	316	612
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	464	110	136	385	85	165
Total Analysis Volume [veh/h]	1856	439	543	1542	340	658
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	49	0	31	80	40	40
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	27	76	36	36
g / C, Green / Cycle	0.37	0.37	0.23	0.63	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.58	0.31	0.34	0.48	0.11	0.46
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1196	534	360	2022	930	427
d1, Uniform Delay [s]	37.49	33.88	46.46	15.59	33.01	41.98
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	252.32	13.34	243.46	2.79	0.24	254.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.55	0.82	1.51	0.76	0.37	1.54
d, Delay for Lane Group [s/veh]	289.81	47.22	289.91	18.38	33.25	296.24
Lane Group LOS	F	D	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	58.01	12.64	34.44	13.01	3.93	42.67
50th-Percentile Queue Length [ft]	1450.14	316.12	860.96	325.25	98.36	1066.69
95th-Percentile Queue Length [veh]	89.44	18.48	53.16	18.93	7.08	66.17
95th-Percentile Queue Length [ft]	2235.94	461.91	1328.94	473.13	177.05	1654.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	289.81	47.22	289.91	18.38	33.25	296.24
Movement LOS	F	D	F	B	C	F
d_A, Approach Delay [s/veh]	243.41		89.10		206.64	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	176.76					
Intersection LOS	F					
Intersection V/C	1.537					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	86.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.229

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	699	13	0	706
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	85	703	14	28	711
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	239	5	10	242
Total Analysis Volume [veh/h]	14	116	958	19	38	969
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.23	0.38	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	86.71	39.49	0.00	0.00	10.39	0.00
Movement LOS	F	E	A	A	B	A
95th-Percentile Queue Length [veh]	3.47	3.47	0.00	0.00	0.17	0.00
95th-Percentile Queue Length [ft]	86.71	86.71	0.00	0.00	4.26	0.00
d_A, Approach Delay [s/veh]	44.57		0.00		0.39	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	2.93					
Intersection LOS	F					

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	37	0	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	171	1	4	137	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	1	42	137	2	39
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	0	14	46	1	13
Total Analysis Volume [veh/h]	231	1	57	185	3	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.01	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	7.82	0.00	12.74	9.81
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.13	0.00	0.23	0.23
95th-Percentile Queue Length [ft]	0.00	0.00	3.34	0.00	5.78	5.78
d_A, Approach Delay [s/veh]	0.00		1.84		9.97	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.89					
Intersection LOS	B					

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	68.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	274	343	86	68	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	463	476	172	174	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	173	177	64	65	32
Total Analysis Volume [veh/h]	86	690	709	256	259	127
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.81	7.59	7.59	17.90	16.39	5.50	1.33
95th-Percentile Queue Length [ft]	20.29	189.87	189.87	447.56	409.72	137.43	33.16
Approach Delay [s/veh]	37.22			109.58		28.96	
Approach LOS	E			F		D	
Intersection Delay [s/veh]	68.55						
Intersection LOS	F						

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	85.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	137	0	0	172	89	72	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	393	7	3	356	147	152	4	103	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	118	2	1	107	44	46	1	31	2	1	0
Total Analysis Volume [veh/h]	169	472	8	4	428	177	183	5	124	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Lanes

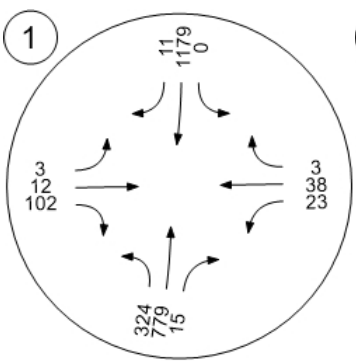
Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	23.02	17.88	2.01	0.03	0.93	0.08
95th-Percentile Queue Length [ft]	575.50	446.97	50.16	0.81	23.27	2.05
Approach Delay [s/veh]	122.07	83.11	14.59			11.97
Approach LOS	F	F	B			B
Intersection Delay [s/veh]	85.09					
Intersection LOS	F					

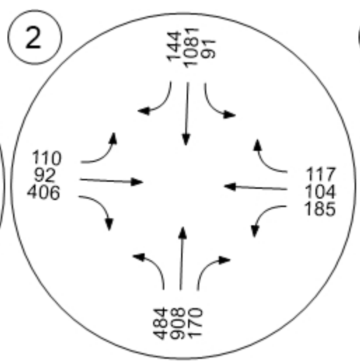
PLACEWORKS

Traffic Volume - Future Total Volume

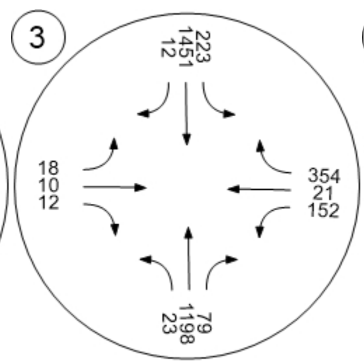
Winchester Road at Keller Ro



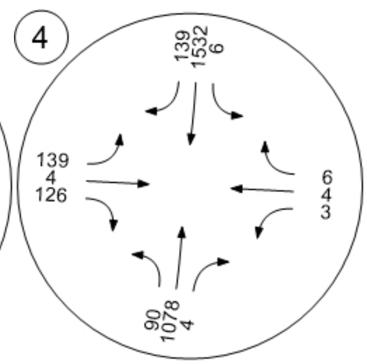
Winchester Road at Pourroy



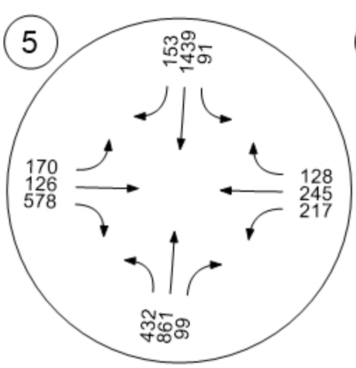
Winchester Road at Whisper



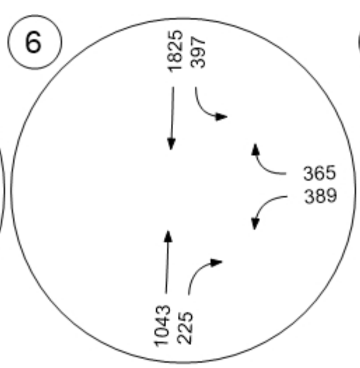
Winchester Road at Jean Nic



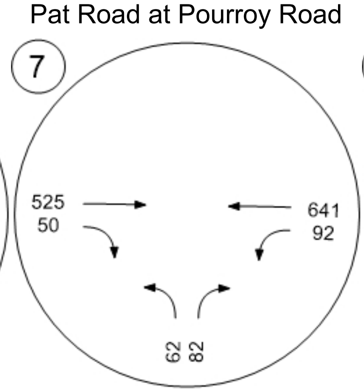
Winchester Road at Max Gilli



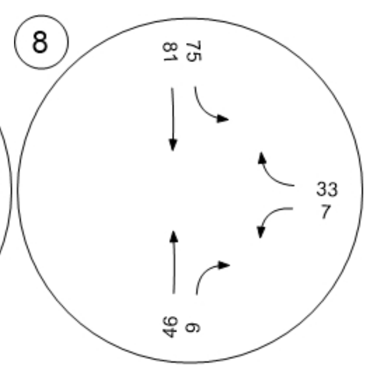
Winchester Road at Benton



Pat Road at Pourroy Road

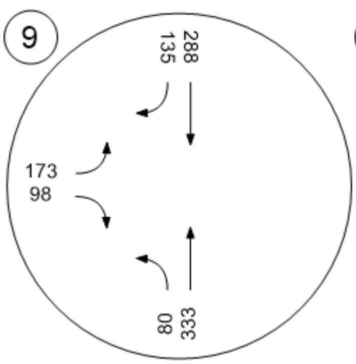


Jean Nicholas Road at Elliot

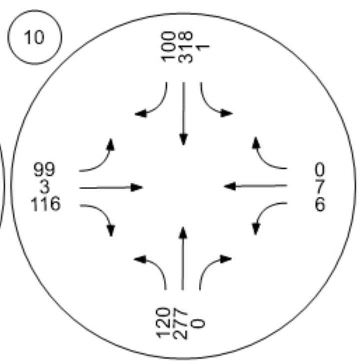


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+A+P+C AM_new.pdf

Scenario 7: E+A+P+C AM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	EB Right	0.736	15.9	B
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	1.329	132.5	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	0.934	49.5	D
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	NB Left	0.825	21.0	C
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.617	218.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.993	47.3	D
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	1.250	357.4	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.325	31.9	D
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		21.6	C
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		28.9	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	323	75	12	0	79	8	2	11	98	15	38	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	779	15	0	1179	11	3	12	102	23	38	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	217	4	0	329	3	1	3	28	6	11	1
Total Analysis Volume [veh/h]	362	869	17	0	1316	12	3	13	114	26	42	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	14	40	0	11	37	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	51	0	41	41	7	7	7	7
g / C, Green / Cycle	0.14	0.73	0.00	0.59	0.59	0.10	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.12	0.53	0.00	0.41	0.01	0.01	0.08	0.06	0.00
s, saturation flow rate [veh/h]	3101	1671	1597	3192	1425	1554	1425	1090	1425
c, Capacity [veh/h]	444	1212	3	1864	832	219	145	182	145
d1, Uniform Delay [s]	29.15	5.63	0.00	10.33	6.12	28.55	30.74	29.96	28.34
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.71	3.91	0.00	2.28	0.03	0.14	8.94	1.27	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.73	0.00	0.71	0.01	0.07	0.78	0.37	0.02
d, Delay for Lane Group [s/veh]	32.86	9.55	0.00	12.62	6.16	28.69	39.68	31.23	28.39
Lane Group LOS	C	A	A	B	A	C	D	C	C
Critical Lane Group	No	Yes	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	2.73	2.90	0.00	4.62	0.05	0.24	2.17	1.14	0.05
50th-Percentile Queue Length [ft]	68.27	72.58	0.00	115.51	1.27	6.11	54.27	28.57	1.15
95th-Percentile Queue Length [veh]	4.92	5.23	0.00	8.15	0.09	0.44	3.91	2.06	0.08
95th-Percentile Queue Length [ft]	122.89	130.64	0.00	203.63	2.29	11.00	97.69	51.43	2.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.86	9.55	9.55	0.00	12.62	6.16	28.69	28.69	39.68	31.23	31.23	28.39
Movement LOS	C	A	A	A	B	A	C	C	D	C	C	C
d_A, Approach Delay [s/veh]	16.31			12.56			38.32			31.11		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	15.92											
Intersection LOS	B											
Intersection V/C	0.736											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	132.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.329

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	459	283	2	19	86	87	70	77	374	2	92	57
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	484	908	170	91	1081	144	110	92	406	185	104	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	134	251	47	25	299	40	30	25	112	51	29	32
Total Analysis Volume [veh/h]	535	1003	188	101	1194	159	122	102	449	204	115	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	53	0	18	37	0	30	33	0	16	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	54	54	9	33	33	11	29	29	12	30	30
g / C, Green / Cycle	0.25	0.45	0.45	0.08	0.28	0.28	0.09	0.24	0.24	0.10	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.34	0.31	0.13	0.06	0.37	0.11	0.08	0.06	0.32	0.13	0.07	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	399	1434	640	123	881	393	147	404	343	160	417	355
d1, Uniform Delay [s]	45.00	26.55	20.98	54.59	43.45	35.41	53.58	36.83	45.56	54.00	36.34	37.22
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	169.23	2.86	1.17	12.76	167.50	3.07	11.40	0.33	158.51	164.21	0.35	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

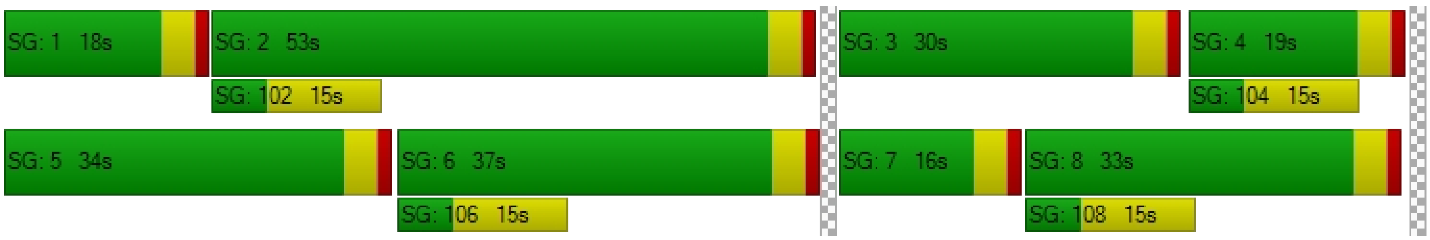
X, volume / capacity	1.34	0.70	0.29	0.82	1.36	0.40	0.83	0.25	1.31	1.28	0.28	0.36
d, Delay for Lane Group [s/veh]	214.24	29.42	22.14	67.35	210.95	38.48	64.97	37.16	204.06	218.21	36.70	37.85
Lane Group LOS	F	C	C	E	F	D	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	29.69	10.74	3.22	3.27	32.45	3.86	4.08	2.47	25.23	11.98	2.69	3.11
50th-Percentile Queue Length [ft]	742.15	268.38	80.44	81.75	811.36	96.42	102.05	61.76	630.71	299.42	67.26	77.63
95th-Percentile Queue Length [veh]	44.89	16.11	5.79	5.89	49.09	6.94	7.35	4.45	38.38	19.26	4.84	5.59
95th-Percentile Queue Length [ft]	1122.22	402.71	144.79	147.15	1227.29	173.55	183.69	111.17	959.48	481.59	121.07	139.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	214.24	29.42	22.14	67.35	210.95	38.48	64.97	37.16	204.06	218.21	36.70	37.85
Movement LOS	F	C	C	E	F	D	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	85.91			182.11			153.55			119.68		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	132.54											
Intersection LOS	F											
Intersection V/C	1.329											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	49.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.934

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	469	2	175	287	0	0	0	0	2	0	275
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1198	79	223	1451	12	18	10	12	152	21	354
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	333	22	62	403	3	5	3	3	42	6	98
Total Analysis Volume [veh/h]	26	1331	88	248	1612	13	20	11	13	169	23	393
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	59	0	14	62	0	11	30	0	17	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	56	56	10	62	62	3	25	25	13	35	35
g / C, Green / Cycle	0.03	0.47	0.47	0.08	0.52	0.52	0.03	0.21	0.21	0.11	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.02	0.42	0.06	0.08	0.51	0.01	0.01	0.01	0.01	0.11	0.01	0.28
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	54	1491	666	258	1649	736	45	348	296	173	482	410
d1, Uniform Delay [s]	56.94	29.22	18.16	54.80	28.32	14.15	57.36	37.90	38.00	53.35	30.86	42.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.38	0.11	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.49	8.53	0.41	17.97	17.42	0.04	6.59	0.04	0.06	53.99	0.04	30.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

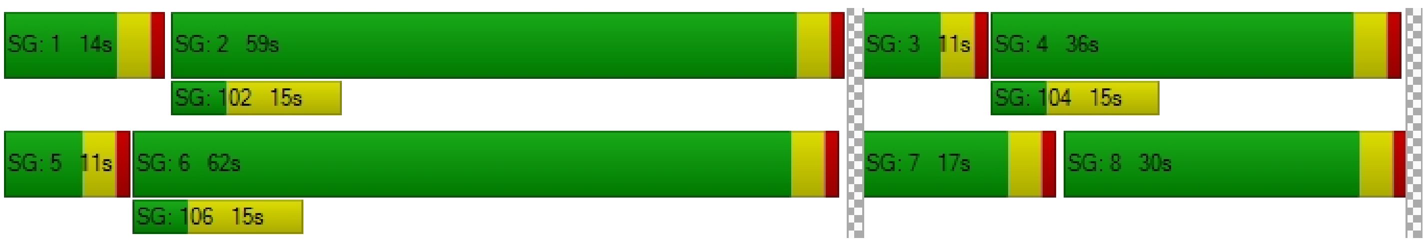
X, volume / capacity	0.48	0.89	0.13	0.96	0.98	0.02	0.44	0.03	0.04	0.98	0.05	0.96
d, Delay for Lane Group [s/veh]	63.43	37.75	18.57	72.77	45.74	14.19	63.94	37.94	38.06	107.34	30.90	72.99
Lane Group LOS	E	D	B	E	D	B	E	D	D	F	C	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.84	17.48	1.37	4.22	23.72	0.17	0.69	0.27	0.32	7.67	0.49	14.83
50th-Percentile Queue Length [ft]	21.06	436.97	34.18	105.53	592.92	4.20	17.13	6.66	7.91	191.67	12.28	370.80
95th-Percentile Queue Length [veh]	1.52	24.34	2.46	7.59	31.70	0.30	1.23	0.48	0.57	12.21	0.88	21.15
95th-Percentile Queue Length [ft]	37.91	608.38	61.52	189.77	792.59	7.56	30.83	11.98	14.23	305.19	22.11	528.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.43	37.75	18.57	72.77	45.74	14.19	63.94	37.94	38.06	107.34	30.90	72.99
Movement LOS	E	D	B	E	D	B	E	D	D	F	C	E
d_A, Approach Delay [s/veh]	37.04			49.10			49.80			81.26		
Approach LOS	D			D			D			F		
d_I, Intersection Delay [s/veh]	49.46											
Intersection LOS	D											
Intersection V/C	0.934											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	391	0	0	244	45	80	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	1078	4	6	1532	139	139	4	126	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	307	1	2	436	40	40	1	36	1	1	2
Total Analysis Volume [veh/h]	103	1228	5	7	1745	158	158	5	144	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	22	0	11	19	0	68	76	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	86	86	1	78	78	14	16	16	1	2	2
g / C, Green / Cycle	0.08	0.72	0.72	0.01	0.65	0.65	0.12	0.13	0.13	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.06	0.38	0.00	0.00	0.55	0.11	0.10	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	125	2292	1023	20	2083	930	186	218	185	10	33	28
d1, Uniform Delay [s]	54.53	7.76	4.79	58.77	15.98	8.15	52.01	45.56	50.53	59.40	57.85	57.96
k, delay calibration	0.22	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.52	0.90	0.01	9.93	4.22	0.40	10.33	0.04	6.85	17.26	2.09	4.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

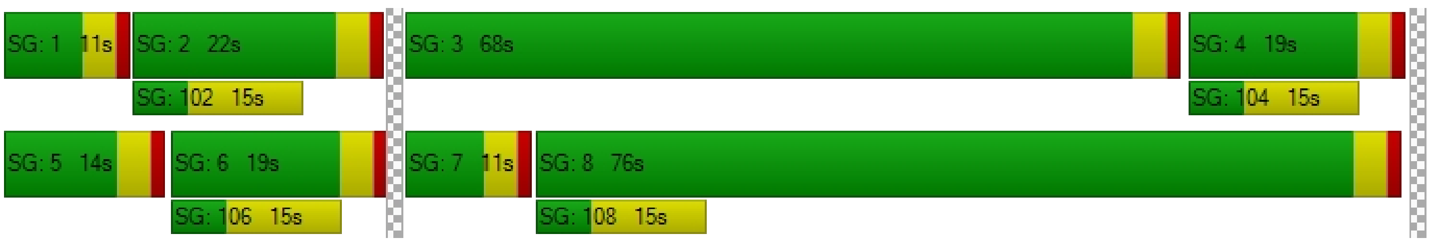
X, volume / capacity	0.83	0.54	0.00	0.35	0.84	0.17	0.85	0.02	0.78	0.31	0.15	0.25
d, Delay for Lane Group [s/veh]	78.06	8.66	4.80	68.70	20.19	8.54	62.34	45.60	57.38	76.67	59.93	62.49
Lane Group LOS	E	A	A	E	C	A	E	D	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.76	5.64	0.03	0.26	15.74	1.44	5.19	0.13	4.54	0.14	0.17	0.25
50th-Percentile Queue Length [ft]	93.90	140.93	0.73	6.47	393.51	36.07	129.84	3.34	113.43	3.43	4.22	6.13
95th-Percentile Queue Length [veh]	6.76	9.53	0.05	0.47	22.25	2.60	8.93	0.24	8.03	0.25	0.30	0.44
95th-Percentile Queue Length [ft]	169.02	238.28	1.32	11.65	556.17	64.93	223.27	6.01	200.76	6.17	7.59	11.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.06	8.66	4.80	68.70	20.19	8.54	62.34	45.60	57.38	76.67	59.93	62.49
Movement LOS	E	A	A	E	C	A	E	D	E	E	E	E
d_A, Approach Delay [s/veh]	13.99			19.41			59.74			64.48		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	21.04											
Intersection LOS	C											
Intersection V/C	0.825											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	218.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.617

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	59	181	0	69	113	63	101	3	22	0	3	110
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	432	861	99	91	1439	153	170	126	578	217	245	128
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	239	27	25	399	42	47	35	160	60	68	36
Total Analysis Volume [veh/h]	479	956	110	101	1597	170	189	140	642	241	272	142
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	26	49	0	18	41	0	30	38	38	15	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	50	50	9	37	37	16	34	34	11	29
g / C, Green / Cycle	0.18	0.42	0.42	0.08	0.31	0.31	0.13	0.28	0.28	0.09	0.24
(v / s)_i Volume / Saturation Flow Rate	0.30	0.32	0.33	0.06	0.50	0.12	0.12	0.08	0.45	0.15	0.26
s, saturation flow rate [veh/h]	1597	1676	1617	1597	3192	1425	1597	1676	1425	1597	1581
c, Capacity [veh/h]	293	698	673	123	989	441	216	472	402	147	377
d1, Uniform Delay [s]	49.00	30.15	30.33	54.58	41.42	32.46	50.92	33.78	43.10	54.50	45.69
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	301.24	8.14	8.83	12.65	281.56	2.53	11.23	0.35	281.03	318.37	75.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

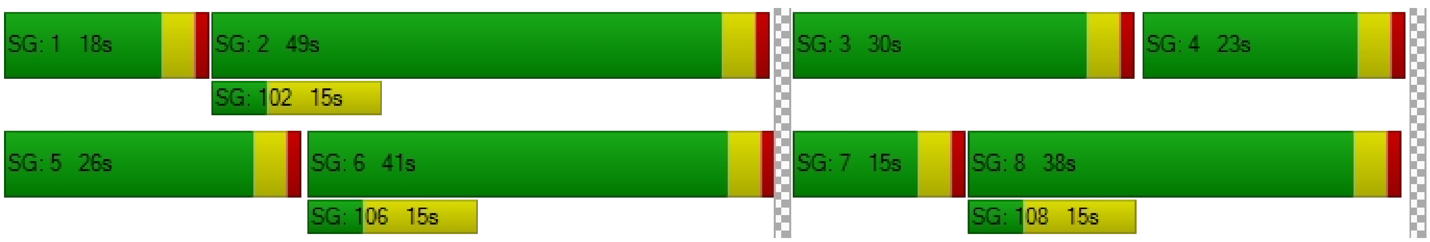
X, volume / capacity	1.64	0.77	0.78	0.82	1.62	0.39	0.88	0.30	1.60	1.64	1.10
d, Delay for Lane Group [s/veh]	350.24	38.29	39.16	67.24	322.98	35.00	62.15	34.12	324.13	372.87	121.08
Lane Group LOS	F	D	D	E	F	C	E	C	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	32.82	13.87	13.73	3.32	52.28	3.98	6.24	3.26	43.10	17.39	19.02
50th-Percentile Queue Length [ft]	820.45	346.77	343.16	82.91	1306.98	99.50	155.89	81.47	1077.52	434.63	475.62
95th-Percentile Queue Length [veh]	51.33	19.98	19.80	5.97	81.11	7.16	10.33	5.87	67.26	28.09	27.60
95th-Percentile Queue Length [ft]	1283.27	499.46	495.06	149.23	2027.71	179.10	258.28	146.64	1681.62	702.26	690.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	350.24	38.67	39.16	67.24	322.98	35.00	62.15	34.12	324.13	372.87	121.08	121.08
Movement LOS	F	D	D	E	F	C	E	C	F	F	F	F
d_A, Approach Delay [s/veh]	135.30			282.94			231.32			213.72		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	218.73											
Intersection LOS	F											
Intersection V/C	1.617											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	47.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.993

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	128	0	74	61	0	112
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1043	225	397	1825	389	365
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	280	60	107	491	105	98
Total Analysis Volume [veh/h]	1122	242	427	1962	418	392
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	47	0	36	83	37	37
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	43	43	32	79	33	33
g / C, Green / Cycle	0.36	0.36	0.27	0.66	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.35	0.17	0.27	0.61	0.13	0.28
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1143	510	426	2101	853	392
d1, Uniform Delay [s]	38.09	29.75	43.97	18.17	36.43	43.47
k, delay calibration	0.50	0.50	0.46	0.50	0.11	0.46
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.49	3.14	42.30	9.22	0.44	43.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.47	1.00	0.93	0.49	1.00
d, Delay for Lane Group [s/veh]	60.57	32.89	86.27	27.39	36.87	86.91
Lane Group LOS	E	C	F	C	D	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	18.59	5.51	16.86	21.44	5.19	16.23
50th-Percentile Queue Length [ft]	464.81	137.66	421.50	536.07	129.78	405.72
95th-Percentile Queue Length [veh]	25.66	9.35	23.63	29.04	8.93	22.84
95th-Percentile Queue Length [ft]	641.59	233.87	590.85	725.92	223.19	570.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.57	32.89	86.27	27.39	36.87	86.91
Movement LOS	E	C	F	C	D	F
d_A, Approach Delay [s/veh]	55.66		37.92		61.08	
Approach LOS	E		D		E	
d_I, Intersection Delay [s/veh]	47.33					
Intersection LOS	D					
Intersection V/C	0.993					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	357.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.250

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	521	47	0	638
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	82	525	50	92	641
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	28	179	17	31	218
Total Analysis Volume [veh/h]	84	112	715	68	125	873
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.25	0.27	0.01	0.00	0.15	0.01
d_M, Delay for Movement [s/veh]	357.38	312.56	0.00	0.00	10.07	0.00
Movement LOS	F	F	A	A	B	A
95th-Percentile Queue Length [veh]	13.75	13.75	0.00	0.00	0.53	0.00
95th-Percentile Queue Length [ft]	343.66	343.66	0.00	0.00	13.13	0.00
d_A, Approach Delay [s/veh]	331.77		0.00		1.26	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	33.53					
Intersection LOS	F					

Intersection Level Of Service Report

Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	31.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.325

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	189	13	94	138	49	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	46	9	24	81	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	243	23	122	225	58	151
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	8	41	76	20	51
Total Analysis Volume [veh/h]	328	31	165	304	78	204
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.14	0.00	0.33	0.29
d_M, Delay for Movement [s/veh]	0.00	0.00	8.48	0.00	31.90	22.03
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.48	0.00	4.08	4.08
95th-Percentile Queue Length [ft]	0.00	0.00	11.92	0.00	101.90	101.90
d_A, Approach Delay [s/veh]	0.00		2.98		24.76	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	7.55					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	21.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	214	135	35	55	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	333	288	135	173	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	124	107	50	64	37
Total Analysis Volume [veh/h]	119	496	429	201	258	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.13	3.21	3.21	5.19	4.61	4.17	1.29
95th-Percentile Queue Length [ft]	28.21	80.31	80.31	129.82	115.13	104.18	32.28
Approach Delay [s/veh]	18.73			24.77		21.01	
Approach LOS	C			C		C	
Intersection Delay [s/veh]	21.60						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	28.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	104	0	0	64	34	53	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	277	0	1	318	100	99	3	116	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	83	0	0	96	30	30	1	35	2	2	0
Total Analysis Volume [veh/h]	144	333	0	1	382	120	119	4	139	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

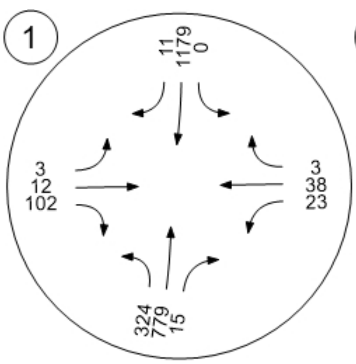
Lanes

Movement, Approach, & Intersection Results

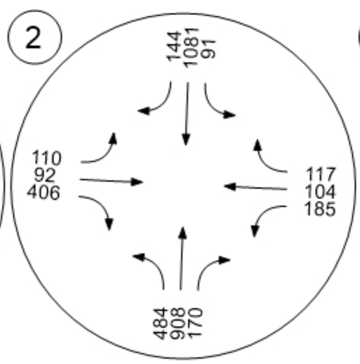
95th-Percentile Queue Length [veh]	8.68	9.21	1.04	0.02	1.02	0.11
95th-Percentile Queue Length [ft]	217.03	230.29	25.94	0.62	25.56	2.73
Approach Delay [s/veh]	33.15	33.92	12.44			11.76
Approach LOS	D	D	B			B
Intersection Delay [s/veh]	28.88					
Intersection LOS	D					

Traffic Volume - Future Total Volume

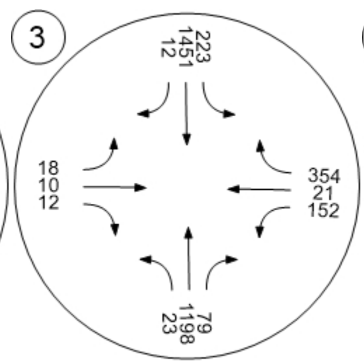
Winchester Road at Keller Ro



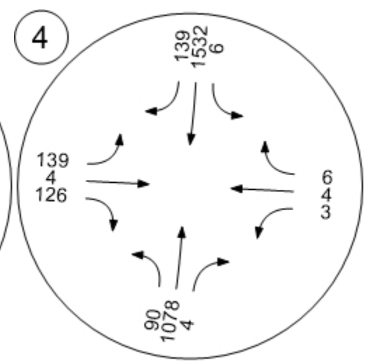
Winchester Road at Pourroy



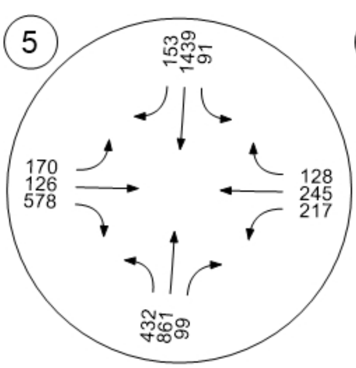
Winchester Road at Whisper



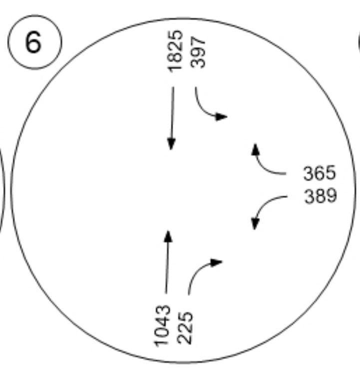
Winchester Road at Jean Nic



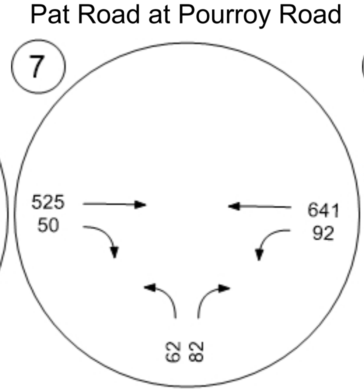
Winchester Road at Max Gilli



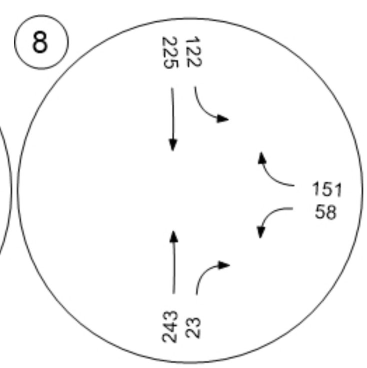
Winchester Road at Benton



Pat Road at Pourroy Road

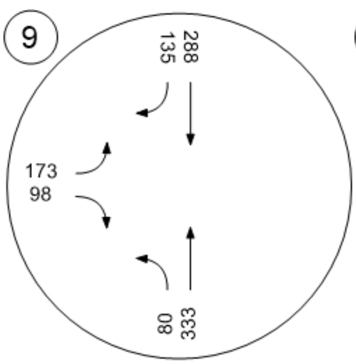


Jean Nicholas Road at Elliot

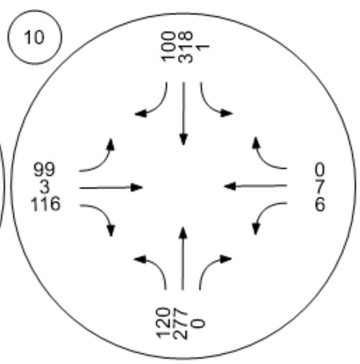


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro

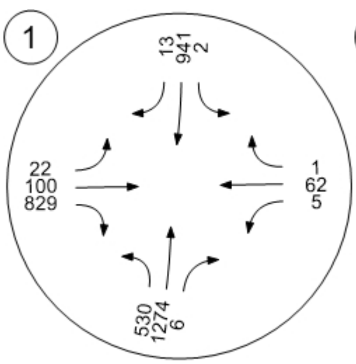


Pourroy Road at Thompson

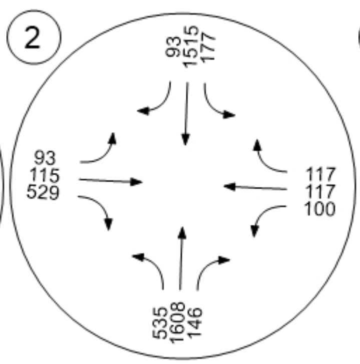


Traffic Volume - Future Total Volume

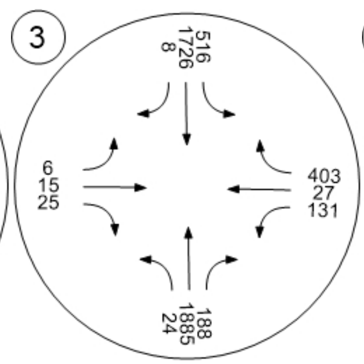
Winchester Road at Keller Ro



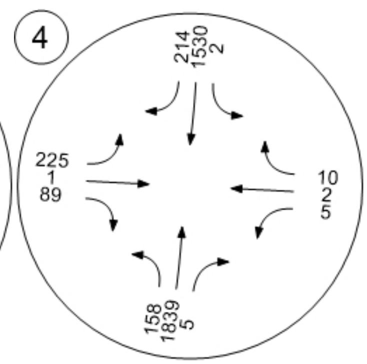
Winchester Road at Pourroy



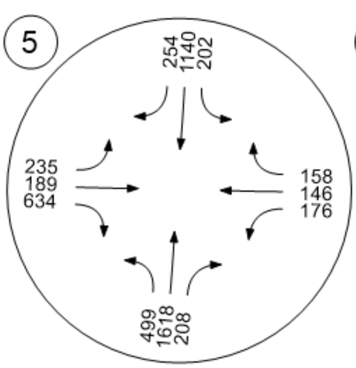
Winchester Road at Whisper



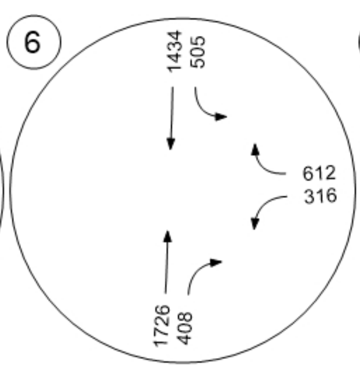
Winchester Road at Jean Nic



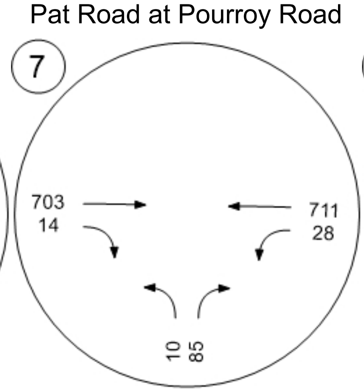
Winchester Road at Max Gilli



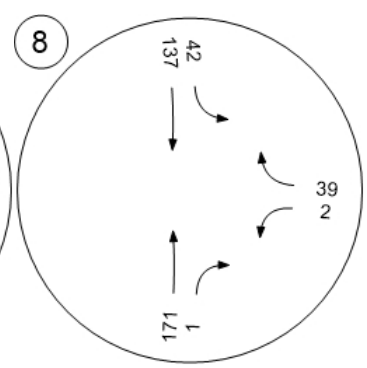
Winchester Road at Benton



Pat Road at Pourroy Road

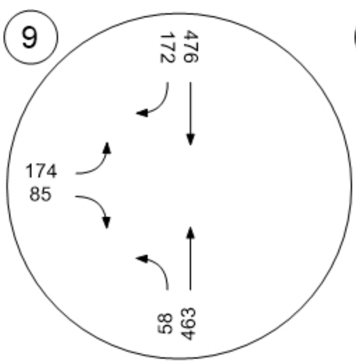


Jean Nicholas Road at Elliot

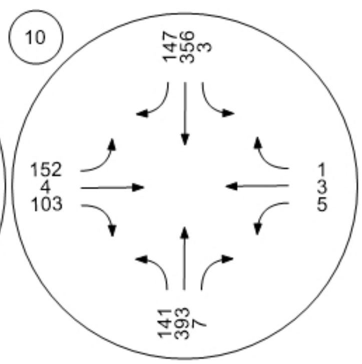


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+A+P+C PM_new.pdf

Scenario 8: E+A+P+C PM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Thru	1.671	221.5	F
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	1.585	236.2	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Right	1.357	143.1	F
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	NB Left	0.968	43.0	D
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.598	261.2	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.537	176.8	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.229	86.7	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.195	25.4	D
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		68.5	F
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		85.1	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	221.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.671

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	526	88	3	0	95	12	20	98	828	2	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	530	1274	6	2	941	13	22	100	829	5	62	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	355	2	1	263	4	6	28	231	1	17	0
Total Analysis Volume [veh/h]	592	1422	7	2	1050	15	25	112	925	6	69	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	58	0	11	43	0	0	51	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	61	0	39	39	47	47	47	47
g / C, Green / Cycle	0.18	0.50	0.00	0.33	0.33	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.19	0.85	0.00	0.33	0.01	0.13	0.65	0.05	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	1081	1425	1477	1425
c, Capacity [veh/h]	569	846	7	1039	464	458	557	610	557
d1, Uniform Delay [s]	48.97	29.70	59.55	40.46	27.58	25.27	36.54	23.40	22.27
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.15	315.59	22.54	30.51	0.13	0.36	305.17	0.09	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

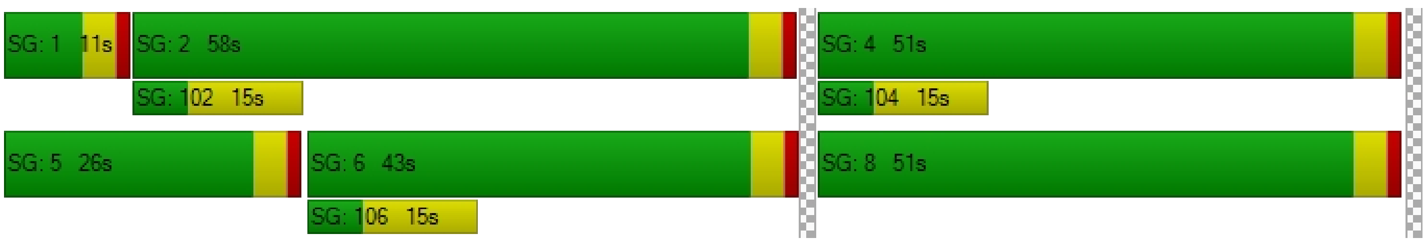
X, volume / capacity	1.04	1.69	0.30	1.01	0.03	0.30	1.66	0.12	0.00
d, Delay for Lane Group [s/veh]	78.12	345.29	82.09	70.96	27.70	25.63	341.71	23.49	22.27
Lane Group LOS	F	F	F	F	C	C	F	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	10.23	94.67	0.10	18.28	0.29	2.64	63.14	1.38	0.02
50th-Percentile Queue Length [ft]	255.67	2366.82	2.50	456.95	7.24	66.06	1578.39	34.54	0.44
95th-Percentile Queue Length [veh]	15.78	148.83	0.18	25.47	0.52	4.76	99.11	2.49	0.03
95th-Percentile Queue Length [ft]	394.44	3720.75	4.49	636.63	13.04	118.91	2477.83	62.17	0.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.12	345.29	345.29	82.09	70.96	27.70	25.63	25.63	341.71	23.49	23.49	22.27
Movement LOS	F	F	F	F	F	C	C	C	F	C	C	C
d_A, Approach Delay [s/veh]	267.03			70.38			300.93			23.47		
Approach LOS	F			E			F			C		
d_I, Intersection Delay [s/veh]	221.52											
Intersection LOS	F											
Intersection V/C	1.671											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	236.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.585

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	519	447	7	142	706	77	78	110	511	6	110	92
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	535	1608	146	177	1515	93	93	115	529	100	117	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	444	40	49	419	26	26	32	146	28	32	32
Total Analysis Volume [veh/h]	591	1777	161	196	1674	103	103	127	585	110	129	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	45	0	29	43	0	18	35	0	11	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	49	49	17	39	39	9	31	31	7	29	29
g / C, Green / Cycle	0.22	0.41	0.41	0.14	0.33	0.33	0.08	0.26	0.26	0.06	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.37	0.56	0.11	0.12	0.52	0.07	0.06	0.08	0.41	0.07	0.08	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	359	1317	588	222	1043	466	125	430	366	93	397	337
d1, Uniform Delay [s]	46.50	35.25	23.34	50.69	40.40	29.32	54.50	35.88	44.60	56.50	37.86	38.43
k, delay calibration	0.50	0.50	0.50	0.14	0.50	0.50	0.11	0.11	0.50	0.44	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	302.57	162.30	1.15	13.87	276.91	1.10	12.65	0.38	282.45	143.44	0.47	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

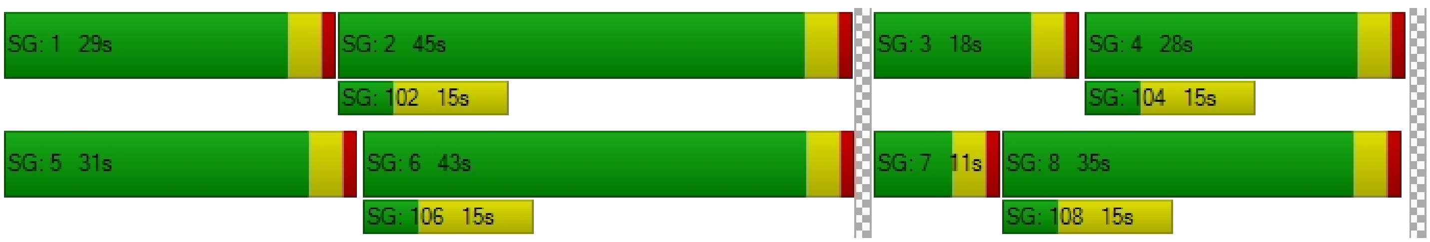
X, volume / capacity	1.65	1.35	0.27	0.88	1.61	0.22	0.82	0.30	1.60	1.18	0.32	0.38
d, Delay for Lane Group [s/veh]	349.07	197.54	24.49	64.57	317.31	30.42	67.15	36.25	327.06	199.94	38.33	39.14
Lane Group LOS	F	F	C	E	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	40.09	46.65	2.93	6.27	54.04	2.14	3.50	3.05	39.45	6.47	3.11	3.17
50th-Percentile Queue Length [ft]	1002.32	1166.18	73.35	156.69	1350.95	53.49	87.61	76.25	986.18	161.70	77.63	79.14
95th-Percentile Queue Length [veh]	62.48	69.67	5.28	10.37	83.80	3.85	6.31	5.49	61.65	11.16	5.59	5.70
95th-Percentile Queue Length [ft]	1561.95	1741.76	132.03	259.33	2094.93	96.27	157.70	137.25	1541.18	278.92	139.74	142.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	349.07	197.54	24.49	64.57	317.31	30.42	67.15	36.25	327.06	199.94	38.33	39.14
Movement LOS	F	F	C	E	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	221.94			277.22			248.89			86.92		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	236.25											
Intersection LOS	F											
Intersection V/C	1.585											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	143.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.357

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	630	10	430	793	0	0	0	0	9	0	343
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1885	188	516	1726	8	6	15	25	131	27	403
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	524	52	143	479	2	2	4	7	36	8	112
Total Analysis Volume [veh/h]	27	2094	209	573	1918	9	7	17	28	146	30	448
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	56	0	19	64	0	11	21	0	14	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	52	52	15	63	63	1	17	17	10	26	26
g / C, Green / Cycle	0.04	0.47	0.47	0.14	0.57	0.57	0.01	0.15	0.15	0.09	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.02	0.66	0.15	0.18	0.60	0.01	0.00	0.01	0.02	0.09	0.02	0.31
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	57	1514	676	423	1835	819	20	257	218	145	388	330
d1, Uniform Delay [s]	52.01	28.92	17.82	47.50	23.39	10.01	53.89	39.86	40.25	50.00	33.06	42.26
k, delay calibration	0.11	0.50	0.50	0.18	0.50	0.50	0.11	0.11	0.11	0.37	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.93	176.75	1.19	165.52	34.02	0.02	10.53	0.11	0.26	65.93	0.08	179.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	1.38	0.31	1.35	1.05	0.01	0.36	0.07	0.13	1.01	0.08	1.36
d, Delay for Lane Group [s/veh]	57.95	205.67	19.01	213.02	57.41	10.03	64.42	39.97	40.51	115.94	33.15	221.53
Lane Group LOS	E	F	B	F	F	B	E	D	D	F	C	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.79	54.52	3.18	15.20	28.07	0.09	0.25	0.41	0.68	6.64	0.64	25.28
50th-Percentile Queue Length [ft]	19.83	1363.12	79.47	379.96	701.74	2.18	6.28	10.15	16.96	165.90	15.94	631.93
95th-Percentile Queue Length [veh]	1.43	82.05	5.72	24.30	38.13	0.16	0.45	0.73	1.22	10.88	1.15	38.91
95th-Percentile Queue Length [ft]	35.69	2051.27	143.04	607.42	953.27	3.92	11.30	18.27	30.53	272.07	28.68	972.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.95	205.67	19.01	213.02	57.41	10.03	64.42	39.97	40.51	115.94	33.15	221.53
Movement LOS	E	F	B	F	F	B	E	D	D	F	C	F
d_A, Approach Delay [s/veh]	187.22			92.91			43.55			187.77		
Approach LOS	F			F			D			F		
d_I, Intersection Delay [s/veh]	143.10											
Intersection LOS	F											
Intersection V/C	1.357											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	43.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.968

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	507	0	0	635	167	133	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	1839	5	2	1530	214	225	1	89	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	524	1	1	436	61	64	0	25	1	1	3
Total Analysis Volume [veh/h]	180	2095	6	2	1743	244	256	1	101	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	58	0	11	52	0	22	30	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	73	73	0	61	61	18	19	19	1	2	2
g / C, Green / Cycle	0.12	0.67	0.67	0.00	0.55	0.55	0.16	0.17	0.17	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.66	0.00	0.00	0.55	0.17	0.16	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	189	2119	946	8	1756	784	262	292	248	19	37	31
d1, Uniform Delay [s]	48.19	18.08	6.24	54.59	24.54	13.44	45.83	37.57	40.41	53.97	52.73	53.07
k, delay calibration	0.36	0.50	0.50	0.11	0.50	0.50	0.41	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	44.32	17.01	0.01	16.72	19.78	1.03	45.04	0.00	1.07	9.48	0.61	6.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.99	0.01	0.26	0.99	0.31	0.98	0.00	0.41	0.32	0.05	0.35
d, Delay for Lane Group [s/veh]	92.51	35.10	6.25	71.30	44.32	14.48	90.87	37.58	41.49	63.45	53.33	59.68
Lane Group LOS	F	D	A	E	D	B	F	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	6.98	23.95	0.04	0.09	23.46	3.08	10.19	0.02	2.51	0.21	0.06	0.36
50th-Percentile Queue Length [ft]	174.61	598.87	1.02	2.22	586.42	77.06	254.72	0.57	62.63	5.35	1.51	8.93
95th-Percentile Queue Length [veh]	11.32	31.98	0.07	0.16	31.40	5.55	15.42	0.04	4.51	0.39	0.11	0.64
95th-Percentile Queue Length [ft]	282.96	799.54	1.83	4.00	784.99	138.71	385.59	1.02	112.74	9.63	2.71	16.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	92.51	35.10	6.25	71.30	44.32	14.48	90.87	37.58	41.49	63.45	53.33	59.68
Movement LOS	F	D	A	E	D	B	F	D	D	E	D	E
d_A, Approach Delay [s/veh]	39.55			40.69			76.79			60.20		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	42.99											
Intersection LOS	D											
Intersection V/C	0.968											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	261.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.598

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	45	216	0	173	275	191	158	8	72	0	8	137
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	499	1618	208	202	1140	254	235	189	634	176	146	158
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	449	58	56	316	70	65	52	176	49	41	44
Total Analysis Volume [veh/h]	554	1796	231	224	1265	282	261	210	704	195	162	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	51	0	15	36	0	23	41	41	13	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	47	47	11	32	32	19	37	37	9	27
g / C, Green / Cycle	0.22	0.39	0.39	0.09	0.27	0.27	0.16	0.31	0.31	0.08	0.22
(v / s)_i Volume / Saturation Flow Rate	0.35	0.60	0.63	0.14	0.40	0.20	0.16	0.13	0.49	0.12	0.22
s, saturation flow rate [veh/h]	1597	1676	1612	1597	3192	1425	1597	1676	1425	1597	1536
c, Capacity [veh/h]	346	659	633	147	856	382	253	514	437	120	343
d1, Uniform Delay [s]	47.01	36.43	36.43	54.50	43.92	40.07	50.50	33.00	41.62	55.50	46.38
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.45	0.11	0.50	0.50	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	283.83	249.88	277.53	267.99	221.19	12.02	61.98	0.52	285.86	314.39	40.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

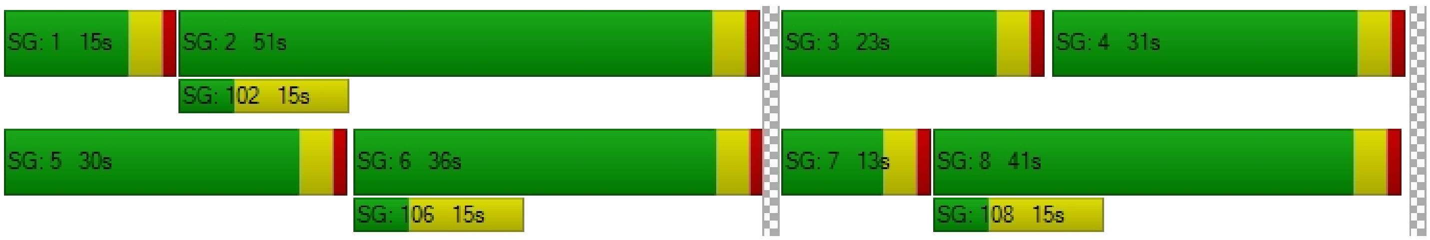
X, volume / capacity	1.60	1.54	1.60	1.53	1.48	0.74	1.03	0.41	1.61	1.62	0.98
d, Delay for Lane Group [s/veh]	330.84	286.31	313.96	322.49	265.10	52.09	112.49	33.52	327.48	369.89	87.26
Lane Group LOS	F	F	F	F	F	D	F	C	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	37.03	63.34	65.76	15.17	38.24	8.45	11.93	4.93	47.40	14.14	13.82
50th-Percentile Queue Length [ft]	925.82	1583.62	1643.99	379.36	955.88	211.20	298.13	123.15	1185.09	353.44	345.45
95th-Percentile Queue Length [veh]	57.58	97.12	101.87	24.60	58.66	13.21	17.86	8.57	74.01	23.20	19.91
95th-Percentile Queue Length [ft]	1439.53	2428.04	2546.68	614.90	1466.53	330.37	446.41	214.15	1850.32	579.92	497.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	330.84	298.36	313.96	322.49	265.10	52.09	112.49	33.52	327.48	369.89	87.26	87.26
Movement LOS	F	F	F	F	F	D	F	C	F	F	F	F
d_A, Approach Delay [s/veh]	306.73			238.44			227.19			190.86		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	261.17											
Intersection LOS	F											
Intersection V/C	1.598											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	176.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.537

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	118	0	178	169	0	143
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1726	408	505	1434	316	612
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	464	110	136	385	85	165
Total Analysis Volume [veh/h]	1856	439	543	1542	340	658
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	49	0	31	80	40	40
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	27	76	36	36
g / C, Green / Cycle	0.37	0.37	0.23	0.63	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.58	0.31	0.34	0.48	0.11	0.46
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1196	534	360	2022	930	427
d1, Uniform Delay [s]	37.49	33.88	46.46	15.59	33.01	41.98
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	252.32	13.34	243.46	2.79	0.24	254.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.55	0.82	1.51	0.76	0.37	1.54
d, Delay for Lane Group [s/veh]	289.81	47.22	289.91	18.38	33.25	296.24
Lane Group LOS	F	D	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	58.01	12.64	34.44	13.01	3.93	42.67
50th-Percentile Queue Length [ft]	1450.14	316.12	860.96	325.25	98.36	1066.69
95th-Percentile Queue Length [veh]	89.44	18.48	53.16	18.93	7.08	66.17
95th-Percentile Queue Length [ft]	2235.94	461.91	1328.94	473.13	177.05	1654.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	289.81	47.22	289.91	18.38	33.25	296.24
Movement LOS	F	D	F	B	C	F
d_A, Approach Delay [s/veh]	243.41		89.10		206.64	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	176.76					
Intersection LOS	F					
Intersection V/C	1.537					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	86.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.229

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	699	13	0	706
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	85	703	14	28	711
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	239	5	10	242
Total Analysis Volume [veh/h]	14	116	958	19	38	969
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.23	0.38	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	86.71	39.49	0.00	0.00	10.39	0.00
Movement LOS	F	E	A	A	B	A
95th-Percentile Queue Length [veh]	3.47	3.47	0.00	0.00	0.17	0.00
95th-Percentile Queue Length [ft]	86.71	86.71	0.00	0.00	4.26	0.00
d_A, Approach Delay [s/veh]	44.57		0.00		0.39	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	2.93					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	25.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.195

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	157	33	40	110	37	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	171	1	4	137	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	334	35	46	251	40	132
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	12	16	85	14	45
Total Analysis Volume [veh/h]	451	47	62	339	54	178
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.06	0.00	0.20	0.30
d_M, Delay for Movement [s/veh]	0.00	0.00	8.59	0.00	25.40	18.48
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.18	0.00	2.71	2.71
95th-Percentile Queue Length [ft]	0.00	0.00	4.62	0.00	67.82	67.82
d_A, Approach Delay [s/veh]	0.00		1.33		20.09	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	4.59					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	68.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	274	343	86	68	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	463	476	172	174	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	173	177	64	65	32
Total Analysis Volume [veh/h]	86	690	709	256	259	127
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.81	7.59	7.59	17.90	16.39	5.50	1.33
95th-Percentile Queue Length [ft]	20.29	189.87	189.87	447.56	409.72	137.43	33.16
Approach Delay [s/veh]	37.22			109.58		28.96	
Approach LOS	E			F		D	
Intersection Delay [s/veh]	68.55						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	85.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	137	0	0	172	89	72	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	393	7	3	356	147	152	4	103	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	118	2	1	107	44	46	1	31	2	1	0
Total Analysis Volume [veh/h]	169	472	8	4	428	177	183	5	124	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

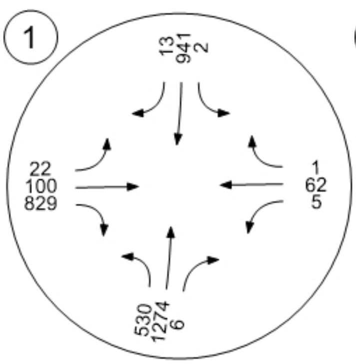
Lanes

Movement, Approach, & Intersection Results

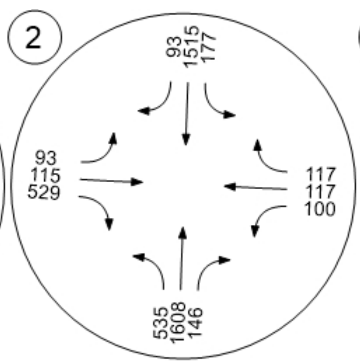
95th-Percentile Queue Length [veh]	23.02	17.88	2.01	0.03	0.93	0.08
95th-Percentile Queue Length [ft]	575.50	446.97	50.16	0.81	23.27	2.05
Approach Delay [s/veh]	122.07	83.11	14.59			11.97
Approach LOS	F	F	B			B
Intersection Delay [s/veh]	85.09					
Intersection LOS	F					

Traffic Volume - Future Total Volume

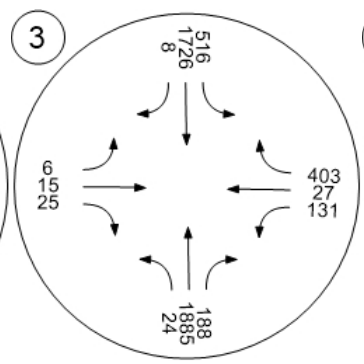
Winchester Road at Keller Ro



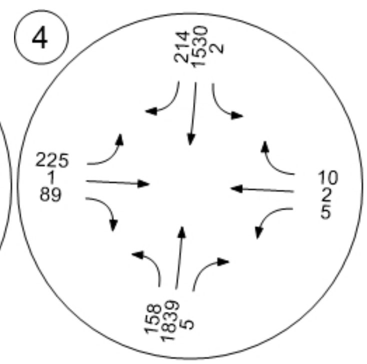
Winchester Road at Pourroy



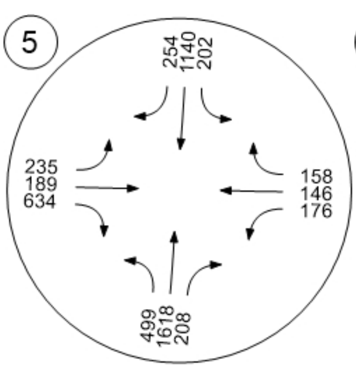
Winchester Road at Whisper



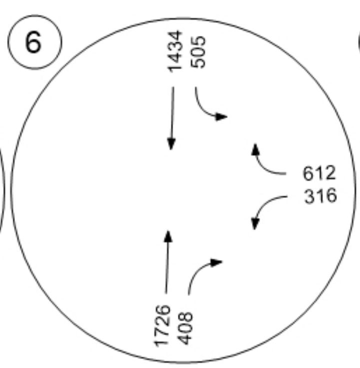
Winchester Road at Jean Nic



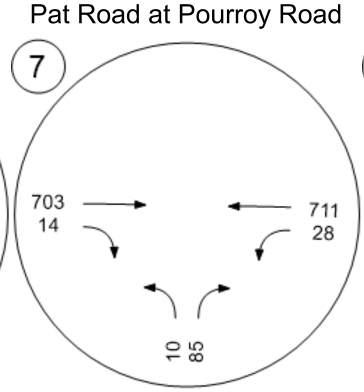
Winchester Road at Max Gilli



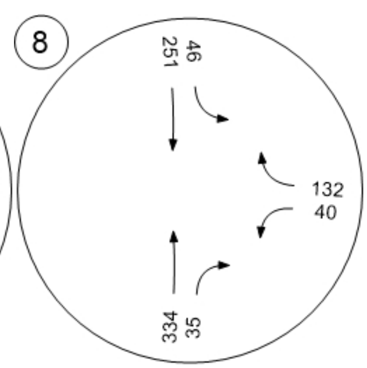
Winchester Road at Benton



Pat Road at Pourroy Road

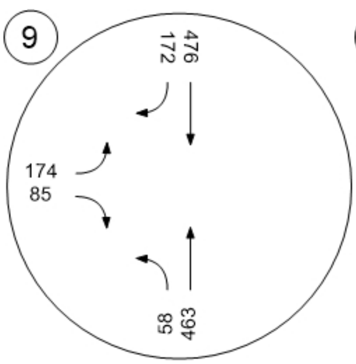


Jean Nicholas Road at Elliot

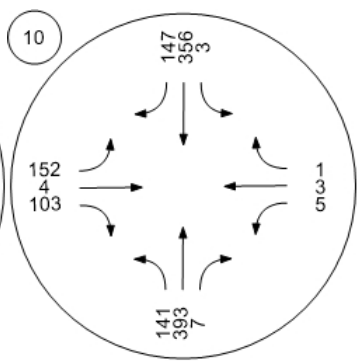


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 7: E+A+P+C AM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Left	0.850	21.4	C
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	1.329	132.5	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	0.934	49.5	D
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Thru	0.971	40.3	D
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.617	218.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.993	47.3	D
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	1.250	357.4	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.015	11.5	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		21.6	C
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		28.9	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	323	75	12	0	79	8	2	11	98	15	38	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	779	15	0	1179	11	3	12	102	23	38	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	217	4	0	329	3	1	3	28	6	11	1
Total Analysis Volume [veh/h]	362	869	17	0	1316	12	3	13	114	26	42	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	24	47	0	14	37	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	53	0	41	41	15	15	15	15
g / C, Green / Cycle	0.15	0.66	0.00	0.52	0.52	0.19	0.19	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.12	0.53	0.00	0.41	0.01	0.02	0.08	0.19	0.00
s, saturation flow rate [veh/h]	3101	1671	1597	3192	1425	768	1425	354	1425
c, Capacity [veh/h]	454	1109	0	1652	737	196	265	128	265
d1, Uniform Delay [s]	32.99	9.62	0.00	15.85	9.39	27.16	28.81	28.48	26.56
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.25	6.03	0.00	4.09	0.04	0.18	1.10	3.39	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

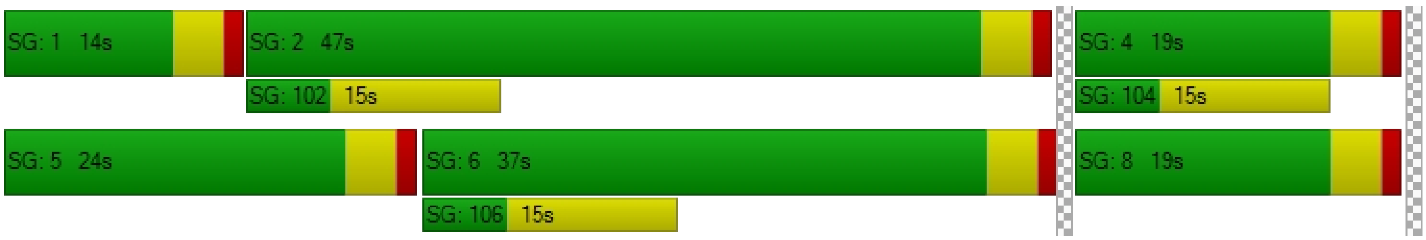
X, volume / capacity	0.80	0.80	0.00	0.80	0.02	0.08	0.43	0.53	0.01
d, Delay for Lane Group [s/veh]	36.24	15.65	0.00	19.94	9.43	27.34	29.91	31.87	26.57
Lane Group LOS	D	B	A	B	A	C	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	3.17	7.53	0.00	7.95	0.08	0.25	1.96	1.20	0.05
50th-Percentile Queue Length [ft]	79.35	188.26	0.00	198.71	2.10	6.37	49.08	29.92	1.17
95th-Percentile Queue Length [veh]	5.71	12.03	0.00	12.57	0.15	0.46	3.53	2.15	0.08
95th-Percentile Queue Length [ft]	142.83	300.76	0.00	314.30	3.78	11.47	88.34	53.86	2.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.24	15.65	15.65	0.00	19.94	9.43	27.34	27.34	29.91	31.87	31.87	26.57
Movement LOS	D	B	B	A	B	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	21.62			19.84			29.59			31.65		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	21.40											
Intersection LOS	C											
Intersection V/C	0.850											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	132.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.329

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	459	283	2	19	86	87	70	77	374	2	92	57
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	484	908	170	91	1081	144	110	92	406	185	104	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	134	251	47	25	299	40	30	25	112	51	29	32
Total Analysis Volume [veh/h]	535	1003	188	101	1194	159	122	102	449	204	115	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	53	0	18	37	0	30	33	0	16	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	54	54	9	33	33	11	29	29	12	30	30
g / C, Green / Cycle	0.25	0.45	0.45	0.08	0.28	0.28	0.09	0.24	0.24	0.10	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.34	0.31	0.13	0.06	0.37	0.11	0.08	0.06	0.32	0.13	0.07	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	399	1434	640	123	881	393	147	404	343	160	417	355
d1, Uniform Delay [s]	45.00	26.55	20.98	54.59	43.45	35.41	53.58	36.83	45.56	54.00	36.34	37.22
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	169.23	2.86	1.17	12.76	167.50	3.07	11.40	0.33	158.51	164.21	0.35	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

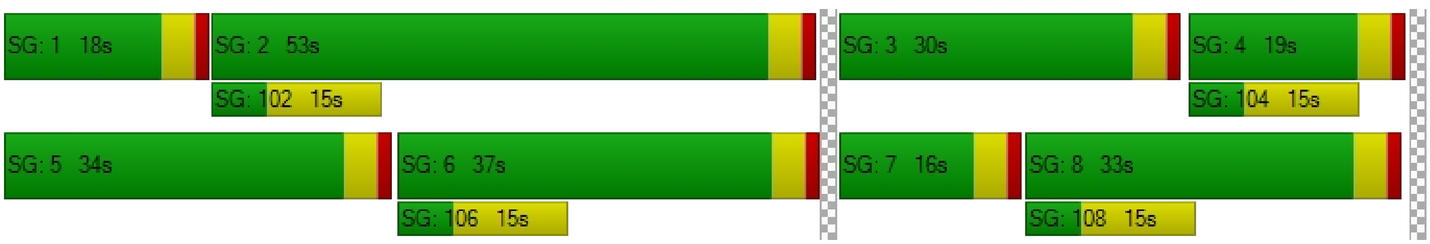
X, volume / capacity	1.34	0.70	0.29	0.82	1.36	0.40	0.83	0.25	1.31	1.28	0.28	0.36
d, Delay for Lane Group [s/veh]	214.24	29.42	22.14	67.35	210.95	38.48	64.97	37.16	204.06	218.21	36.70	37.85
Lane Group LOS	F	C	C	E	F	D	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	29.69	10.74	3.22	3.27	32.45	3.86	4.08	2.47	25.23	11.98	2.69	3.11
50th-Percentile Queue Length [ft]	742.15	268.38	80.44	81.75	811.36	96.42	102.05	61.76	630.71	299.42	67.26	77.63
95th-Percentile Queue Length [veh]	44.89	16.11	5.79	5.89	49.09	6.94	7.35	4.45	38.38	19.26	4.84	5.59
95th-Percentile Queue Length [ft]	1122.22	402.71	144.79	147.15	1227.29	173.55	183.69	111.17	959.48	481.59	121.07	139.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	214.24	29.42	22.14	67.35	210.95	38.48	64.97	37.16	204.06	218.21	36.70	37.85
Movement LOS	F	C	C	E	F	D	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	85.91			182.11			153.55			119.68		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	132.54											
Intersection LOS	F											
Intersection V/C	1.329											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	49.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.934

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	469	2	175	287	0	0	0	0	2	0	275
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1198	79	223	1451	12	18	10	12	152	21	354
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	333	22	62	403	3	5	3	3	42	6	98
Total Analysis Volume [veh/h]	26	1331	88	248	1612	13	20	11	13	169	23	393
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	59	0	14	62	0	11	30	0	17	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	56	56	10	62	62	3	25	25	13	35	35
g / C, Green / Cycle	0.03	0.47	0.47	0.08	0.52	0.52	0.03	0.21	0.21	0.11	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.02	0.42	0.06	0.08	0.51	0.01	0.01	0.01	0.01	0.11	0.01	0.28
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	54	1491	666	258	1649	736	45	348	296	173	482	410
d1, Uniform Delay [s]	56.94	29.22	18.16	54.80	28.32	14.15	57.36	37.90	38.00	53.35	30.86	42.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.38	0.11	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.49	8.53	0.41	17.97	17.42	0.04	6.59	0.04	0.06	53.99	0.04	30.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

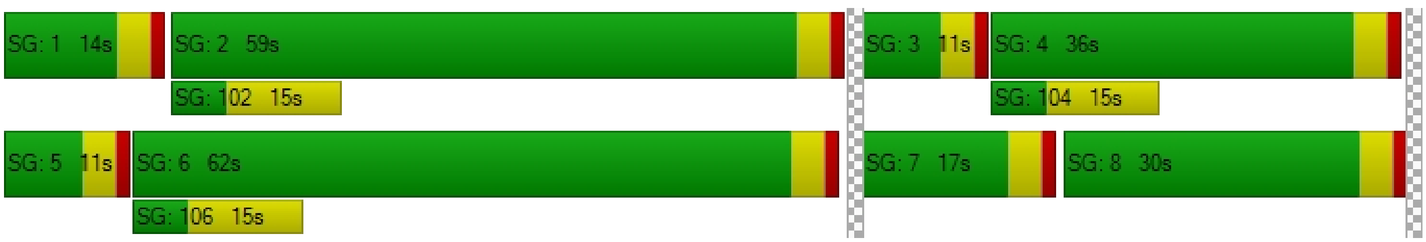
X, volume / capacity	0.48	0.89	0.13	0.96	0.98	0.02	0.44	0.03	0.04	0.98	0.05	0.96
d, Delay for Lane Group [s/veh]	63.43	37.75	18.57	72.77	45.74	14.19	63.94	37.94	38.06	107.34	30.90	72.99
Lane Group LOS	E	D	B	E	D	B	E	D	D	F	C	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.84	17.48	1.37	4.22	23.72	0.17	0.69	0.27	0.32	7.67	0.49	14.83
50th-Percentile Queue Length [ft]	21.06	436.97	34.18	105.53	592.92	4.20	17.13	6.66	7.91	191.67	12.28	370.80
95th-Percentile Queue Length [veh]	1.52	24.34	2.46	7.59	31.70	0.30	1.23	0.48	0.57	12.21	0.88	21.15
95th-Percentile Queue Length [ft]	37.91	608.38	61.52	189.77	792.59	7.56	30.83	11.98	14.23	305.19	22.11	528.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.43	37.75	18.57	72.77	45.74	14.19	63.94	37.94	38.06	107.34	30.90	72.99
Movement LOS	E	D	B	E	D	B	E	D	D	F	C	E
d_A, Approach Delay [s/veh]	37.04			49.10			49.80			81.26		
Approach LOS	D			D			D			F		
d_I, Intersection Delay [s/veh]	49.46											
Intersection LOS	D											
Intersection V/C	0.934											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	40.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.971

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	391	0	0	244	45	80	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	1078	4	6	1532	139	139	4	126	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	307	1	2	436	40	40	1	36	1	1	2
Total Analysis Volume [veh/h]	103	1228	5	7	1745	158	158	5	144	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	48	0	11	46	0	12	20	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	35	35	1	30	30	8	9	9	0	1	1
g / C, Green / Cycle	0.10	0.58	0.58	0.01	0.49	0.49	0.13	0.14	0.14	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.06	0.38	0.00	0.00	0.55	0.11	0.10	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	153	1836	820	22	1573	702	202	238	203	10	37	31
d1, Uniform Delay [s]	26.59	8.92	5.51	29.74	15.43	8.80	25.77	22.46	24.91	30.11	29.20	29.26
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.07	0.43	0.00	8.44	51.80	0.16	6.49	0.03	4.57	15.91	1.66	3.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.67	0.01	0.32	1.11	0.22	0.78	0.02	0.71	0.30	0.14	0.22
d, Delay for Lane Group [s/veh]	31.66	9.35	5.51	38.18	67.23	8.96	32.26	22.50	29.48	46.02	30.86	32.83
Lane Group LOS	C	A	A	D	F	A	C	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	1.45	3.24	0.02	0.14	18.34	0.84	2.45	0.06	2.12	0.09	0.09	0.13
50th-Percentile Queue Length [ft]	36.33	80.90	0.41	3.48	458.40	20.88	61.14	1.51	52.90	2.15	2.13	3.17
95th-Percentile Queue Length [veh]	2.62	5.82	0.03	0.25	27.28	1.50	4.40	0.11	3.81	0.15	0.15	0.23
95th-Percentile Queue Length [ft]	65.40	145.61	0.74	6.27	682.04	37.58	110.05	2.72	95.22	3.87	3.84	5.71

Generated with PTV VISTRO
Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.66	9.35	5.51	38.18	67.23	8.96	32.26	22.50	29.48	46.02	30.86	32.83
Movement LOS	C	A	A	D	F	A	C	C	C	D	C	C
d_A, Approach Delay [s/veh]	11.06			62.30			30.80			34.81		
Approach LOS	B			E			C			C		
d_I, Intersection Delay [s/veh]	40.29											
Intersection LOS	D											
Intersection V/C	0.971											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	218.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.617

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	59	181	0	69	113	63	101	3	22	0	3	110
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	432	861	99	91	1439	153	170	126	578	217	245	128
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	239	27	25	399	42	47	35	160	60	68	36
Total Analysis Volume [veh/h]	479	956	110	101	1597	170	189	140	642	241	272	142
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	26	49	0	18	41	0	30	38	38	15	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	50	50	9	37	37	16	34	34	11	29
g / C, Green / Cycle	0.18	0.42	0.42	0.08	0.31	0.31	0.13	0.28	0.28	0.09	0.24
(v / s)_i Volume / Saturation Flow Rate	0.30	0.32	0.33	0.06	0.50	0.12	0.12	0.08	0.45	0.15	0.26
s, saturation flow rate [veh/h]	1597	1676	1617	1597	3192	1425	1597	1676	1425	1597	1581
c, Capacity [veh/h]	293	698	673	123	989	441	216	472	402	147	377
d1, Uniform Delay [s]	49.00	30.15	30.33	54.58	41.42	32.46	50.92	33.78	43.10	54.50	45.69
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	301.24	8.14	8.83	12.65	281.56	2.53	11.23	0.35	281.03	318.37	75.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

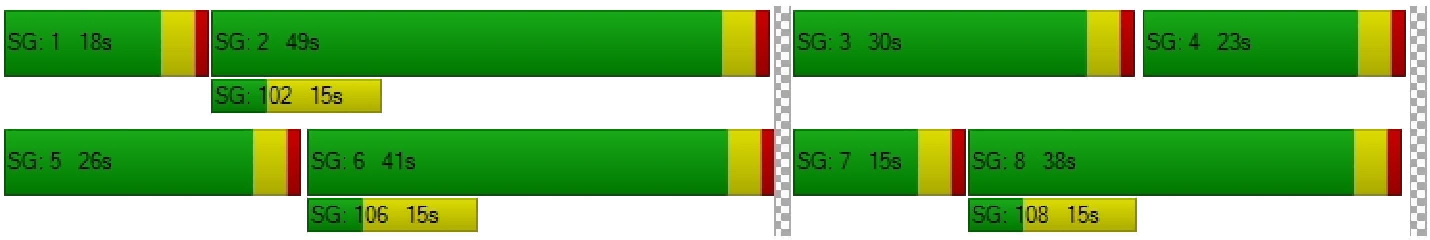
X, volume / capacity	1.64	0.77	0.78	0.82	1.62	0.39	0.88	0.30	1.60	1.64	1.10
d, Delay for Lane Group [s/veh]	350.24	38.29	39.16	67.24	322.98	35.00	62.15	34.12	324.13	372.87	121.08
Lane Group LOS	F	D	D	E	F	C	E	C	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	32.82	13.87	13.73	3.32	52.28	3.98	6.24	3.26	43.10	17.39	19.02
50th-Percentile Queue Length [ft]	820.45	346.77	343.16	82.91	1306.98	99.50	155.89	81.47	1077.52	434.63	475.62
95th-Percentile Queue Length [veh]	51.33	19.98	19.80	5.97	81.11	7.16	10.33	5.87	67.26	28.09	27.60
95th-Percentile Queue Length [ft]	1283.27	499.46	495.06	149.23	2027.71	179.10	258.28	146.64	1681.62	702.26	690.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	350.24	38.67	39.16	67.24	322.98	35.00	62.15	34.12	324.13	372.87	121.08	121.08
Movement LOS	F	D	D	E	F	C	E	C	F	F	F	F
d_A, Approach Delay [s/veh]	135.30			282.94			231.32			213.72		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	218.73											
Intersection LOS	F											
Intersection V/C	1.617											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	47.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.993

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	128	0	74	61	0	112
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1043	225	397	1825	389	365
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	280	60	107	491	105	98
Total Analysis Volume [veh/h]	1122	242	427	1962	418	392
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	47	0	36	83	37	37
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
l1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
l2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	43	43	32	79	33	33
g / C, Green / Cycle	0.36	0.36	0.27	0.66	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.35	0.17	0.27	0.61	0.13	0.28
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1143	510	426	2101	853	392
d1, Uniform Delay [s]	38.09	29.75	43.97	18.17	36.43	43.47
k, delay calibration	0.50	0.50	0.46	0.50	0.11	0.46
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.49	3.14	42.30	9.22	0.44	43.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.47	1.00	0.93	0.49	1.00
d, Delay for Lane Group [s/veh]	60.57	32.89	86.27	27.39	36.87	86.91
Lane Group LOS	E	C	F	C	D	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	18.59	5.51	16.86	21.44	5.19	16.23
50th-Percentile Queue Length [ft]	464.81	137.66	421.50	536.07	129.78	405.72
95th-Percentile Queue Length [veh]	25.66	9.35	23.63	29.04	8.93	22.84
95th-Percentile Queue Length [ft]	641.59	233.87	590.85	725.92	223.19	570.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.57	32.89	86.27	27.39	36.87	86.91
Movement LOS	E	C	F	C	D	F
d_A, Approach Delay [s/veh]	55.66		37.92		61.08	
Approach LOS	E		D		E	
d_I, Intersection Delay [s/veh]	47.33					
Intersection LOS	D					
Intersection V/C	0.993					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	357.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.250

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	521	47	0	638
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	82	525	50	92	641
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	28	179	17	31	218
Total Analysis Volume [veh/h]	84	112	715	68	125	873
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.25	0.27	0.01	0.00	0.15	0.01
d_M, Delay for Movement [s/veh]	357.38	312.56	0.00	0.00	10.07	0.00
Movement LOS	F	F	A	A	B	A
95th-Percentile Queue Length [veh]	13.75	13.75	0.00	0.00	0.53	0.00
95th-Percentile Queue Length [ft]	343.66	343.66	0.00	0.00	13.13	0.00
d_A, Approach Delay [s/veh]	331.77		0.00		1.26	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	33.53					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.015

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	49	0	0	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	46	9	24	81	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	9	75	81	7	33
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	3	25	27	2	11
Total Analysis Volume [veh/h]	62	12	101	109	9	45
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.07	0.00	0.02	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	7.53	0.00	11.45	8.88
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.21	0.00	0.19	0.19
95th-Percentile Queue Length [ft]	0.00	0.00	5.31	0.00	4.84	4.84
d_A, Approach Delay [s/veh]	0.00		3.62		9.31	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	3.74					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	21.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	214	135	35	55	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	333	288	135	173	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	124	107	50	64	37
Total Analysis Volume [veh/h]	119	496	429	201	258	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.13	3.21	3.21	5.19	4.61	4.17	1.29
95th-Percentile Queue Length [ft]	28.21	80.31	80.31	129.82	115.13	104.18	32.28
Approach Delay [s/veh]	18.73			24.77		21.01	
Approach LOS	C			C		C	
Intersection Delay [s/veh]	21.60						
Intersection LOS	C						

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	28.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	104	0	0	64	34	53	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	277	0	1	318	100	99	3	116	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	83	0	0	96	30	30	1	35	2	2	0
Total Analysis Volume [veh/h]	144	333	0	1	382	120	119	4	139	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	8.68	9.21	1.04	0.02	1.02	0.11
95th-Percentile Queue Length [ft]	217.03	230.29	25.94	0.62	25.56	2.73
Approach Delay [s/veh]	33.15	33.92	12.44			11.76
Approach LOS	D	D	B			B
Intersection Delay [s/veh]	28.88					
Intersection LOS	D					

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\intersections.pdf

Scenario 8: E+A+P+C PM
11/11/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Thru	1.671	221.5	F
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	1.585	236.2	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Right	1.357	143.1	F
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	SB Thru	1.067	108.0	F
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.598	261.2	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.537	176.8	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.229	86.7	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.006	12.7	B
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		68.5	F
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		85.1	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	221.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.671

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	526	88	3	0	95	12	20	98	828	2	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	530	1274	6	2	941	13	22	100	829	5	62	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	355	2	1	263	4	6	28	231	1	17	0
Total Analysis Volume [veh/h]	592	1422	7	2	1050	15	25	112	925	6	69	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	58	0	11	43	0	0	51	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	61	0	39	39	47	47	47	47
g / C, Green / Cycle	0.18	0.50	0.00	0.33	0.33	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.19	0.85	0.00	0.33	0.01	0.13	0.65	0.05	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	1081	1425	1477	1425
c, Capacity [veh/h]	569	846	7	1039	464	458	557	610	557
d1, Uniform Delay [s]	48.97	29.70	59.55	40.46	27.58	25.27	36.54	23.40	22.27
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.15	315.59	22.54	30.51	0.13	0.36	305.17	0.09	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

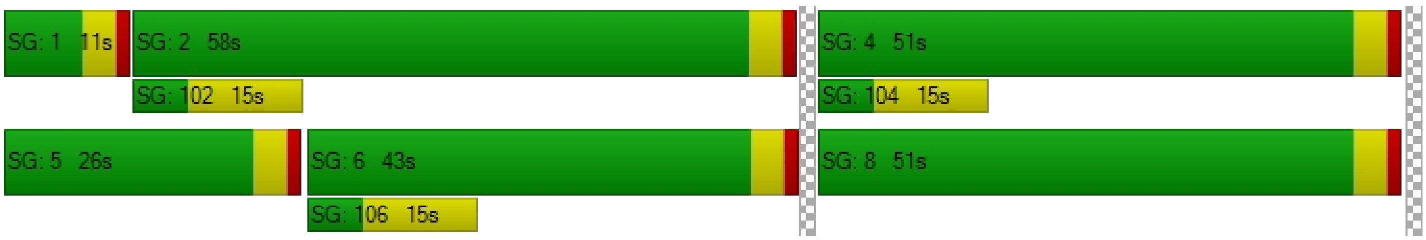
X, volume / capacity	1.04	1.69	0.30	1.01	0.03	0.30	1.66	0.12	0.00
d, Delay for Lane Group [s/veh]	78.12	345.29	82.09	70.96	27.70	25.63	341.71	23.49	22.27
Lane Group LOS	F	F	F	F	C	C	F	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	10.23	94.67	0.10	18.28	0.29	2.64	63.14	1.38	0.02
50th-Percentile Queue Length [ft]	255.67	2366.82	2.50	456.95	7.24	66.06	1578.39	34.54	0.44
95th-Percentile Queue Length [veh]	15.78	148.83	0.18	25.47	0.52	4.76	99.11	2.49	0.03
95th-Percentile Queue Length [ft]	394.44	3720.75	4.49	636.63	13.04	118.91	2477.83	62.17	0.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.12	345.29	345.29	82.09	70.96	27.70	25.63	25.63	341.71	23.49	23.49	22.27
Movement LOS	F	F	F	F	F	C	C	C	F	C	C	C
d_A, Approach Delay [s/veh]	267.03			70.38			300.93			23.47		
Approach LOS	F			E			F			C		
d_I, Intersection Delay [s/veh]	221.52											
Intersection LOS	F											
Intersection V/C	1.671											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	236.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.585

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	519	447	7	142	706	77	78	110	511	6	110	92
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	535	1608	146	177	1515	93	93	115	529	100	117	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	444	40	49	419	26	26	32	146	28	32	32
Total Analysis Volume [veh/h]	591	1777	161	196	1674	103	103	127	585	110	129	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	45	0	29	43	0	18	35	0	11	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO

Version 4.00-03

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	49	49	17	39	39	9	31	31	7	29	29
g / C, Green / Cycle	0.22	0.41	0.41	0.14	0.33	0.33	0.08	0.26	0.26	0.06	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.37	0.56	0.11	0.12	0.52	0.07	0.06	0.08	0.41	0.07	0.08	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	359	1317	588	222	1043	466	125	430	366	93	397	337
d1, Uniform Delay [s]	46.50	35.25	23.34	50.69	40.40	29.32	54.50	35.88	44.60	56.50	37.86	38.43
k, delay calibration	0.50	0.50	0.50	0.14	0.50	0.50	0.11	0.11	0.50	0.44	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	302.57	162.30	1.15	13.87	276.91	1.10	12.65	0.38	282.45	143.44	0.47	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

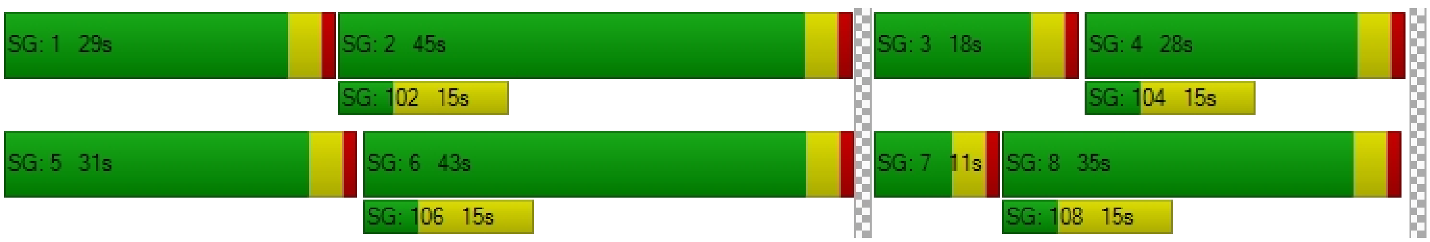
X, volume / capacity	1.65	1.35	0.27	0.88	1.61	0.22	0.82	0.30	1.60	1.18	0.32	0.38
d, Delay for Lane Group [s/veh]	349.07	197.54	24.49	64.57	317.31	30.42	67.15	36.25	327.06	199.94	38.33	39.14
Lane Group LOS	F	F	C	E	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	40.09	46.65	2.93	6.27	54.04	2.14	3.50	3.05	39.45	6.47	3.11	3.17
50th-Percentile Queue Length [ft]	1002.32	1166.18	73.35	156.69	1350.95	53.49	87.61	76.25	986.18	161.70	77.63	79.14
95th-Percentile Queue Length [veh]	62.48	69.67	5.28	10.37	83.80	3.85	6.31	5.49	61.65	11.16	5.59	5.70
95th-Percentile Queue Length [ft]	1561.95	1741.76	132.03	259.33	2094.93	96.27	157.70	137.25	1541.18	278.92	139.74	142.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	349.07	197.54	24.49	64.57	317.31	30.42	67.15	36.25	327.06	199.94	38.33	39.14
Movement LOS	F	F	C	E	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	221.94			277.22			248.89			86.92		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	236.25											
Intersection LOS	F											
Intersection V/C	1.585											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	143.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.357

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	630	10	430	793	0	0	0	0	9	0	343
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1885	188	516	1726	8	6	15	25	131	27	403
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	524	52	143	479	2	2	4	7	36	8	112
Total Analysis Volume [veh/h]	27	2094	209	573	1918	9	7	17	28	146	30	448
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	56	0	19	64	0	11	21	0	14	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	52	52	15	63	63	1	17	17	10	26	26
g / C, Green / Cycle	0.04	0.47	0.47	0.14	0.57	0.57	0.01	0.15	0.15	0.09	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.02	0.66	0.15	0.18	0.60	0.01	0.00	0.01	0.02	0.09	0.02	0.31
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	57	1514	676	423	1835	819	20	257	218	145	388	330
d1, Uniform Delay [s]	52.01	28.92	17.82	47.50	23.39	10.01	53.89	39.86	40.25	50.00	33.06	42.26
k, delay calibration	0.11	0.50	0.50	0.18	0.50	0.50	0.11	0.11	0.11	0.37	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.93	176.75	1.19	165.52	34.02	0.02	10.53	0.11	0.26	65.93	0.08	179.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	1.38	0.31	1.35	1.05	0.01	0.36	0.07	0.13	1.01	0.08	1.36
d, Delay for Lane Group [s/veh]	57.95	205.67	19.01	213.02	57.41	10.03	64.42	39.97	40.51	115.94	33.15	221.53
Lane Group LOS	E	F	B	F	F	B	E	D	D	F	C	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.79	54.52	3.18	15.20	28.07	0.09	0.25	0.41	0.68	6.64	0.64	25.28
50th-Percentile Queue Length [ft]	19.83	1363.12	79.47	379.96	701.74	2.18	6.28	10.15	16.96	165.90	15.94	631.93
95th-Percentile Queue Length [veh]	1.43	82.05	5.72	24.30	38.13	0.16	0.45	0.73	1.22	10.88	1.15	38.91
95th-Percentile Queue Length [ft]	35.69	2051.27	143.04	607.42	953.27	3.92	11.30	18.27	30.53	272.07	28.68	972.70

Generated with PTV VISTRO

Version 4.00-03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.95	205.67	19.01	213.02	57.41	10.03	64.42	39.97	40.51	115.94	33.15	221.53
Movement LOS	E	F	B	F	F	B	E	D	D	F	C	F
d_A, Approach Delay [s/veh]	187.22			92.91			43.55			187.77		
Approach LOS	F			F			D			F		
d_I, Intersection Delay [s/veh]	143.10											
Intersection LOS	F											
Intersection V/C	1.357											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	108.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.067

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	507	0	0	635	167	133	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	1839	5	2	1530	214	225	1	89	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	524	1	1	436	61	64	0	25	1	1	3
Total Analysis Volume [veh/h]	180	2095	6	2	1743	244	256	1	101	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	19	0	11	19	0	11	19	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Generated with PTV VISTRO

Version 4.00-03

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	40	40	0	30	30	14	14	14	1	2	2
g / C, Green / Cycle	0.14	0.56	0.56	0.00	0.42	0.42	0.19	0.20	0.20	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.66	0.00	0.00	0.55	0.17	0.16	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	223	1778	794	7	1346	601	304	339	288	18	38	33
d1, Uniform Delay [s]	29.67	15.75	7.00	35.31	20.57	14.35	27.74	22.66	24.37	34.88	33.99	34.22
k, delay calibration	0.11	0.29	0.11	0.11	0.19	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.75	83.79	0.00	22.11	134.93	0.44	6.21	0.00	0.73	9.86	0.55	5.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	1.18	0.01	0.29	1.29	0.41	0.84	0.00	0.35	0.33	0.05	0.34
d, Delay for Lane Group [s/veh]	36.42	99.54	7.01	57.42	155.50	14.79	33.95	22.66	25.10	44.75	34.55	40.13
Lane Group LOS	D	F	A	E	F	B	C	C	C	D	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.05	30.13	0.03	0.07	33.80	2.24	4.51	0.01	1.46	0.15	0.04	0.24
50th-Percentile Queue Length [ft]	76.16	753.36	0.73	1.83	844.97	56.07	112.87	0.33	36.41	3.76	0.97	5.88
95th-Percentile Queue Length [veh]	5.48	44.17	0.05	0.13	50.99	4.04	8.00	0.02	2.62	0.27	0.07	0.42
95th-Percentile Queue Length [ft]	137.09	1104.17	1.31	3.29	1274.77	100.92	199.99	0.59	65.54	6.78	1.74	10.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.42	99.54	7.01	57.42	155.50	14.79	33.95	22.66	25.10	44.75	34.55	40.13
Movement LOS	D	F	A	E	F	B	C	C	C	D	C	D
d_A, Approach Delay [s/veh]	94.31			138.14			31.42			41.00		
Approach LOS	F			F			C			D		
d_I, Intersection Delay [s/veh]	108.01											
Intersection LOS	F											
Intersection V/C	1.067											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	261.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.598

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	45	216	0	173	275	191	158	8	72	0	8	137
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	499	1618	208	202	1140	254	235	189	634	176	146	158
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	449	58	56	316	70	65	52	176	49	41	44
Total Analysis Volume [veh/h]	554	1796	231	224	1265	282	261	210	704	195	162	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Generated with PTV VISTRO
Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	51	0	15	36	0	23	41	41	13	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	47	47	11	32	32	19	37	37	9	27
g / C, Green / Cycle	0.22	0.39	0.39	0.09	0.27	0.27	0.16	0.31	0.31	0.08	0.22
(v / s)_i Volume / Saturation Flow Rate	0.35	0.60	0.63	0.14	0.40	0.20	0.16	0.13	0.49	0.12	0.22
s, saturation flow rate [veh/h]	1597	1676	1612	1597	3192	1425	1597	1676	1425	1597	1536
c, Capacity [veh/h]	346	659	633	147	856	382	253	514	437	120	343
d1, Uniform Delay [s]	47.01	36.43	36.43	54.50	43.92	40.07	50.50	33.00	41.62	55.50	46.38
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.45	0.11	0.50	0.50	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	283.83	249.88	277.53	267.99	221.19	12.02	61.98	0.52	285.86	314.39	40.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

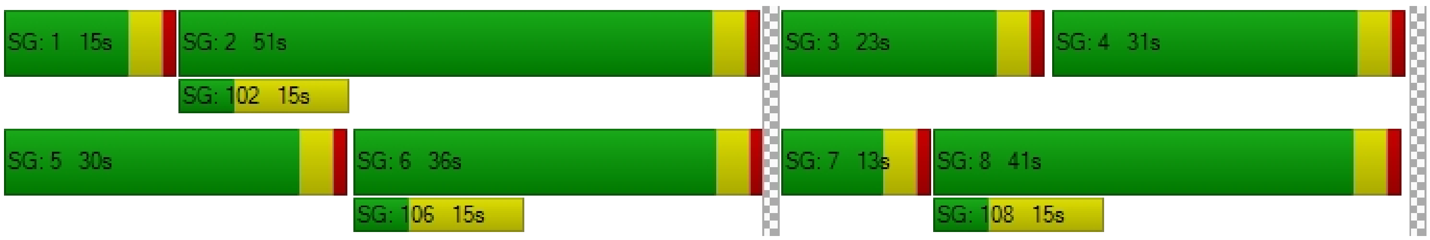
X, volume / capacity	1.60	1.54	1.60	1.53	1.48	0.74	1.03	0.41	1.61	1.62	0.98
d, Delay for Lane Group [s/veh]	330.84	286.31	313.96	322.49	265.10	52.09	112.49	33.52	327.48	369.89	87.26
Lane Group LOS	F	F	F	F	F	D	F	C	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	37.03	63.34	65.76	15.17	38.24	8.45	11.93	4.93	47.40	14.14	13.82
50th-Percentile Queue Length [ft]	925.82	1583.62	1643.99	379.36	955.88	211.20	298.13	123.15	1185.09	353.44	345.45
95th-Percentile Queue Length [veh]	57.58	97.12	101.87	24.60	58.66	13.21	17.86	8.57	74.01	23.20	19.91
95th-Percentile Queue Length [ft]	1439.53	2428.04	2546.68	614.90	1466.53	330.37	446.41	214.15	1850.32	579.92	497.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	330.84	298.36	313.96	322.49	265.10	52.09	112.49	33.52	327.48	369.89	87.26	87.26
Movement LOS	F	F	F	F	F	D	F	C	F	F	F	F
d_A, Approach Delay [s/veh]	306.73			238.44			227.19			190.86		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	261.17											
Intersection LOS	F											
Intersection V/C	1.598											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	176.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.537

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	118	0	178	169	0	143
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1726	408	505	1434	316	612
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	464	110	136	385	85	165
Total Analysis Volume [veh/h]	1856	439	543	1542	340	658
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	49	0	31	80	40	40
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	27	76	36	36
g / C, Green / Cycle	0.37	0.37	0.23	0.63	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.58	0.31	0.34	0.48	0.11	0.46
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1196	534	360	2022	930	427
d1, Uniform Delay [s]	37.49	33.88	46.46	15.59	33.01	41.98
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	252.32	13.34	243.46	2.79	0.24	254.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.55	0.82	1.51	0.76	0.37	1.54
d, Delay for Lane Group [s/veh]	289.81	47.22	289.91	18.38	33.25	296.24
Lane Group LOS	F	D	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	58.01	12.64	34.44	13.01	3.93	42.67
50th-Percentile Queue Length [ft]	1450.14	316.12	860.96	325.25	98.36	1066.69
95th-Percentile Queue Length [veh]	89.44	18.48	53.16	18.93	7.08	66.17
95th-Percentile Queue Length [ft]	2235.94	461.91	1328.94	473.13	177.05	1654.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	289.81	47.22	289.91	18.38	33.25	296.24
Movement LOS	F	D	F	B	C	F
d_A, Approach Delay [s/veh]	243.41		89.10		206.64	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	176.76					
Intersection LOS	F					
Intersection V/C	1.537					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	86.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.229

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	699	13	0	706
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	85	703	14	28	711
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	239	5	10	242
Total Analysis Volume [veh/h]	14	116	958	19	38	969
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.23	0.38	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	86.71	39.49	0.00	0.00	10.39	0.00
Movement LOS	F	E	A	A	B	A
95th-Percentile Queue Length [veh]	3.47	3.47	0.00	0.00	0.17	0.00
95th-Percentile Queue Length [ft]	86.71	86.71	0.00	0.00	4.26	0.00
d_A, Approach Delay [s/veh]	44.57		0.00		0.39	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	2.93					
Intersection LOS	F					

Generated with PTV VISTRO
Version 4.00-03

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	0	0	37	0	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	171	1	4	137	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	1	42	137	2	39
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	0	14	46	1	13
Total Analysis Volume [veh/h]	231	1	57	185	3	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.01	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	7.82	0.00	12.74	9.81
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.13	0.00	0.23	0.23
95th-Percentile Queue Length [ft]	0.00	0.00	3.34	0.00	5.78	5.78
d_A, Approach Delay [s/veh]	0.00		1.84		9.97	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	1.89					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	68.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	274	343	86	68	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	463	476	172	174	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	173	177	64	65	32
Total Analysis Volume [veh/h]	86	690	709	256	259	127
Pedestrian Volume [ped/h]	0		0		0	

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.81	7.59	7.59	17.90	16.39	5.50	1.33
95th-Percentile Queue Length [ft]	20.29	189.87	189.87	447.56	409.72	137.43	33.16
Approach Delay [s/veh]	37.22			109.58		28.96	
Approach LOS	E			F		D	
Intersection Delay [s/veh]	68.55						
Intersection LOS	F						

Generated with PTV VISTRO

Version 4.00-03

Intersection Level Of Service Report

Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	85.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	137	0	0	172	89	72	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	393	7	3	356	147	152	4	103	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	118	2	1	107	44	46	1	31	2	1	0
Total Analysis Volume [veh/h]	169	472	8	4	428	177	183	5	124	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

Generated with PTV VISTRO

Version 4.00-03

Intersection Settings

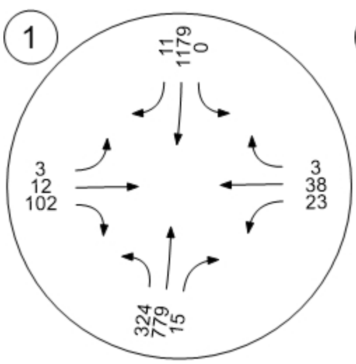
Lanes

Movement, Approach, & Intersection Results

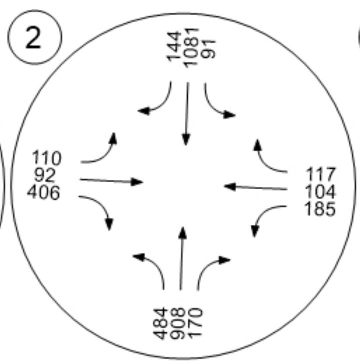
95th-Percentile Queue Length [veh]	23.02	17.88	2.01	0.03	0.93	0.08
95th-Percentile Queue Length [ft]	575.50	446.97	50.16	0.81	23.27	2.05
Approach Delay [s/veh]	122.07	83.11	14.59			11.97
Approach LOS	F	F	B			B
Intersection Delay [s/veh]	85.09					
Intersection LOS	F					

Traffic Volume - Future Total Volume

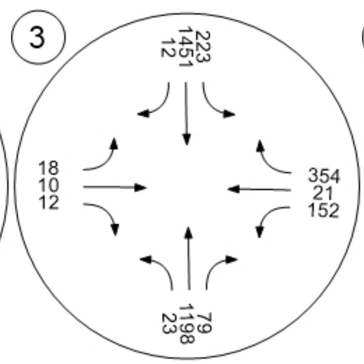
Winchester Road at Keller Ro



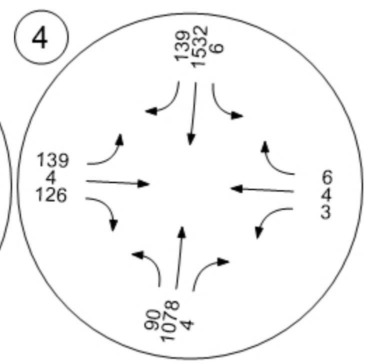
Winchester Road at Pourroy



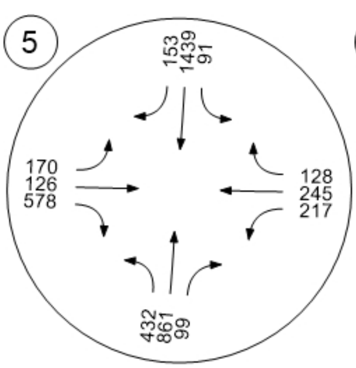
Winchester Road at Whisper



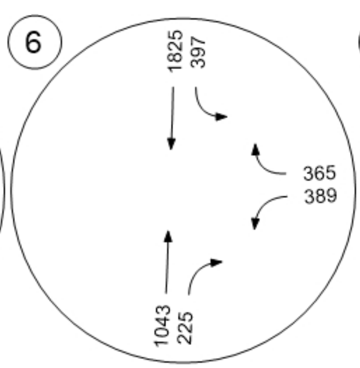
Winchester Road at Jean Nic



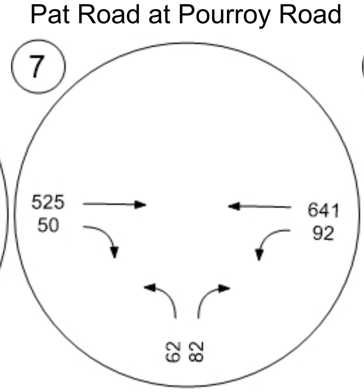
Winchester Road at Max Gilli



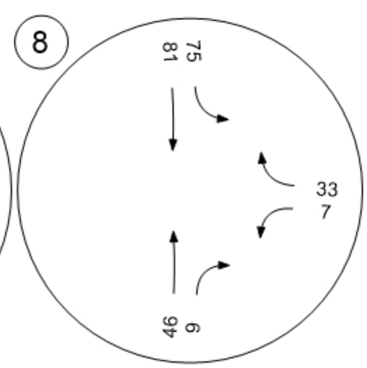
Winchester Road at Benton



Pat Road at Pourroy Road

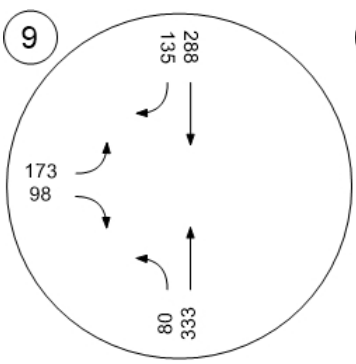


Jean Nicholas Road at Elliot

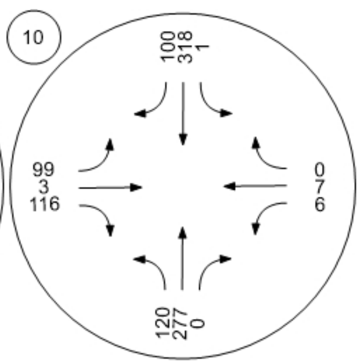


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro

Report File: Q:\...\E+A+P+C AM_new.pdf

Scenario 7: E+A+P+C AM

12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	EB Right	0.736	15.9	B
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	WB Left	1.329	132.5	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Left	0.934	49.5	D
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	NB Left	0.825	21.0	C
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.617	218.7	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	0.993	47.3	D
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	1.250	357.4	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.325	31.9	D
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		21.6	C
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	SB Thru		28.9	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	1	677	3	0	1058	3	1	1	4	8	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	323	75	12	0	79	8	2	11	98	15	38	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	779	15	0	1179	11	3	12	102	23	38	3
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	217	4	0	329	3	1	3	28	6	11	1
Total Analysis Volume [veh/h]	362	869	17	0	1316	12	3	13	114	26	42	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	14	40	0	11	37	0	0	19	0	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	51	0	41	41	7	7	7	7
g / C, Green / Cycle	0.14	0.73	0.00	0.59	0.59	0.10	0.10	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.12	0.53	0.00	0.41	0.01	0.01	0.08	0.06	0.00
s, saturation flow rate [veh/h]	3101	1671	1597	3192	1425	1554	1425	1090	1425
c, Capacity [veh/h]	444	1212	3	1864	832	219	145	182	145
d1, Uniform Delay [s]	29.15	5.63	0.00	10.33	6.12	28.55	30.74	29.96	28.34
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.71	3.91	0.00	2.28	0.03	0.14	8.94	1.27	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.73	0.00	0.71	0.01	0.07	0.78	0.37	0.02
d, Delay for Lane Group [s/veh]	32.86	9.55	0.00	12.62	6.16	28.69	39.68	31.23	28.39
Lane Group LOS	C	A	A	B	A	C	D	C	C
Critical Lane Group	No	Yes	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	2.73	2.90	0.00	4.62	0.05	0.24	2.17	1.14	0.05
50th-Percentile Queue Length [ft]	68.27	72.58	0.00	115.51	1.27	6.11	54.27	28.57	1.15
95th-Percentile Queue Length [veh]	4.92	5.23	0.00	8.15	0.09	0.44	3.91	2.06	0.08
95th-Percentile Queue Length [ft]	122.89	130.64	0.00	203.63	2.29	11.00	97.69	51.43	2.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.86	9.55	9.55	0.00	12.62	6.16	28.69	28.69	39.68	31.23	31.23	28.39
Movement LOS	C	A	A	A	B	A	C	C	D	C	C	C
d_A, Approach Delay [s/veh]	16.31			12.56			38.32			31.11		
Approach LOS	B			B			D			C		
d_I, Intersection Delay [s/veh]	15.92											
Intersection LOS	B											
Intersection V/C	0.736											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	132.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.329

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	24	601	162	69	957	55	38	14	31	176	12	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	459	283	2	19	86	87	70	77	374	2	92	57
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	484	908	170	91	1081	144	110	92	406	185	104	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	134	251	47	25	299	40	30	25	112	51	29	32
Total Analysis Volume [veh/h]	535	1003	188	101	1194	159	122	102	449	204	115	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	34	53	0	18	37	0	30	33	0	16	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	54	54	9	33	33	11	29	29	12	30	30
g / C, Green / Cycle	0.25	0.45	0.45	0.08	0.28	0.28	0.09	0.24	0.24	0.10	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.34	0.31	0.13	0.06	0.37	0.11	0.08	0.06	0.32	0.13	0.07	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	399	1434	640	123	881	393	147	404	343	160	417	355
d1, Uniform Delay [s]	45.00	26.55	20.98	54.59	43.45	35.41	53.58	36.83	45.56	54.00	36.34	37.22
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	169.23	2.86	1.17	12.76	167.50	3.07	11.40	0.33	158.51	164.21	0.35	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

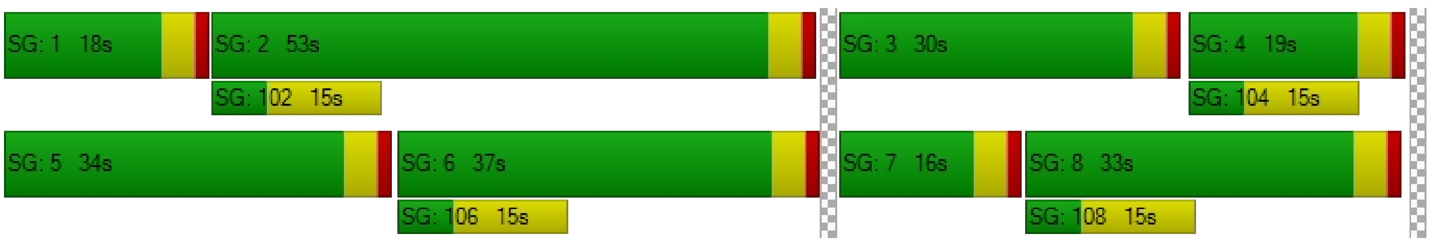
X, volume / capacity	1.34	0.70	0.29	0.82	1.36	0.40	0.83	0.25	1.31	1.28	0.28	0.36
d, Delay for Lane Group [s/veh]	214.24	29.42	22.14	67.35	210.95	38.48	64.97	37.16	204.06	218.21	36.70	37.85
Lane Group LOS	F	C	C	E	F	D	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	29.69	10.74	3.22	3.27	32.45	3.86	4.08	2.47	25.23	11.98	2.69	3.11
50th-Percentile Queue Length [ft]	742.15	268.38	80.44	81.75	811.36	96.42	102.05	61.76	630.71	299.42	67.26	77.63
95th-Percentile Queue Length [veh]	44.89	16.11	5.79	5.89	49.09	6.94	7.35	4.45	38.38	19.26	4.84	5.59
95th-Percentile Queue Length [ft]	1122.22	402.71	144.79	147.15	1227.29	173.55	183.69	111.17	959.48	481.59	121.07	139.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	214.24	29.42	22.14	67.35	210.95	38.48	64.97	37.16	204.06	218.21	36.70	37.85
Movement LOS	F	C	C	E	F	D	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	85.91			182.11			153.55			119.68		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	132.54											
Intersection LOS	F											
Intersection V/C	1.329											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	49.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.934

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	22	701	74	46	1119	12	17	10	12	144	20	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	469	2	175	287	0	0	0	0	2	0	275
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	1198	79	223	1451	12	18	10	12	152	21	354
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	333	22	62	403	3	5	3	3	42	6	98
Total Analysis Volume [veh/h]	26	1331	88	248	1612	13	20	11	13	169	23	393
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	59	0	14	62	0	11	30	0	17	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	56	56	10	62	62	3	25	25	13	35	35
g / C, Green / Cycle	0.03	0.47	0.47	0.08	0.52	0.52	0.03	0.21	0.21	0.11	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.02	0.42	0.06	0.08	0.51	0.01	0.01	0.01	0.01	0.11	0.01	0.28
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	54	1491	666	258	1649	736	45	348	296	173	482	410
d1, Uniform Delay [s]	56.94	29.22	18.16	54.80	28.32	14.15	57.36	37.90	38.00	53.35	30.86	42.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.38	0.11	0.41
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.49	8.53	0.41	17.97	17.42	0.04	6.59	0.04	0.06	53.99	0.04	30.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

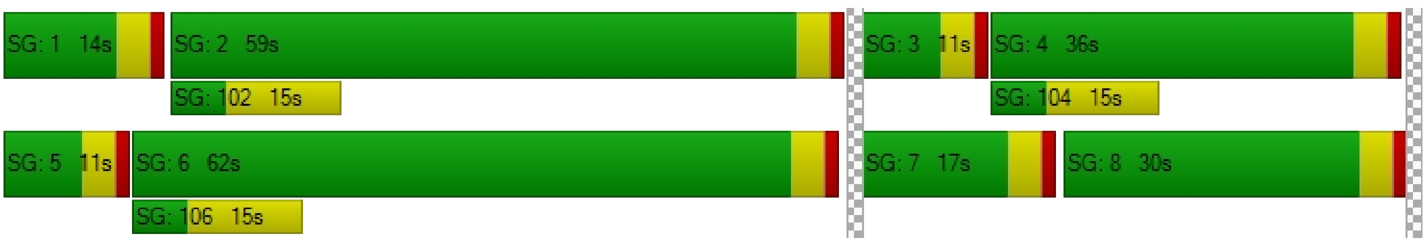
X, volume / capacity	0.48	0.89	0.13	0.96	0.98	0.02	0.44	0.03	0.04	0.98	0.05	0.96
d, Delay for Lane Group [s/veh]	63.43	37.75	18.57	72.77	45.74	14.19	63.94	37.94	38.06	107.34	30.90	72.99
Lane Group LOS	E	D	B	E	D	B	E	D	D	F	C	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.84	17.48	1.37	4.22	23.72	0.17	0.69	0.27	0.32	7.67	0.49	14.83
50th-Percentile Queue Length [ft]	21.06	436.97	34.18	105.53	592.92	4.20	17.13	6.66	7.91	191.67	12.28	370.80
95th-Percentile Queue Length [veh]	1.52	24.34	2.46	7.59	31.70	0.30	1.23	0.48	0.57	12.21	0.88	21.15
95th-Percentile Queue Length [ft]	37.91	608.38	61.52	189.77	792.59	7.56	30.83	11.98	14.23	305.19	22.11	528.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.43	37.75	18.57	72.77	45.74	14.19	63.94	37.94	38.06	107.34	30.90	72.99
Movement LOS	E	D	B	E	D	B	E	D	D	F	C	E
d_A, Approach Delay [s/veh]	37.04			49.10			49.80			81.26		
Approach LOS	D			D			D			F		
d_I, Intersection Delay [s/veh]	49.46											
Intersection LOS	D											
Intersection V/C	0.934											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	86	661	4	6	1238	90	57	4	120	3	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	391	0	0	244	45	80	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	90	1078	4	6	1532	139	139	4	126	3	4	6
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	307	1	2	436	40	40	1	36	1	1	2
Total Analysis Volume [veh/h]	103	1228	5	7	1745	158	158	5	144	3	5	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	22	0	11	19	0	68	76	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	86	86	1	78	78	14	16	16	1	2	2
g / C, Green / Cycle	0.08	0.72	0.72	0.01	0.65	0.65	0.12	0.13	0.13	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.06	0.38	0.00	0.00	0.55	0.11	0.10	0.00	0.10	0.00	0.00	0.00
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	125	2292	1023	20	2083	930	186	218	185	10	33	28
d1, Uniform Delay [s]	54.53	7.76	4.79	58.77	15.98	8.15	52.01	45.56	50.53	59.40	57.85	57.96
k, delay calibration	0.22	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.52	0.90	0.01	9.93	4.22	0.40	10.33	0.04	6.85	17.26	2.09	4.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

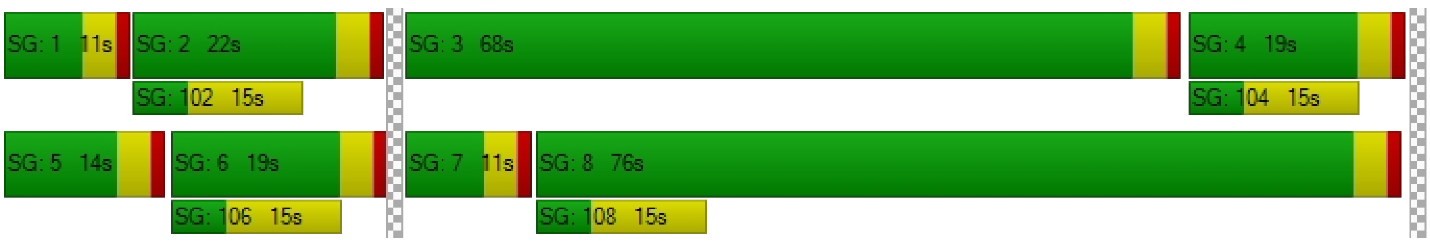
X, volume / capacity	0.83	0.54	0.00	0.35	0.84	0.17	0.85	0.02	0.78	0.31	0.15	0.25
d, Delay for Lane Group [s/veh]	78.06	8.66	4.80	68.70	20.19	8.54	62.34	45.60	57.38	76.67	59.93	62.49
Lane Group LOS	E	A	A	E	C	A	E	D	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	3.76	5.64	0.03	0.26	15.74	1.44	5.19	0.13	4.54	0.14	0.17	0.25
50th-Percentile Queue Length [ft]	93.90	140.93	0.73	6.47	393.51	36.07	129.84	3.34	113.43	3.43	4.22	6.13
95th-Percentile Queue Length [veh]	6.76	9.53	0.05	0.47	22.25	2.60	8.93	0.24	8.03	0.25	0.30	0.44
95th-Percentile Queue Length [ft]	169.02	238.28	1.32	11.65	556.17	64.93	223.27	6.01	200.76	6.17	7.59	11.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.06	8.66	4.80	68.70	20.19	8.54	62.34	45.60	57.38	76.67	59.93	62.49
Movement LOS	E	A	A	E	C	A	E	D	E	E	E	E
d_A, Approach Delay [s/veh]	13.99			19.41			59.74			64.48		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	21.04											
Intersection LOS	C											
Intersection V/C	0.825											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	218.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.617

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	359	654	95	21	1275	87	66	118	535	209	233	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	59	181	0	69	113	63	101	3	22	0	3	110
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	432	861	99	91	1439	153	170	126	578	217	245	128
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	239	27	25	399	42	47	35	160	60	68	36
Total Analysis Volume [veh/h]	479	956	110	101	1597	170	189	140	642	241	272	142
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	26	49	0	18	41	0	30	38	38	15	23	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	50	50	9	37	37	16	34	34	11	29
g / C, Green / Cycle	0.18	0.42	0.42	0.08	0.31	0.31	0.13	0.28	0.28	0.09	0.24
(v / s)_i Volume / Saturation Flow Rate	0.30	0.32	0.33	0.06	0.50	0.12	0.12	0.08	0.45	0.15	0.26
s, saturation flow rate [veh/h]	1597	1676	1617	1597	3192	1425	1597	1676	1425	1597	1581
c, Capacity [veh/h]	293	698	673	123	989	441	216	472	402	147	377
d1, Uniform Delay [s]	49.00	30.15	30.33	54.58	41.42	32.46	50.92	33.78	43.10	54.50	45.69
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	301.24	8.14	8.83	12.65	281.56	2.53	11.23	0.35	281.03	318.37	75.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

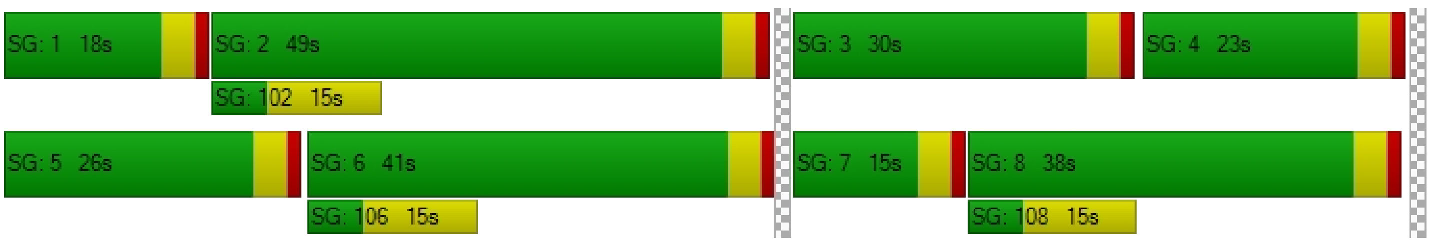
X, volume / capacity	1.64	0.77	0.78	0.82	1.62	0.39	0.88	0.30	1.60	1.64	1.10
d, Delay for Lane Group [s/veh]	350.24	38.29	39.16	67.24	322.98	35.00	62.15	34.12	324.13	372.87	121.08
Lane Group LOS	F	D	D	E	F	C	E	C	F	F	F
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	32.82	13.87	13.73	3.32	52.28	3.98	6.24	3.26	43.10	17.39	19.02
50th-Percentile Queue Length [ft]	820.45	346.77	343.16	82.91	1306.98	99.50	155.89	81.47	1077.52	434.63	475.62
95th-Percentile Queue Length [veh]	51.33	19.98	19.80	5.97	81.11	7.16	10.33	5.87	67.26	28.09	27.60
95th-Percentile Queue Length [ft]	1283.27	499.46	495.06	149.23	2027.71	179.10	258.28	146.64	1681.62	702.26	690.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	350.24	38.67	39.16	67.24	322.98	35.00	62.15	34.12	324.13	372.87	121.08	121.08
Movement LOS	F	D	D	E	F	C	E	C	F	F	F	F
d_A, Approach Delay [s/veh]	135.30			282.94			231.32			213.72		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	218.73											
Intersection LOS	F											
Intersection V/C	1.617											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	47.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.993

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	880	216	311	1696	374	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	128	0	74	61	0	112
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1043	225	397	1825	389	365
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	280	60	107	491	105	98
Total Analysis Volume [veh/h]	1122	242	427	1962	418	392
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	47	0	36	83	37	37
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	43	43	32	79	33	33
g / C, Green / Cycle	0.36	0.36	0.27	0.66	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.35	0.17	0.27	0.61	0.13	0.28
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1143	510	426	2101	853	392
d1, Uniform Delay [s]	38.09	29.75	43.97	18.17	36.43	43.47
k, delay calibration	0.50	0.50	0.46	0.50	0.11	0.46
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	22.49	3.14	42.30	9.22	0.44	43.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.47	1.00	0.93	0.49	1.00
d, Delay for Lane Group [s/veh]	60.57	32.89	86.27	27.39	36.87	86.91
Lane Group LOS	E	C	F	C	D	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	18.59	5.51	16.86	21.44	5.19	16.23
50th-Percentile Queue Length [ft]	464.81	137.66	421.50	536.07	129.78	405.72
95th-Percentile Queue Length [veh]	25.66	9.35	23.63	29.04	8.93	22.84
95th-Percentile Queue Length [ft]	641.59	233.87	590.85	725.92	223.19	570.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.57	32.89	86.27	27.39	36.87	86.91
Movement LOS	E	C	F	C	D	F
d_A, Approach Delay [s/veh]	55.66		37.92		61.08	
Approach LOS	E		D		E	
d_I, Intersection Delay [s/veh]	47.33					
Intersection LOS	D					
Intersection V/C	0.993					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	357.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.250

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	79	4	3	88	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	60	0	521	47	0	638
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	62	82	525	50	92	641
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	28	179	17	31	218
Total Analysis Volume [veh/h]	84	112	715	68	125	873
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.25	0.27	0.01	0.00	0.15	0.01
d_M, Delay for Movement [s/veh]	357.38	312.56	0.00	0.00	10.07	0.00
Movement LOS	F	F	A	A	B	A
95th-Percentile Queue Length [veh]	13.75	13.75	0.00	0.00	0.53	0.00
95th-Percentile Queue Length [ft]	343.66	343.66	0.00	0.00	13.13	0.00
d_A, Approach Delay [s/veh]	331.77		0.00		1.26	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	33.53					
Intersection LOS	F					

Intersection Level Of Service Report

Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	31.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.325

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	189	13	94	138	49	127
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	46	9	24	81	7	19
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	243	23	122	225	58	151
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	8	41	76	20	51
Total Analysis Volume [veh/h]	328	31	165	304	78	204
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.14	0.00	0.33	0.29
d_M, Delay for Movement [s/veh]	0.00	0.00	8.48	0.00	31.90	22.03
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.48	0.00	4.08	4.08
95th-Percentile Queue Length [ft]	0.00	0.00	11.92	0.00	101.90	101.90
d_A, Approach Delay [s/veh]	0.00		2.98		24.76	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	7.55					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	21.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	77	114	147	96	113	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	214	135	35	55	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	333	288	135	173	98
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	124	107	50	64	37
Total Analysis Volume [veh/h]	119	496	429	201	258	146
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.13	3.21	3.21	5.19	4.61	4.17	1.29
95th-Percentile Queue Length [ft]	28.21	80.31	80.31	129.82	115.13	104.18	32.28
Approach Delay [s/veh]	18.73			24.77		21.01	
Approach LOS	C			C		C	
Intersection Delay [s/veh]	21.60						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	28.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	114	166	0	1	244	63	44	3	111	6	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	104	0	0	64	34	53	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	120	277	0	1	318	100	99	3	116	6	7	0
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	83	0	0	96	30	30	1	35	2	2	0
Total Analysis Volume [veh/h]	144	333	0	1	382	120	119	4	139	7	8	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

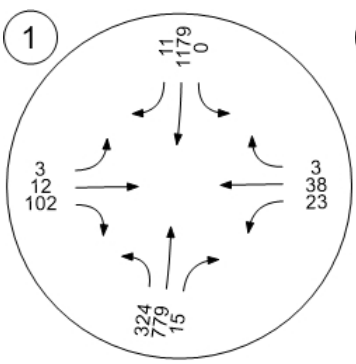
Lanes

Movement, Approach, & Intersection Results

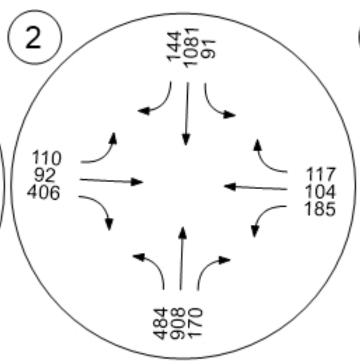
95th-Percentile Queue Length [veh]	8.68	9.21	1.04	0.02	1.02	0.11
95th-Percentile Queue Length [ft]	217.03	230.29	25.94	0.62	25.56	2.73
Approach Delay [s/veh]	33.15	33.92	12.44			11.76
Approach LOS	D	D	B			B
Intersection Delay [s/veh]	28.88					
Intersection LOS	D					

Traffic Volume - Future Total Volume

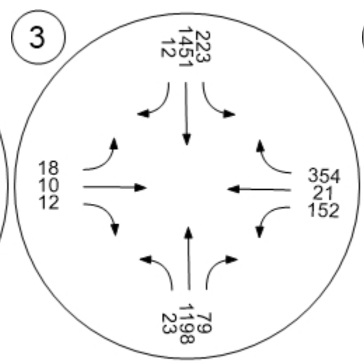
Winchester Road at Keller Ro



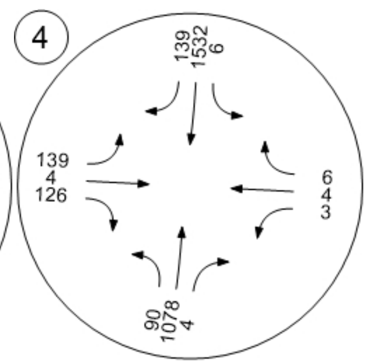
Winchester Road at Pourroy



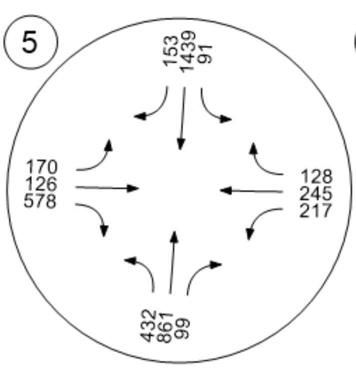
Winchester Road at Whisper



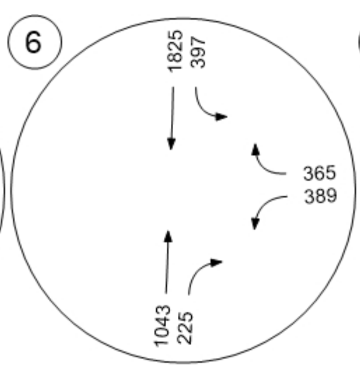
Winchester Road at Jean Nic



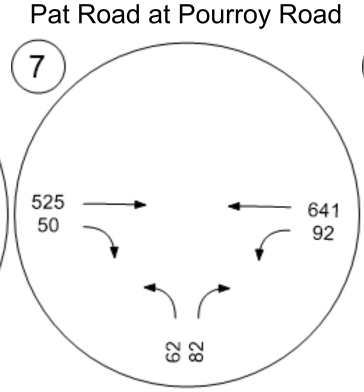
Winchester Road at Max Gilli



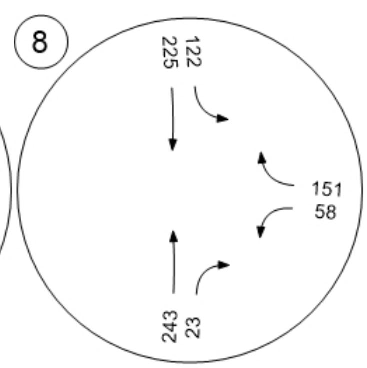
Winchester Road at Benton



Pat Road at Pourroy Road

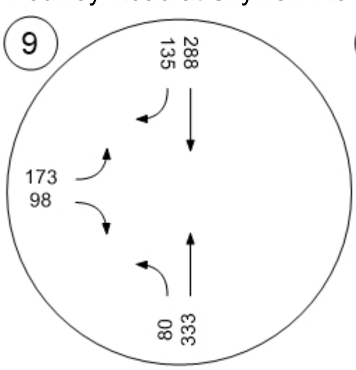


Jean Nicholas Road at Elliot

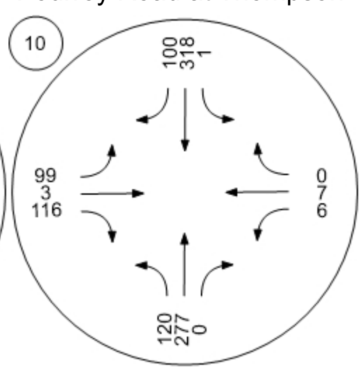


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Generated with PTV VISTRO

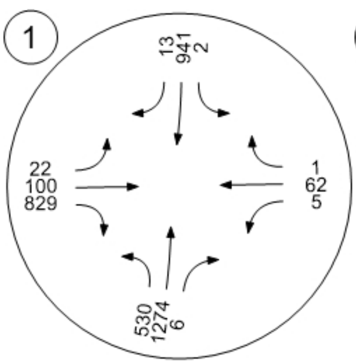
Version 4.00-03

PLACEWORKS

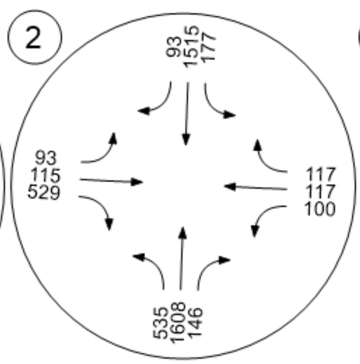
Scenario 8: 8: E+A+P+C PM

Traffic Volume - Future Total Volume

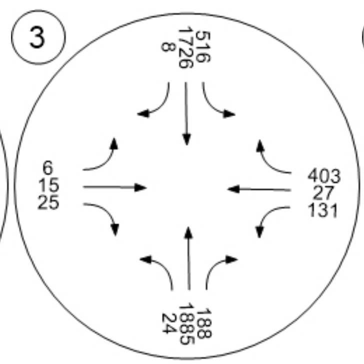
Winchester Road at Keller Ro



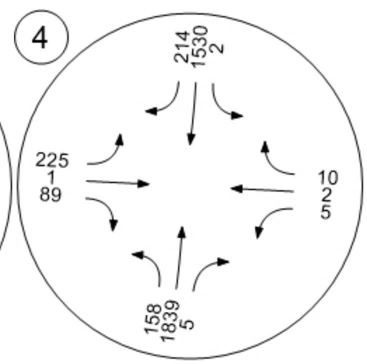
Winchester Road at Pourroy



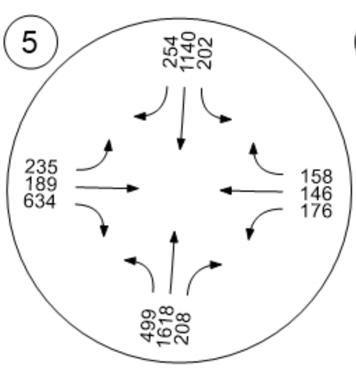
Winchester Road at Whisper



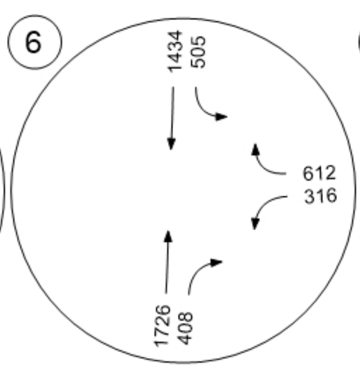
Winchester Road at Jean Nic



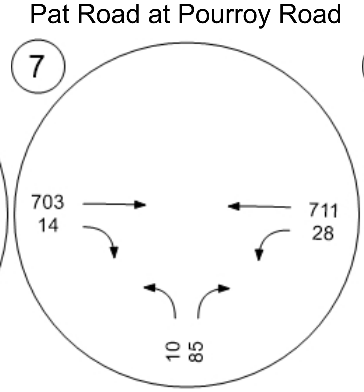
Winchester Road at Max Gilli



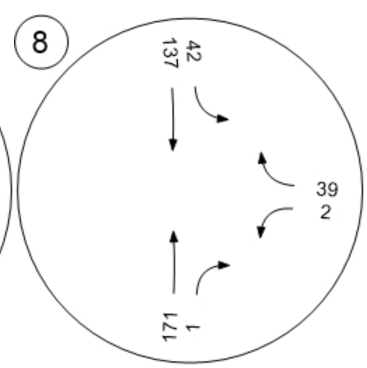
Winchester Road at Benton



Pat Road at Pourroy Road

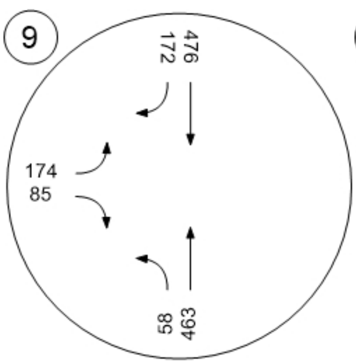


Jean Nicholas Road at Elliot

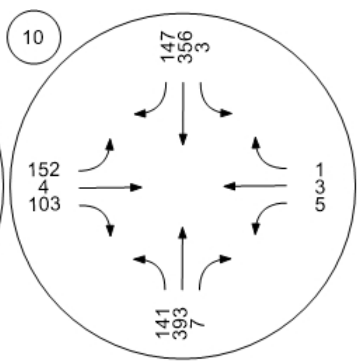


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Temecula Valley Charter School

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\E+A+P+C PM_new.pdf

Scenario 8: E+A+P+C PM
12/13/2016

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Winchester Road at Keller Road	Signalized	HCM 2010	NB Thru	1.671	221.5	F
2	Winchester Road at Pourroy Road/Abelia Street	Signalized	HCM 2010	NB Left	1.585	236.2	F
3	Winchester Road at Whisper Heights Parkway/Pourroy Road	Signalized	HCM 2010	WB Right	1.357	143.1	F
4	Winchester Road at Jean Nicholas Road/Skyview Road	Signalized	HCM 2010	NB Left	0.968	43.0	D
5	Winchester Road at Max Gillis Boulevard/Thompson Road	Signalized	HCM 2010	WB Left	1.598	261.2	F
6	Winchester Road at Benton Road	Signalized	HCM 2010	WB Right	1.537	176.8	F
7	Pat Road at Pourroy Road	Two-way stop	HCM 2010	NB Left	0.229	86.7	F
8	Jean Nicholas Road at Elliot Road	Two-way stop	HCM 2010	WB Left	0.195	25.4	D
9	Pourroy Road at Skyview Road	All-way stop	HCM 2010	SB Thru		68.5	F
10	Pourroy Road at Thompson Road	All-way stop	HCM 2010	NB Thru		85.1	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. for all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Winchester Road at Keller Road

Control Type:	Signalized	Delay (sec / veh):	221.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.671

Intersection Setup

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	200.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Keller Road			Keller Road		
Base Volume Input [veh/h]	4	1140	3	2	813	1	2	2	1	3	0	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	526	88	3	0	95	12	20	98	828	2	62	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	530	1274	6	2	941	13	22	100	829	5	62	1
Peak Hour Factor	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	355	2	1	263	4	6	28	231	1	17	0
Total Analysis Volume [veh/h]	592	1422	7	2	1050	15	25	112	925	6	69	1
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	5	2	0	1	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	7	7	0	7	7	0	0	7	0	0	7	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	58	0	11	43	0	0	51	0	0	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	C	R	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	61	0	39	39	47	47	47	47
g / C, Green / Cycle	0.18	0.50	0.00	0.33	0.33	0.39	0.39	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.19	0.85	0.00	0.33	0.01	0.13	0.65	0.05	0.00
s, saturation flow rate [veh/h]	3101	1675	1597	3192	1425	1081	1425	1477	1425
c, Capacity [veh/h]	569	846	7	1039	464	458	557	610	557
d1, Uniform Delay [s]	48.97	29.70	59.55	40.46	27.58	25.27	36.54	23.40	22.27
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.15	315.59	22.54	30.51	0.13	0.36	305.17	0.09	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

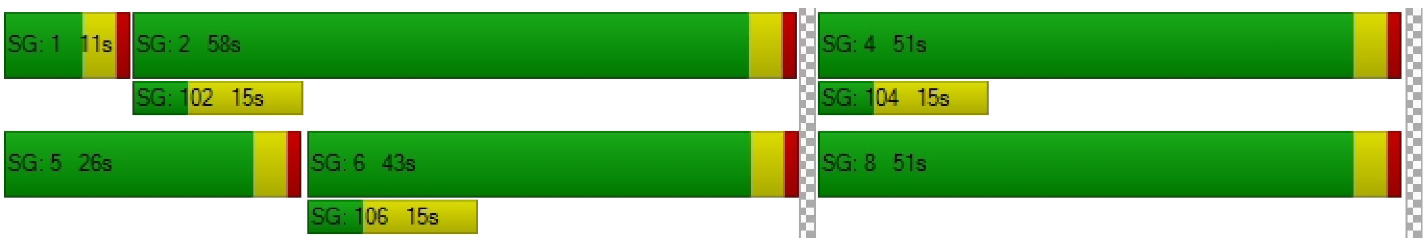
X, volume / capacity	1.04	1.69	0.30	1.01	0.03	0.30	1.66	0.12	0.00
d, Delay for Lane Group [s/veh]	78.12	345.29	82.09	70.96	27.70	25.63	341.71	23.49	22.27
Lane Group LOS	F	F	F	F	C	C	F	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh]	10.23	94.67	0.10	18.28	0.29	2.64	63.14	1.38	0.02
50th-Percentile Queue Length [ft]	255.67	2366.82	2.50	456.95	7.24	66.06	1578.39	34.54	0.44
95th-Percentile Queue Length [veh]	15.78	148.83	0.18	25.47	0.52	4.76	99.11	2.49	0.03
95th-Percentile Queue Length [ft]	394.44	3720.75	4.49	636.63	13.04	118.91	2477.83	62.17	0.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	78.12	345.29	345.29	82.09	70.96	27.70	25.63	25.63	341.71	23.49	23.49	22.27
Movement LOS	F	F	F	F	F	C	C	C	F	C	C	C
d_A, Approach Delay [s/veh]		267.03			70.38			300.93			23.47	
Approach LOS		F			E			F			C	
d_I, Intersection Delay [s/veh]	221.52											
Intersection LOS	F											
Intersection V/C	1.671											

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Control Type:	Signalized	Delay (sec / veh):	236.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.585

Intersection Setup

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	65.00			65.00			30.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Pourroy Road			Abelia Street		
Base Volume Input [veh/h]	15	1116	134	34	778	15	14	5	17	90	7	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	519	447	7	142	706	77	78	110	511	6	110	92
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	535	1608	146	177	1515	93	93	115	529	100	117	117
Peak Hour Factor	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	444	40	49	419	26	26	32	146	28	32	32
Total Analysis Volume [veh/h]	591	1777	161	196	1674	103	103	127	585	110	129	129
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	45	0	29	43	0	18	35	0	11	28	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	27	49	49	17	39	39	9	31	31	7	29	29
g / C, Green / Cycle	0.22	0.41	0.41	0.14	0.33	0.33	0.08	0.26	0.26	0.06	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.37	0.56	0.11	0.12	0.52	0.07	0.06	0.08	0.41	0.07	0.08	0.09
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	359	1317	588	222	1043	466	125	430	366	93	397	337
d1, Uniform Delay [s]	46.50	35.25	23.34	50.69	40.40	29.32	54.50	35.88	44.60	56.50	37.86	38.43
k, delay calibration	0.50	0.50	0.50	0.14	0.50	0.50	0.11	0.11	0.50	0.44	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	302.57	162.30	1.15	13.87	276.91	1.10	12.65	0.38	282.45	143.44	0.47	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

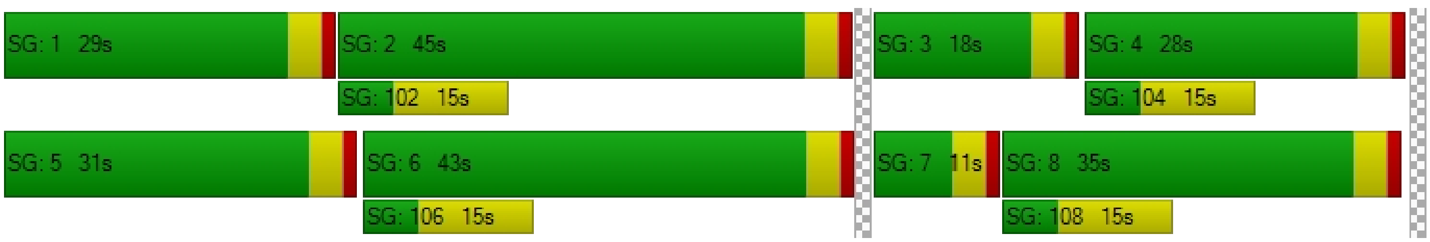
X, volume / capacity	1.65	1.35	0.27	0.88	1.61	0.22	0.82	0.30	1.60	1.18	0.32	0.38
d, Delay for Lane Group [s/veh]	349.07	197.54	24.49	64.57	317.31	30.42	67.15	36.25	327.06	199.94	38.33	39.14
Lane Group LOS	F	F	C	E	F	C	E	D	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	40.09	46.65	2.93	6.27	54.04	2.14	3.50	3.05	39.45	6.47	3.11	3.17
50th-Percentile Queue Length [ft]	1002.32	1166.18	73.35	156.69	1350.95	53.49	87.61	76.25	986.18	161.70	77.63	79.14
95th-Percentile Queue Length [veh]	62.48	69.67	5.28	10.37	83.80	3.85	6.31	5.49	61.65	11.16	5.59	5.70
95th-Percentile Queue Length [ft]	1561.95	1741.76	132.03	259.33	2094.93	96.27	157.70	137.25	1541.18	278.92	139.74	142.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	349.07	197.54	24.49	64.57	317.31	30.42	67.15	36.25	327.06	199.94	38.33	39.14
Movement LOS	F	F	C	E	F	C	E	D	F	F	D	D
d_A, Approach Delay [s/veh]	221.94			277.22			248.89			86.92		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	236.25											
Intersection LOS	F											
Intersection V/C	1.585											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Control Type:	Signalized	Delay (sec / veh):	143.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.357

Intersection Setup

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Whisper Heights Parkway			Pourroy Road		
Base Volume Input [veh/h]	23	1207	171	83	897	8	6	14	24	117	26	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	630	10	430	793	0	0	0	0	9	0	343
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	1885	188	516	1726	8	6	15	25	131	27	403
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	524	52	143	479	2	2	4	7	36	8	112
Total Analysis Volume [veh/h]	27	2094	209	573	1918	9	7	17	28	146	30	448
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	56	0	19	64	0	11	21	0	14	24	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	52	52	15	63	63	1	17	17	10	26	26
g / C, Green / Cycle	0.04	0.47	0.47	0.14	0.57	0.57	0.01	0.15	0.15	0.09	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.02	0.66	0.15	0.18	0.60	0.01	0.00	0.01	0.02	0.09	0.02	0.31
s, saturation flow rate [veh/h]	1597	3192	1425	3101	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	57	1514	676	423	1835	819	20	257	218	145	388	330
d1, Uniform Delay [s]	52.01	28.92	17.82	47.50	23.39	10.01	53.89	39.86	40.25	50.00	33.06	42.26
k, delay calibration	0.11	0.50	0.50	0.18	0.50	0.50	0.11	0.11	0.11	0.37	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.93	176.75	1.19	165.52	34.02	0.02	10.53	0.11	0.26	65.93	0.08	179.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	1.38	0.31	1.35	1.05	0.01	0.36	0.07	0.13	1.01	0.08	1.36
d, Delay for Lane Group [s/veh]	57.95	205.67	19.01	213.02	57.41	10.03	64.42	39.97	40.51	115.94	33.15	221.53
Lane Group LOS	E	F	B	F	F	B	E	D	D	F	C	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.79	54.52	3.18	15.20	28.07	0.09	0.25	0.41	0.68	6.64	0.64	25.28
50th-Percentile Queue Length [ft]	19.83	1363.12	79.47	379.96	701.74	2.18	6.28	10.15	16.96	165.90	15.94	631.93
95th-Percentile Queue Length [veh]	1.43	82.05	5.72	24.30	38.13	0.16	0.45	0.73	1.22	10.88	1.15	38.91
95th-Percentile Queue Length [ft]	35.69	2051.27	143.04	607.42	953.27	3.92	11.30	18.27	30.53	272.07	28.68	972.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.95	205.67	19.01	213.02	57.41	10.03	64.42	39.97	40.51	115.94	33.15	221.53
Movement LOS	E	F	B	F	F	B	E	D	D	F	C	F
d_A, Approach Delay [s/veh]		187.22			92.91			43.55			187.77	
Approach LOS		F			F			D			F	
d_I, Intersection Delay [s/veh]						143.10						
Intersection LOS						F						
Intersection V/C						1.357						

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road

Control Type:	Signalized	Delay (sec / veh):	43.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.968

Intersection Setup

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Jean Nicholas Road			Skyview Road		
Base Volume Input [veh/h]	148	1281	5	2	861	45	88	1	82	5	2	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	507	0	0	635	167	133	0	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	1839	5	2	1530	214	225	1	89	5	2	10
Peak Hour Factor	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780	0.8780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	524	1	1	436	61	64	0	25	1	1	3
Total Analysis Volume [veh/h]	180	2095	6	2	1743	244	256	1	101	6	2	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	0	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	58	0	11	52	0	22	30	0	11	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
l1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
l2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	73	73	0	61	61	18	19	19	1	2	2
g / C, Green / Cycle	0.12	0.67	0.67	0.00	0.55	0.55	0.16	0.17	0.17	0.01	0.02	0.02
(v / s)_i Volume / Saturation Flow Rate	0.11	0.66	0.00	0.00	0.55	0.17	0.16	0.00	0.07	0.00	0.00	0.01
s, saturation flow rate [veh/h]	1597	3192	1425	1597	3192	1425	1597	1676	1425	1597	1676	1425
c, Capacity [veh/h]	189	2119	946	8	1756	784	262	292	248	19	37	31
d1, Uniform Delay [s]	48.19	18.08	6.24	54.59	24.54	13.44	45.83	37.57	40.41	53.97	52.73	53.07
k, delay calibration	0.36	0.50	0.50	0.11	0.50	0.50	0.41	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	44.32	17.01	0.01	16.72	19.78	1.03	45.04	0.00	1.07	9.48	0.61	6.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.99	0.01	0.26	0.99	0.31	0.98	0.00	0.41	0.32	0.05	0.35
d, Delay for Lane Group [s/veh]	92.51	35.10	6.25	71.30	44.32	14.48	90.87	37.58	41.49	63.45	53.33	59.68
Lane Group LOS	F	D	A	E	D	B	F	D	D	E	D	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	6.98	23.95	0.04	0.09	23.46	3.08	10.19	0.02	2.51	0.21	0.06	0.36
50th-Percentile Queue Length [ft]	174.61	598.87	1.02	2.22	586.42	77.06	254.72	0.57	62.63	5.35	1.51	8.93
95th-Percentile Queue Length [veh]	11.32	31.98	0.07	0.16	31.40	5.55	15.42	0.04	4.51	0.39	0.11	0.64
95th-Percentile Queue Length [ft]	282.96	799.54	1.83	4.00	784.99	138.71	385.59	1.02	112.74	9.63	2.71	16.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	92.51	35.10	6.25	71.30	44.32	14.48	90.87	37.58	41.49	63.45	53.33	59.68
Movement LOS	F	D	A	E	D	B	F	D	D	E	D	E
d_A, Approach Delay [s/veh]		39.55			40.69			76.79			60.20	
Approach LOS		D			D			E			E	
d_I, Intersection Delay [s/veh]	42.99											
Intersection LOS	D											
Intersection V/C	0.968											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road

Control Type:	Signalized	Delay (sec / veh):	261.2
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.598

Intersection Setup

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00			55.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Winchester Road			Winchester Road			Max Gillis Boulevard			Thompson Road		
Base Volume Input [veh/h]	437	1348	200	28	832	61	74	174	540	169	133	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	45	216	0	173	275	191	158	8	72	0	8	137
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	499	1618	208	202	1140	254	235	189	634	176	146	158
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	449	58	56	316	70	65	52	176	49	41	44
Total Analysis Volume [veh/h]	554	1796	231	224	1265	282	261	210	704	195	162	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	8	7	4	0
Auxiliary Signal Groups									8			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	7	7	0	7	7	0	7	7	7	7	7	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	30	51	0	15	36	0	23	41	41	13	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	R	L	C
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	47	47	11	32	32	19	37	37	9	27
g / C, Green / Cycle	0.22	0.39	0.39	0.09	0.27	0.27	0.16	0.31	0.31	0.08	0.22
(v / s)_i Volume / Saturation Flow Rate	0.35	0.60	0.63	0.14	0.40	0.20	0.16	0.13	0.49	0.12	0.22
s, saturation flow rate [veh/h]	1597	1676	1612	1597	3192	1425	1597	1676	1425	1597	1536
c, Capacity [veh/h]	346	659	633	147	856	382	253	514	437	120	343
d1, Uniform Delay [s]	47.01	36.43	36.43	54.50	43.92	40.07	50.50	33.00	41.62	55.50	46.38
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.45	0.11	0.50	0.50	0.43
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	283.83	249.88	277.53	267.99	221.19	12.02	61.98	0.52	285.86	314.39	40.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

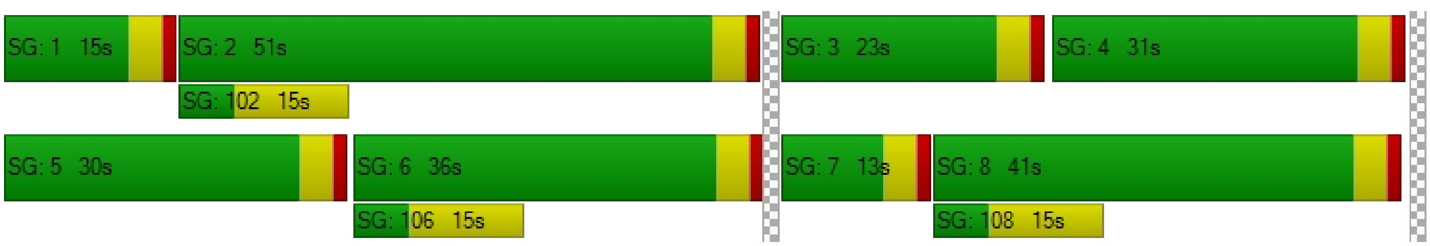
X, volume / capacity	1.60	1.54	1.60	1.53	1.48	0.74	1.03	0.41	1.61	1.62	0.98
d, Delay for Lane Group [s/veh]	330.84	286.31	313.96	322.49	265.10	52.09	112.49	33.52	327.48	369.89	87.26
Lane Group LOS	F	F	F	F	F	D	F	C	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	37.03	63.34	65.76	15.17	38.24	8.45	11.93	4.93	47.40	14.14	13.82
50th-Percentile Queue Length [ft]	925.82	1583.62	1643.99	379.36	955.88	211.20	298.13	123.15	1185.09	353.44	345.45
95th-Percentile Queue Length [veh]	57.58	97.12	101.87	24.60	58.66	13.21	17.86	8.57	74.01	23.20	19.91
95th-Percentile Queue Length [ft]	1439.53	2428.04	2546.68	614.90	1466.53	330.37	446.41	214.15	1850.32	579.92	497.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	330.84	298.36	313.96	322.49	265.10	52.09	112.49	33.52	327.48	369.89	87.26	87.26
Movement LOS	F	F	F	F	F	D	F	C	F	F	F	F
d_A, Approach Delay [s/veh]		306.73			238.44			227.19			190.86	
Approach LOS		F			F			F			F	
d_I, Intersection Delay [s/veh]	261.17											
Intersection LOS	F											
Intersection V/C	1.598											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Winchester Road at Benton Road

Control Type:	Signalized	Delay (sec / veh):	176.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.537

Intersection Setup

Name	Winchester Road		Winchester Road		Benton Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	1	1	0	2	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	55.00		55.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		Yes	

Volumes

Name	Winchester Road		Winchester Road		Benton Road	
Base Volume Input [veh/h]	1546	392	314	1216	304	451
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	118	0	178	169	0	143
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1726	408	505	1434	316	612
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	464	110	136	385	85	165
Total Analysis Volume [veh/h]	1856	439	543	1542	340	658
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal group	2	0	1	6	7	4
Auxiliary Signal Groups						4
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	7	0	7	7	7	7
Maximum Green [s]	30	0	30	30	30	30
Amber [s]	3.0	0.0	3.0	3.0	3.0	3.0
All red [s]	1.0	0.0	1.0	1.0	1.0	1.0
Split [s]	49	0	31	80	40	40
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	3.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	2.0
Minimum Recall	No		No	No	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	27	76	36	36
g / C, Green / Cycle	0.37	0.37	0.23	0.63	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.58	0.31	0.34	0.48	0.11	0.46
s, saturation flow rate [veh/h]	3192	1425	1597	3192	3101	1425
c, Capacity [veh/h]	1196	534	360	2022	930	427
d1, Uniform Delay [s]	37.49	33.88	46.46	15.59	33.01	41.98
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	252.32	13.34	243.46	2.79	0.24	254.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.55	0.82	1.51	0.76	0.37	1.54
d, Delay for Lane Group [s/veh]	289.81	47.22	289.91	18.38	33.25	296.24
Lane Group LOS	F	D	F	B	C	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	58.01	12.64	34.44	13.01	3.93	42.67
50th-Percentile Queue Length [ft]	1450.14	316.12	860.96	325.25	98.36	1066.69
95th-Percentile Queue Length [veh]	89.44	18.48	53.16	18.93	7.08	66.17
95th-Percentile Queue Length [ft]	2235.94	461.91	1328.94	473.13	177.05	1654.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	289.81	47.22	289.91	18.38	33.25	296.24
Movement LOS	F	D	F	B	C	F
d_A, Approach Delay [s/veh]	243.41		89.10		206.64	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	176.76					
Intersection LOS	F					
Intersection V/C	1.537					

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Pat Road at Pourroy Road

Control Type:	Two-way stop	Delay (sec / veh):	86.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.229

Intersection Setup

Name	Pat Road		Pourroy Road		Pourroy Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Pat Road		Pourroy Road		Pourroy Road	
Base Volume Input [veh/h]	2	82	4	1	27	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	0	699	13	0	706
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	85	703	14	28	711
Peak Hour Factor	0.7340	0.7340	0.7340	0.7340	0.7340	0.7340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	29	239	5	10	242
Total Analysis Volume [veh/h]	14	116	958	19	38	969
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.23	0.38	0.01	0.00	0.05	0.01
d_M, Delay for Movement [s/veh]	86.71	39.49	0.00	0.00	10.39	0.00
Movement LOS	F	E	A	A	B	A
95th-Percentile Queue Length [veh]	3.47	3.47	0.00	0.00	0.17	0.00
95th-Percentile Queue Length [ft]	86.71	86.71	0.00	0.00	4.26	0.00
d_A, Approach Delay [s/veh]	44.57		0.00		0.39	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	2.93					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 8: Jean Nicholas Road at Elliot Road

Control Type:	Two-way stop	Delay (sec / veh):	25.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.195

Intersection Setup

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Jean Nicholas Road		Jean Nicholas Road		Elliot Road	
Base Volume Input [veh/h]	157	33	40	110	37	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	171	1	4	137	2	5
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	334	35	46	251	40	132
Peak Hour Factor	0.7400	0.7400	0.7400	0.7400	0.7400	0.7400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	12	16	85	14	45
Total Analysis Volume [veh/h]	451	47	62	339	54	178
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane	No	No	No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No	No	No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.06	0.00	0.20	0.30
d_M, Delay for Movement [s/veh]	0.00	0.00	8.59	0.00	25.40	18.48
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.18	0.00	2.71	2.71
95th-Percentile Queue Length [ft]	0.00	0.00	4.62	0.00	67.82	67.82
d_A, Approach Delay [s/veh]	0.00		1.33		20.09	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	4.59					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: Pourroy Road at Skyview Road

Control Type:	All-way stop	Delay (sec / veh):	68.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road		Pourroy Road		Skyview Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		Yes	

Volumes

Name	Pourroy Road		Pourroy Road		Skyview Road	
Base Volume Input [veh/h]	56	182	128	83	102	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	274	343	86	68	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	463	476	172	174	85
Peak Hour Factor	0.6710	0.6710	0.6710	0.6710	0.6710	0.6710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	173	177	64	65	32
Total Analysis Volume [veh/h]	86	690	709	256	259	127
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.81	7.59	7.59	17.90	16.39	5.50	1.33
95th-Percentile Queue Length [ft]	20.29	189.87	189.87	447.56	409.72	137.43	33.16
Approach Delay [s/veh]	37.22			109.58		28.96	
Approach LOS	E			F		D	
Intersection Delay [s/veh]	68.55						
Intersection LOS	F						

Intersection Level Of Service Report
Intersection 10: Pourroy Road at Thompson Road

Control Type:	All-way stop	Delay (sec / veh):	85.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Pourroy Road			Pourroy Road			Thompson Road			Thompson Road		
Base Volume Input [veh/h]	134	246	7	3	177	56	77	4	97	5	3	1
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	137	0	0	172	89	72	0	2	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	393	7	3	356	147	152	4	103	5	3	1
Peak Hour Factor	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320	0.8320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	118	2	1	107	44	46	1	31	2	1	0
Total Analysis Volume [veh/h]	169	472	8	4	428	177	183	5	124	6	4	1
Pedestrian Volume [ped/h]	0			0			0			0		

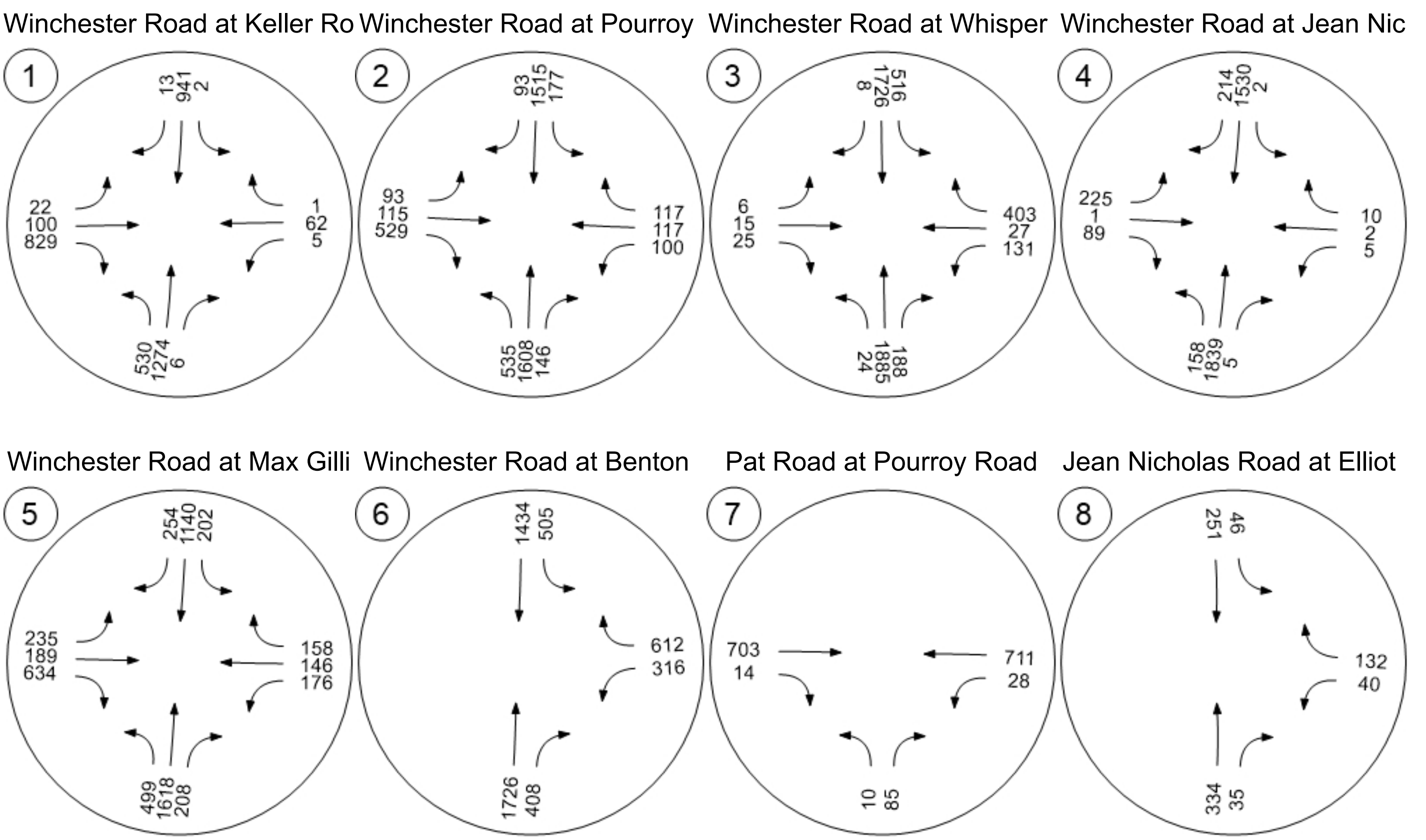
Intersection Settings

Lanes

Movement, Approach, & Intersection Results

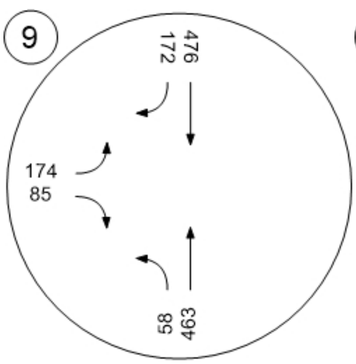
95th-Percentile Queue Length [veh]	23.02	17.88	2.01	0.03	0.93	0.08
95th-Percentile Queue Length [ft]	575.50	446.97	50.16	0.81	23.27	2.05
Approach Delay [s/veh]	122.07	83.11	14.59			11.97
Approach LOS	F	F	B			B
Intersection Delay [s/veh]	85.09					
Intersection LOS	F					

Traffic Volume - Future Total Volume

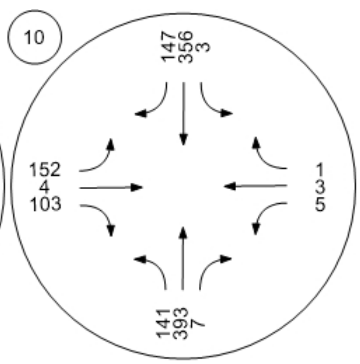


Traffic Volume - Future Total Volume

Pourroy Road at Skyview Ro



Pourroy Road at Thompson



Appendix I. Fair Share Calculations

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\fair share and mitigation.pdf

Scenario 7: E+A+P+C AM
11/11/2016

Fair Share Volumes

Intersection 1: Winchester Road at Keller Road													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0	24	12	0	30	0	0	0	0	15	0	0	81
2: Riverside #1	0	1	0	0	1	0	0	0	0	0	0	0	2
3: Riverside #2	0	34	0	0	42	0	0	0	0	0	0	0	76
4: Riverside #3	323	0	0	0	0	8	2	11	98	0	38	0	480
5: Murrieta #1	0	16	0	0	6	0	0	0	0	0	0	0	22
Site-Generated Trips	323	75	12	0	79	8	2	11	98	15	38	0	
Future Total Volume	324	779	15	0	1179	11	3	12	102	23	38	3	

Intersection 2: Winchester Road at Pourroy Road/Abelia Street													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	165	0	0	0	0	45	36	24	136	0	30	0	436
2: Riverside #1	0	1	2	0	1	0	0	0	0	2	0	0	6
3: Riverside #2	294	0	0	0	0	42	34	53	238	0	62	0	723
4: Riverside #3	0	266	0	19	79	0	0	0	0	0	0	57	421
5: Murrieta #1	0	16	0	0	6	0	0	0	0	0	0	0	22
Site-Generated Trips	459	283	2	19	86	87	70	77	374	2	92	57	
Future Total Volume	484	908	170	91	1081	144	110	92	406	185	104	117	

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0	90	0	61	75	0	0	0	0	0	0	75	301
2: Riverside #1	0	3	2	0	3	0	0	0	0	2	0	0	10
3: Riverside #2	0	189	0	85	153	0	0	0	0	0	0	105	532
4: Riverside #3	0	171	0	29	50	0	0	0	0	0	0	95	345
5: Murrieta #1	0	16	0	0	6	0	0	0	0	0	0	0	22
Site-Generated Trips	0	469	2	175	287	0	0	0	0	2	0	275	
Future Total Volume	23	1198	79	223	1451	12	18	10	12	152	21	354	

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0	90	0	0	75	0	0	0	0	0	0	0	165
2: Riverside #1	1	5	0	0	5	0	0	0	1	0	0	0	12
3: Riverside #2	0	147	0	0	119	34	42	0	0	0	0	0	342
4: Riverside #3	0	133	0	0	39	11	38	0	0	0	0	0	221
5: Murrieta #1	0	16	0	0	6	0	0	0	0	0	0	0	22
Site-Generated Trips	1	391	0	0	244	45	80	0	1	0	0	0	
Future Total Volume	90	1078	4	6	1532	139	139	4	126	3	4	6	

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0	45	0	24	39	12	15	0	0	0	0	30	165
2: Riverside #1	3	0	0	0	0	6	6	3	3	0	3	0	24
3: Riverside #2	0	63	0	34	51	34	42	0	0	0	0	42	266
4: Riverside #3	0	57	0	11	17	11	38	0	0	0	0	38	172
5: Murrieta #1	56	16	0	0	6	0	0	0	19	0	0	0	97
Site-Generated Trips	59	181	0	69	113	63	101	3	22	0	3	110	
Future Total Volume	432	861	99	91	1439	153	170	126	578	217	245	128	

Intersection 6: Winchester Road at Benton Road							
Zone ID: Name	Northbound		Southbound		Westbound		Total
	Thru	Right	Left	Thru	Left	Right	
1: TVCS	15	0	27	12	0	30	84
2: Riverside #1	1	0	2	1	0	2	6
3: Riverside #2	21	0	34	17	0	42	114
4: Riverside #3	19	0	11	6	0	38	74
5: Murrieta #1	72	0	0	25	0	0	97
Site-Generated Trips	128	0	74	61	0	112	
Future Total Volume	1043	225	397	1825	389	365	

Intersection 7: Pat Road at Pourroy Road							
Zone ID: Name	Northbound		Eastbound		Westbound		Total
	Left	Right	Thru	Right	Left	Thru	
1: TVCS	60	0	196	47	0	240	543
2: Riverside #1	0	0	0	0	0	0	0
3: Riverside #2	0	0	325	0	0	398	723
4: Riverside #3	0	0	0	0	0	0	0
5: Murrieta #1	0	0	0	0	0	0	0
Site-Generated Trips	60	0	521	47	0	638	
Future Total Volume	62	82	525	50	92	641	

Intersection 8: Jean Nicholas Road at Elliot Road							
Zone ID: Name	Northbound		Southbound		Westbound		Total
	Thru	Right	Left	Thru	Left	Right	
1: TVCS	0	9	24	0	7	19	59
2: Riverside #1	1	0	0	1	0	0	2
3: Riverside #2	34	0	0	42	0	0	76
4: Riverside #3	11	0	0	38	0	0	49
5: Murrieta #1	0	0	0	0	0	0	0
Site-Generated Trips	46	9	24	81	7	19	
Future Total Volume	46	9	75	81	7	33	

Intersection 9: Pourroy Road at Skyview Road							
Zone ID: Name	Northbound		Southbound		Eastbound		Total
	Left	Thru	Thru	Right	Left	Right	
1: TVCS	0	54	44	12	15	0	125
2: Riverside #1	0	0	0	0	0	0	0
3: Riverside #2	0	84	68	17	21	0	190
4: Riverside #3	0	76	23	6	19	0	124
5: Murrieta #1	0	0	0	0	0	0	0
Site-Generated Trips	0	214	135	35	55	0	
Future Total Volume	80	333	288	135	173	98	

Intersection 10: Pourroy Road at Thompson Road													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0	24	0	0	19	10	12	0	0	0	0	0	65
2: Riverside #1	1	0	0	0	0	1	1	0	1	0	0	0	4
3: Riverside #2	0	42	0	0	34	17	21	0	0	0	0	0	114
4: Riverside #3	0	38	0	0	11	6	19	0	0	0	0	0	74
5: Murrieta #1	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips	1	104	0	0	64	34	53	0	1	0	0	0	
Future Total Volume	120	277	0	1	318	100	99	3	116	6	7	0	

Vistro File: Q:\...\tvcs1.vistro
Report File: Q:\...\fair share and mitigation.pdf

Scenario 7: E+A+P+C AM
11/11/2016

Fair Share % of Net New Site

Intersection 1: Winchester Road at Keller Road

Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0%	32%	100%	0%	37.97%	0%	0%	0%	0%	100%	0%	0%	12.25%
2: Riverside #1	0%	1.33%	0%	0%	1.27%	0%	0%	0%	0%	0%	0%	0%	0.3%
3: Riverside #2	0%	45.33%	0%	0%	53.16%	0%	0%	0%	0%	0%	0%	0%	11.5%
4: Riverside #3	100%	0%	0%	0%	0%	100%	100%	100%	100%	0%	100%	0%	72.62%
5: Murrieta #1	0%	21.33%	0%	0%	7.59%	0%	0%	0%	0%	0%	0%	0%	3.33%
Total	100%	100%	100%	0%	100%	100%	100%	100%	100%	100%	100%	0%	

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	35.95%	0%	0%	0%	0%	51.72%	51.43%	31.17%	36.36%	0%	32.61%	0%	27.11%
2: Riverside #1	0%	0.35%	100%	0%	1.16%	0%	0%	0%	0%	100%	0%	0%	0.37%
3: Riverside #2	64.05%	0%	0%	0%	0%	48.28%	48.57%	68.83%	63.64%	0%	67.39%	0%	44.96%
4: Riverside #3	0%	93.99%	0%	100%	91.86%	0%	0%	0%	0%	0%	0%	100%	26.18%
5: Murrieta #1	0%	5.65%	0%	0%	6.98%	0%	0%	0%	0%	0%	0%	0%	1.37%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0%	19.19%	0%	34.86%	26.13%	0%	0%	0%	0%	0%	0%	27.27%	24.88%
2: Riverside #1	0%	0.64%	100%	0%	1.05%	0%	0%	0%	0%	100%	0%	0%	0.83%
3: Riverside #2	0%	40.3%	0%	48.57%	53.31%	0%	0%	0%	0%	0%	0%	38.18%	43.97%
4: Riverside #3	0%	36.46%	0%	16.57%	17.42%	0%	0%	0%	0%	0%	0%	34.55%	28.51%
5: Murrieta #1	0%	3.41%	0%	0%	2.09%	0%	0%	0%	0%	0%	0%	0%	1.82%
Total	0%	100%	100%	100%	100%	0%	0%	0%	0%	100%	0%	100%	

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0%	23.02%	0%	0%	30.74%	0%	0%	0%	0%	0%	0%	0%	21.66%
2: Riverside #1	100%	1.28%	0%	0%	2.05%	0%	0%	0%	100%	0%	0%	0%	1.58%
3: Riverside #2	0%	37.6%	0%	0%	48.77%	75.56%	52.5%	0%	0%	0%	0%	0%	44.88%
4: Riverside #3	0%	34.02%	0%	0%	15.98%	24.44%	47.5%	0%	0%	0%	0%	0%	29%
5: Murrieta #1	0%	4.09%	0%	0%	2.46%	0%	0%	0%	0%	0%	0%	0%	2.89%
Total	100%	100%	0%	0%	100%	100%	100%	0%	100%	0%	0%	0%	

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0%	24.86%	0%	34.78%	34.51%	19.05%	14.85%	0%	0%	0%	0%	27.27%	22.79%
2: Riverside #1	5.08%	0%	0%	0%	0%	9.52%	5.94%	100%	13.64%	0%	100%	0%	3.31%
3: Riverside #2	0%	34.81%	0%	49.28%	45.13%	53.97%	41.58%	0%	0%	0%	0%	38.18%	36.74%
4: Riverside #3	0%	31.49%	0%	15.94%	15.04%	17.46%	37.62%	0%	0%	0%	0%	34.55%	23.76%
5: Murrieta #1	94.92%	8.84%	0%	0%	5.31%	0%	0%	0%	86.36%	0%	0%	0%	13.4%
Total	100%	100%	0%	100%	100%	100%	100%	100%	100%	0%	100%	100%	

Intersection 6: Winchester Road at Benton Road							
Zone ID: Name	Northbound		Southbound		Westbound		Total
	Thru	Right	Left	Thru	Left	Right	
1: TVCS	11.72%	0%	36.49%	19.67%	0%	26.79%	22.4%
2: Riverside #1	0.78%	0%	2.7%	1.64%	0%	1.79%	1.6%
3: Riverside #2	16.41%	0%	45.95%	27.87%	0%	37.5%	30.4%
4: Riverside #3	14.84%	0%	14.86%	9.84%	0%	33.93%	19.73%
5: Murrieta #1	56.25%	0%	0%	40.98%	0%	0%	25.87%
Total	100%	0%	100%	100%	0%	100%	

Intersection 7: Pat Road at Pourroy Road							
Zone ID: Name	Northbound		Eastbound		Westbound		Total
	Left	Right	Thru	Right	Left	Thru	
1: TVCS	100%	0%	37.62%	100%	0%	37.62%	42.89%
2: Riverside #1	0%	0%	0%	0%	0%	0%	0%
3: Riverside #2	0%	0%	62.38%	0%	0%	62.38%	57.11%
4: Riverside #3	0%	0%	0%	0%	0%	0%	0%
5: Murrieta #1	0%	0%	0%	0%	0%	0%	0%
Total	100%	0%	100%	100%	0%	100%	

Intersection 8: Jean Nicholas Road at Elliot Road							
Zone ID: Name	Northbound		Southbound		Westbound		Total
	Thru	Right	Left	Thru	Left	Right	
1: TVCS	0%	100%	100%	0%	100%	100%	31.72%
2: Riverside #1	2.17%	0%	0%	1.23%	0%	0%	1.07%
3: Riverside #2	73.91%	0%	0%	51.85%	0%	0%	40.86%
4: Riverside #3	23.91%	0%	0%	46.91%	0%	0%	26.34%
5: Murrieta #1	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	

Intersection 9: Pourroy Road at Skyview Road							
Zone ID: Name	Northbound		Southbound		Eastbound		Total
	Left	Thru	Thru	Right	Left	Right	
1: TVCS	0%	25.23%	32.59%	34.29%	27.27%	0%	28.47%
2: Riverside #1	0%	0%	0%	0%	0%	0%	0%
3: Riverside #2	0%	39.25%	50.37%	48.57%	38.18%	0%	43.28%
4: Riverside #3	0%	35.51%	17.04%	17.14%	34.55%	0%	28.25%
5: Murrieta #1	0%	0%	0%	0%	0%	0%	0%
Total	0%	100%	100%	100%	100%	0%	

Intersection 10: Pourroy Road at Thompson Road													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0%	23.08%	0%	0%	29.69%	29.41%	22.64%	0%	0%	0%	0%	0%	25.29%
2: Riverside #1	100%	0%	0%	0%	0%	2.94%	1.89%	0%	100%	0%	0%	0%	1.56%
3: Riverside #2	0%	40.38%	0%	0%	53.13%	50%	39.62%	0%	0%	0%	0%	0%	44.36%
4: Riverside #3	0%	36.54%	0%	0%	17.19%	17.65%	35.85%	0%	0%	0%	0%	0%	28.8%
5: Murrieta #1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	0%	0%	100%	100%	100%	0%	100%	0%	0%	0%	

Vistro File: Q:\...\tvcs1.vistro | Scenario 7: E+A+P+C AM
Report File: Q:\...\fair share and mitigation.pdf | 11/11/2016

Fair Share % of Future Total

Intersection 1: Winchester Road at Keller Road

Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0%	3.08%	80%	0%	2.54%	0%	0%	0%	0%	65.22%	0%	0%	3.25%
2: Riverside #1	0%	0.13%	0%	0%	0.08%	0%	0%	0%	0%	0%	0%	0%	0.08%
3: Riverside #2	0%	4.36%	0%	0%	3.56%	0%	0%	0%	0%	0%	0%	0%	3.05%
4: Riverside #3	99.69%	0%	0%	0%	0%	72.73%	66.67%	91.67%	96.08%	0%	100%	0%	19.28%
5: Murrieta #1	0%	2.05%	0%	0%	0.51%	0%	0%	0%	0%	0%	0%	0%	0.88%
Total	99.69%	9.63%	80%	0%	6.7%	72.73%	66.67%	91.67%	96.08%	65.22%	100%	0%	

Intersection 2: Winchester Road at Pourroy Road/Abelia Street

Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	34.09%	0%	0%	0%	0%	31.25%	32.73%	26.09%	33.5%	0%	28.85%	0%	11.2%
2: Riverside #1	0%	0.11%	1.18%	0%	0.09%	0%	0%	0%	0%	1.08%	0%	0%	0.15%
3: Riverside #2	60.74%	0%	0%	0%	0%	29.17%	30.91%	57.61%	58.62%	0%	59.62%	0%	18.58%
4: Riverside #3	0%	29.3%	0%	20.88%	7.31%	0%	0%	0%	0%	0%	0%	48.72%	10.82%
5: Murrieta #1	0%	1.76%	0%	0%	0.56%	0%	0%	0%	0%	0%	0%	0%	0.57%
Total	94.83%	31.17%	1.18%	20.88%	7.96%	60.42%	63.64%	83.7%	92.12%	1.08%	88.46%	48.72%	

Intersection 3: Winchester Road at Whisper Heights Parkway/Pourroy Road

Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0%	7.51%	0%	27.35%	5.17%	0%	0%	0%	0%	0%	0%	21.19%	8.47%
2: Riverside #1	0%	0.25%	2.53%	0%	0.21%	0%	0%	0%	0%	1.32%	0%	0%	0.28%
3: Riverside #2	0%	15.78%	0%	38.12%	10.54%	0%	0%	0%	0%	0%	0%	29.66%	14.97%
4: Riverside #3	0%	14.27%	0%	13%	3.45%	0%	0%	0%	0%	0%	0%	26.84%	9.71%
5: Murrieta #1	0%	1.34%	0%	0%	0.41%	0%	0%	0%	0%	0%	0%	0%	0.62%
Total	0%	39.15%	2.53%	78.48%	19.78%	0%	0%	0%	0%	1.32%	0%	77.68%	

Intersection 4: Winchester Road at Jean Nicholas Road/Skyview Road													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0%	8.35%	0%	0%	4.9%	0%	0%	0%	0%	0%	0%	0%	5.27%
2: Riverside #1	1.11%	0.46%	0%	0%	0.33%	0%	0%	0%	0.79%	0%	0%	0%	0.38%
3: Riverside #2	0%	13.64%	0%	0%	7.77%	24.46%	30.22%	0%	0%	0%	0%	0%	10.93%
4: Riverside #3	0%	12.34%	0%	0%	2.55%	7.91%	27.34%	0%	0%	0%	0%	0%	7.06%
5: Murrieta #1	0%	1.48%	0%	0%	0.39%	0%	0%	0%	0%	0%	0%	0%	0.7%
Total	1.11%	36.27%	0%	0%	15.93%	32.37%	57.55%	0%	0.79%	0%	0%	0%	

Intersection 5: Winchester Road at Max Gillis Boulevard/Thompson Road													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0%	5.23%	0%	26.37%	2.71%	7.84%	8.82%	0%	0%	0%	0%	23.44%	3.64%
2: Riverside #1	0.69%	0%	0%	0%	0%	3.92%	3.53%	2.38%	0.52%	0%	1.22%	0%	0.53%
3: Riverside #2	0%	7.32%	0%	37.36%	3.54%	22.22%	24.71%	0%	0%	0%	0%	32.81%	5.86%
4: Riverside #3	0%	6.62%	0%	12.09%	1.18%	7.19%	22.35%	0%	0%	0%	0%	29.69%	3.79%
5: Murrieta #1	12.96%	1.86%	0%	0%	0.42%	0%	0%	0%	3.29%	0%	0%	0%	2.14%
Total	13.66%	21.02%	0%	75.82%	7.85%	41.18%	59.41%	2.38%	3.81%	0%	1.22%	85.94%	

Intersection 6: Winchester Road at Benton Road							
Zone ID: Name	Northbound		Southbound		Westbound		Total
	Thru	Right	Left	Thru	Left	Right	
1: TVCS	1.44%	0%	6.8%	0.66%	0%	8.22%	1.98%
2: Riverside #1	0.1%	0%	0.5%	0.05%	0%	0.55%	0.14%
3: Riverside #2	2.01%	0%	8.56%	0.93%	0%	11.51%	2.68%
4: Riverside #3	1.82%	0%	2.77%	0.33%	0%	10.41%	1.74%
5: Murrieta #1	6.9%	0%	0%	1.37%	0%	0%	2.28%
Total	12.27%	0%	18.64%	3.34%	0%	30.68%	

Intersection 7: Pat Road at Pourroy Road							
Zone ID: Name	Northbound		Eastbound		Westbound		Total
	Left	Right	Thru	Right	Left	Thru	
1: TVCS	96.77%	0%	37.33%	94%	0%	37.44%	37.39%
2: Riverside #1	0%	0%	0%	0%	0%	0%	0%
3: Riverside #2	0%	0%	61.9%	0%	0%	62.09%	49.79%
4: Riverside #3	0%	0%	0%	0%	0%	0%	0%
5: Murrieta #1	0%	0%	0%	0%	0%	0%	0%
Total	96.77%	0%	99.24%	94%	0%	99.53%	

Intersection 8: Jean Nicholas Road at Elliot Road							
Zone ID: Name	Northbound		Southbound		Westbound		Total
	Thru	Right	Left	Thru	Left	Right	
1: TVCS	0%	100%	32%	0%	100%	57.58%	23.51%
2: Riverside #1	2.17%	0%	0%	1.23%	0%	0%	0.79%
3: Riverside #2	73.91%	0%	0%	51.85%	0%	0%	30.28%
4: Riverside #3	23.91%	0%	0%	46.91%	0%	0%	19.52%
5: Murrieta #1	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	32%	100%	100%	57.58%	

Intersection 9: Pourroy Road at Skyview Road							
Zone ID: Name	Northbound		Southbound		Eastbound		Total
	Left	Thru	Thru	Right	Left	Right	
1: TVCS	0%	16.22%	15.28%	8.89%	8.67%	0%	11.29%
2: Riverside #1	0%	0%	0%	0%	0%	0%	0%
3: Riverside #2	0%	25.23%	23.61%	12.59%	12.14%	0%	17.16%
4: Riverside #3	0%	22.82%	7.99%	4.44%	10.98%	0%	11.2%
5: Murrieta #1	0%	0%	0%	0%	0%	0%	0%
Total	0%	64.26%	46.88%	25.93%	31.79%	0%	

Intersection 10: Pourroy Road at Thompson Road													
Zone ID: Name	Northbound			Southbound			Eastbound			Westbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1: TVCS	0%	8.66%	0%	0%	5.97%	10%	12.12%	0%	0%	0%	0%	0%	6.21%
2: Riverside #1	0.83%	0%	0%	0%	0%	1%	1.01%	0%	0.86%	0%	0%	0%	0.38%
3: Riverside #2	0%	15.16%	0%	0%	10.69%	17%	21.21%	0%	0%	0%	0%	0%	10.89%
4: Riverside #3	0%	13.72%	0%	0%	3.46%	6%	19.19%	0%	0%	0%	0%	0%	7.07%
5: Murrieta #1	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total	0.83%	37.55%	0%	0%	20.13%	34%	53.54%	0%	0.86%	0%	0%	0%	

Signal Warrants Report For Intersection 7: Pat Road at Pourroy Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	15	12	3
2	15	12	3
3	22	17	4
4	22	17	4
5	29	23	6
6	73	58	14
7	81	63	16
8	147	115	29
9	257	201	50
10	264	207	52
11	264	207	52
12	286	224	56
13	315	247	62
14	330	259	65
15	330	259	65
16	352	276	69
17	440	345	86
18	462	362	91
19	498	391	98
20	557	437	109
21	586	460	115
22	689	541	135
23	704	552	138
24	733	575	144

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	27	1	3	No	No	No	No	No	No	No	No	No	No
2	4	27	1	3	No	No	No	No	No	No	No	No	No	No
3	4	39	1	4	No	No	No	No	No	No	No	No	No	No
4	4	39	1	4	No	No	No	No	No	No	No	No	No	No
5	4	52	1	6	No	No	No	No	No	No	No	No	No	No
6	4	131	1	14	No	No	No	No	No	No	No	No	No	No
7	4	144	1	16	No	No	No	No	No	No	No	No	No	No
8	4	262	1	29	No	No	No	No	No	No	No	No	No	No
9	4	458	1	50	No	No	No	No	No	No	No	No	No	No
10	4	471	1	52	No	No	No	No	No	No	No	No	No	No
11	4	471	1	52	No	No	No	No	No	No	No	No	No	No
12	4	510	1	56	No	No	No	No	No	No	No	Yes	No	No
13	4	562	1	62	No	No	No	No	No	No	No	Yes	No	No
14	4	589	1	65	No	No	No	No	No	No	No	Yes	No	No
15	4	589	1	65	No	No	No	No	No	No	No	Yes	No	No
16	4	628	1	69	No	No	No	No	No	No	No	Yes	No	No
17	4	785	1	86	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No
18	4	824	1	91	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No
19	4	889	1	98	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No
20	4	994	1	109	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	4	1046	1	115	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	4	1230	1	135	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	4	1256	1	138	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	4	1308	1	144	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hours Met					0	3	5	8	5	8	8	13	8	5

Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	331.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	13:16
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	144
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1452
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
Warrant Met for Intersection	**Yes**

Signal Warrants Report For Intersection 8: Jean Nicholas Road at Elliot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	3	1	1
2	3	1	1
3	5	2	1
4	5	2	1
5	6	2	2
6	16	6	4
7	17	6	4
8	31	11	8
9	55	19	14
10	56	20	14
11	56	20	14
12	61	21	16
13	67	24	17
14	70	25	18
15	70	25	18
16	75	26	19
17	94	33	24
18	98	35	25
19	106	37	27
20	119	42	30
21	125	44	32
22	147	52	38
23	150	53	38
24	156	55	40

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	4	4	1	1	No	No	No	No	No	No	No	No	No	No
2	4	4	1	1	No	No	No	No	No	No	No	No	No	No
3	4	7	1	1	No	No	No	No	No	No	No	No	No	No
4	4	7	1	1	No	No	No	No	No	No	No	No	No	No
5	4	8	1	2	No	No	No	No	No	No	No	No	No	No
6	4	22	1	4	No	No	No	No	No	No	No	No	No	No
7	4	23	1	4	No	No	No	No	No	No	No	No	No	No
8	4	42	1	8	No	No	No	No	No	No	No	No	No	No
9	4	74	1	14	No	No	No	No	No	No	No	No	No	No
10	4	76	1	14	No	No	No	No	No	No	No	No	No	No
11	4	76	1	14	No	No	No	No	No	No	No	No	No	No
12	4	82	1	16	No	No	No	No	No	No	No	No	No	No
13	4	91	1	17	No	No	No	No	No	No	No	No	No	No
14	4	95	1	18	No	No	No	No	No	No	No	No	No	No
15	4	95	1	18	No	No	No	No	No	No	No	No	No	No
16	4	101	1	19	No	No	No	No	No	No	No	No	No	No
17	4	127	1	24	No	No	No	No	No	No	No	No	No	No
18	4	133	1	25	No	No	No	No	No	No	No	No	No	No
19	4	143	1	27	No	No	No	No	No	No	No	No	No	No
20	4	161	1	30	No	No	No	No	No	No	No	No	No	No
21	4	169	1	32	No	No	No	No	No	No	No	No	No	No
22	4	199	1	38	No	No	No	No	No	No	No	No	No	No
23	4	203	1	38	No	No	No	No	No	No	No	No	No	No
24	4	211	1	40	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:06
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	40
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	251
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 9: Pourroy Road at Skyview Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	W
1	8	8	5
2	8	8	5
3	13	12	8
4	13	12	8
5	17	17	11
6	42	41	27
7	47	45	30
8	85	83	54
9	148	145	95
10	152	149	98
11	152	149	98
12	165	161	106
13	182	178	117
14	190	186	122
15	190	186	122
16	203	198	130
17	254	248	163
18	266	260	171
19	288	281	184
20	321	314	206
21	338	330	217
22	398	388	255
23	406	396	260
24	423	413	271

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	5	16	2	5	No	No	No	No	No	No	No	No	No	No
2	5	16	2	5	No	No	No	No	No	No	No	No	No	No
3	5	25	2	8	No	No	No	No	No	No	No	No	No	No
4	5	25	2	8	No	No	No	No	No	No	No	No	No	No
5	5	34	2	11	No	No	No	No	No	No	No	No	No	No
6	5	83	2	27	No	No	No	No	No	No	No	No	No	No
7	5	92	2	30	No	No	No	No	No	No	No	No	No	No
8	5	168	2	54	No	No	No	No	No	No	No	No	No	No
9	5	293	2	95	No	No	No	No	No	No	No	No	No	No
10	5	301	2	98	No	No	No	No	No	No	No	No	No	No
11	5	301	2	98	No	No	No	No	No	No	No	No	No	No
12	5	326	2	106	No	No	No	No	No	No	No	No	No	No
13	5	360	2	117	No	No	No	Yes	No	No	No	No	No	No
14	5	376	2	122	No	No	No	Yes	No	No	No	No	No	No
15	5	376	2	122	No	No	No	Yes	No	No	No	No	No	No
16	5	401	2	130	No	No	No	Yes	No	No	No	No	No	No
17	5	502	2	163	No	Yes	Yes	Yes	No	No	No	No	No	No
18	5	526	2	171	No	Yes	Yes	Yes	No	No	No	Yes	No	No
19	5	569	2	184	No	Yes	Yes	Yes	No	No	No	Yes	No	No
20	5	635	2	206	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
21	5	668	2	217	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
22	5	786	2	255	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
23	5	802	2	260	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
24	5	836	2	271	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
Hours Met					5	8	8	12	0	3	5	7	4	0

Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	21
Number of Lanes on Minor Street Approach	2
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	1:34
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	271
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1107
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 10: Pourroy Road at Thompson Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	8	8	0	4
2	8	8	0	4
3	13	12	0	7
4	13	12	0	7
5	17	16	1	9
6	42	40	1	22
7	46	44	1	24
8	84	79	3	44
9	147	139	5	76
10	151	143	5	78
11	151	143	5	78
12	163	155	5	85
13	180	171	6	94
14	189	179	6	98
15	189	179	6	98
16	201	191	6	105
17	251	238	8	131
18	264	250	8	137
19	285	270	9	148
20	318	302	10	166
21	335	318	10	174
22	394	373	12	205
23	402	381	12	209
24	419	397	13	218

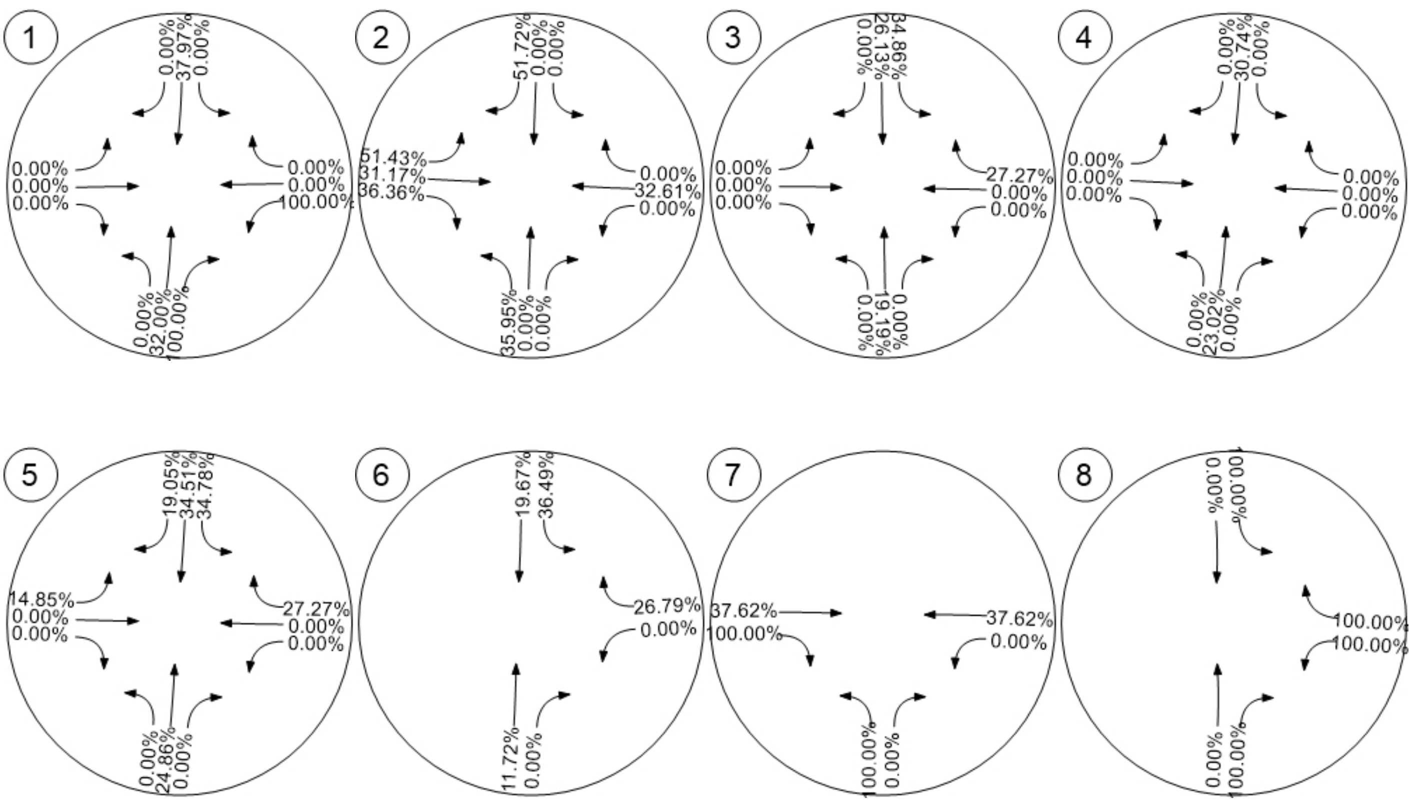
Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	2	16	4	4	No	No	No	No	No	No	No	No	No	No
2	2	16	4	4	No	No	No	No	No	No	No	No	No	No
3	2	25	4	7	No	No	No	No	No	No	No	No	No	No
4	2	25	4	7	No	No	No	No	No	No	No	No	No	No
5	2	33	4	10	No	No	No	No	No	No	No	No	No	No
6	2	82	4	23	No	No	No	No	No	No	No	No	No	No
7	2	90	4	25	No	No	No	No	No	No	No	No	No	No
8	2	163	4	47	No	No	No	No	No	No	No	No	No	No
9	2	286	4	81	No	No	No	No	No	No	No	No	No	No
10	2	294	4	83	No	No	No	No	No	No	No	No	No	No
11	2	294	4	83	No	No	No	No	No	No	No	No	No	No
12	2	318	4	90	No	No	No	No	No	No	No	No	No	No
13	2	351	4	100	No	No	No	No	No	No	No	No	No	No
14	2	368	4	104	No	No	No	No	No	No	No	No	No	No
15	2	368	4	104	No	No	No	No	No	No	No	No	No	No
16	2	392	4	111	No	No	No	No	No	No	No	No	No	No
17	2	489	4	139	No	No	No	Yes	No	No	No	No	No	No
18	2	514	4	145	No	No	No	Yes	No	No	No	Yes	No	No
19	2	555	4	157	No	No	Yes	Yes	No	No	No	Yes	No	No
20	2	620	4	176	No	Yes	Yes	Yes	No	No	No	Yes	No	No
21	2	653	4	184	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
22	2	767	4	217	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
23	2	783	4	221	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
24	2	816	4	231	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
Hours Met					3	5	6	8	0	3	4	7	3	0

Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.8	12.4
Number of Lanes on Minor Street Approach	1	3
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:02	0:45
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	13	218
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1047	1047
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

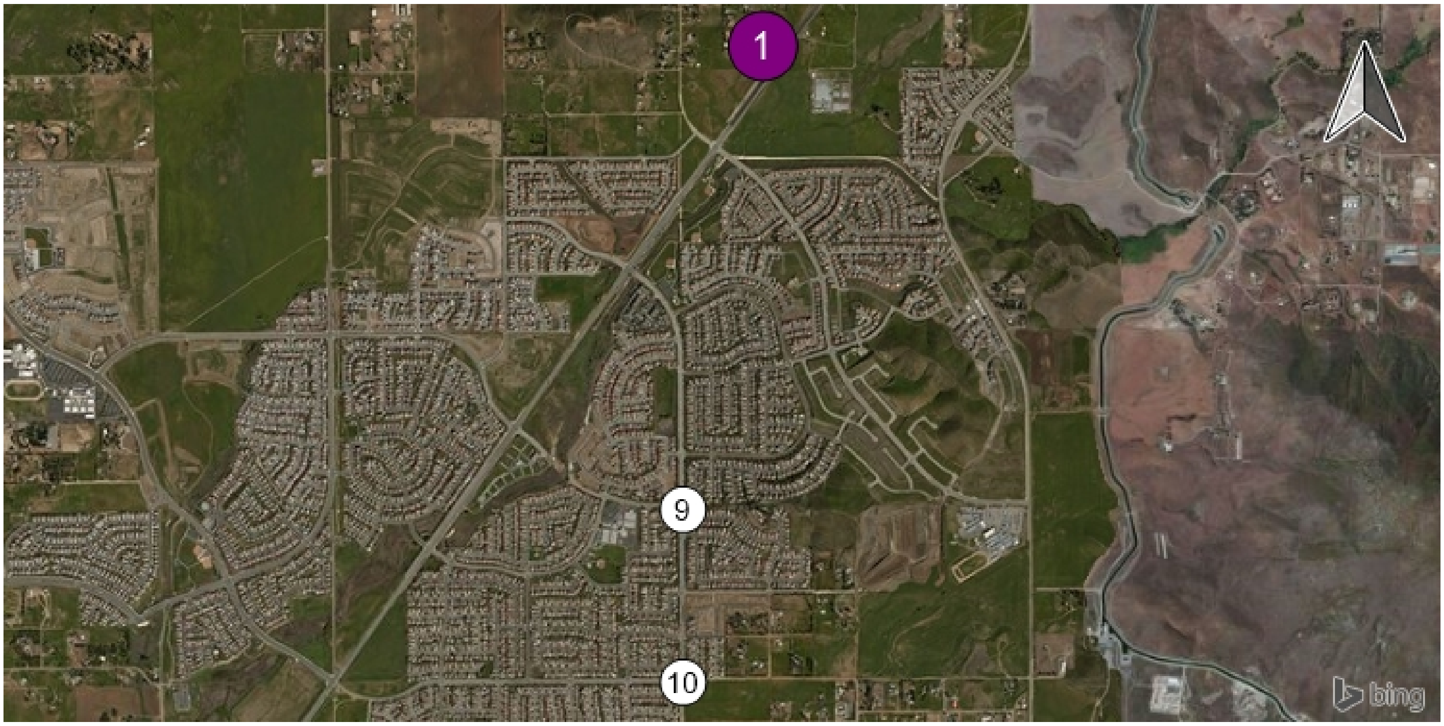
Fair Share - Fair Share % of Net New Site - Zone 1: TVCS

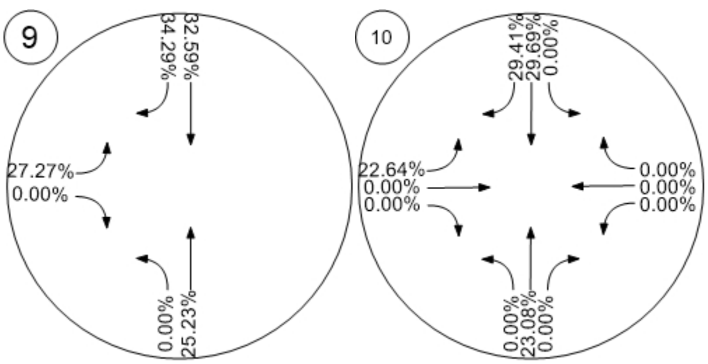


Generated with PTV VISTRO

Version 4.00-03

Fair Share - Fair Share % of Net New Site - Zone 1: TVCS

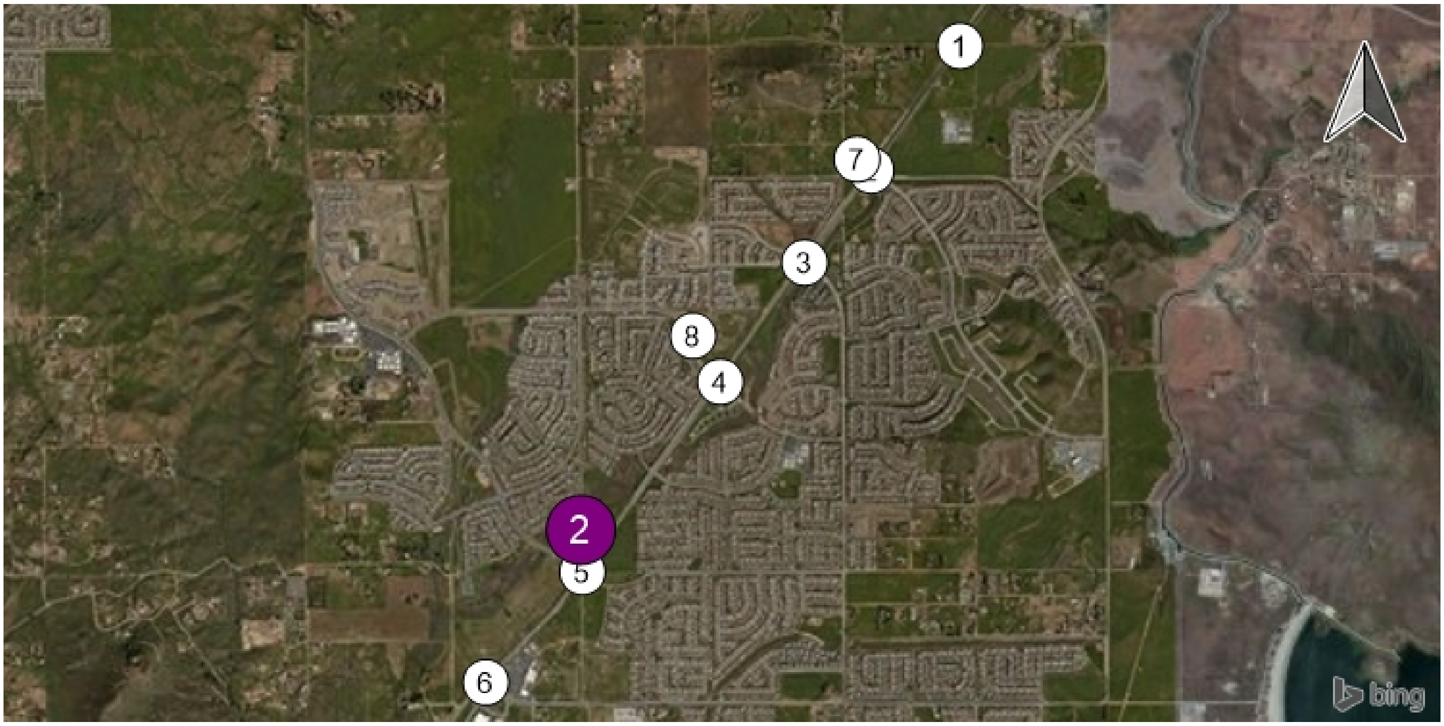


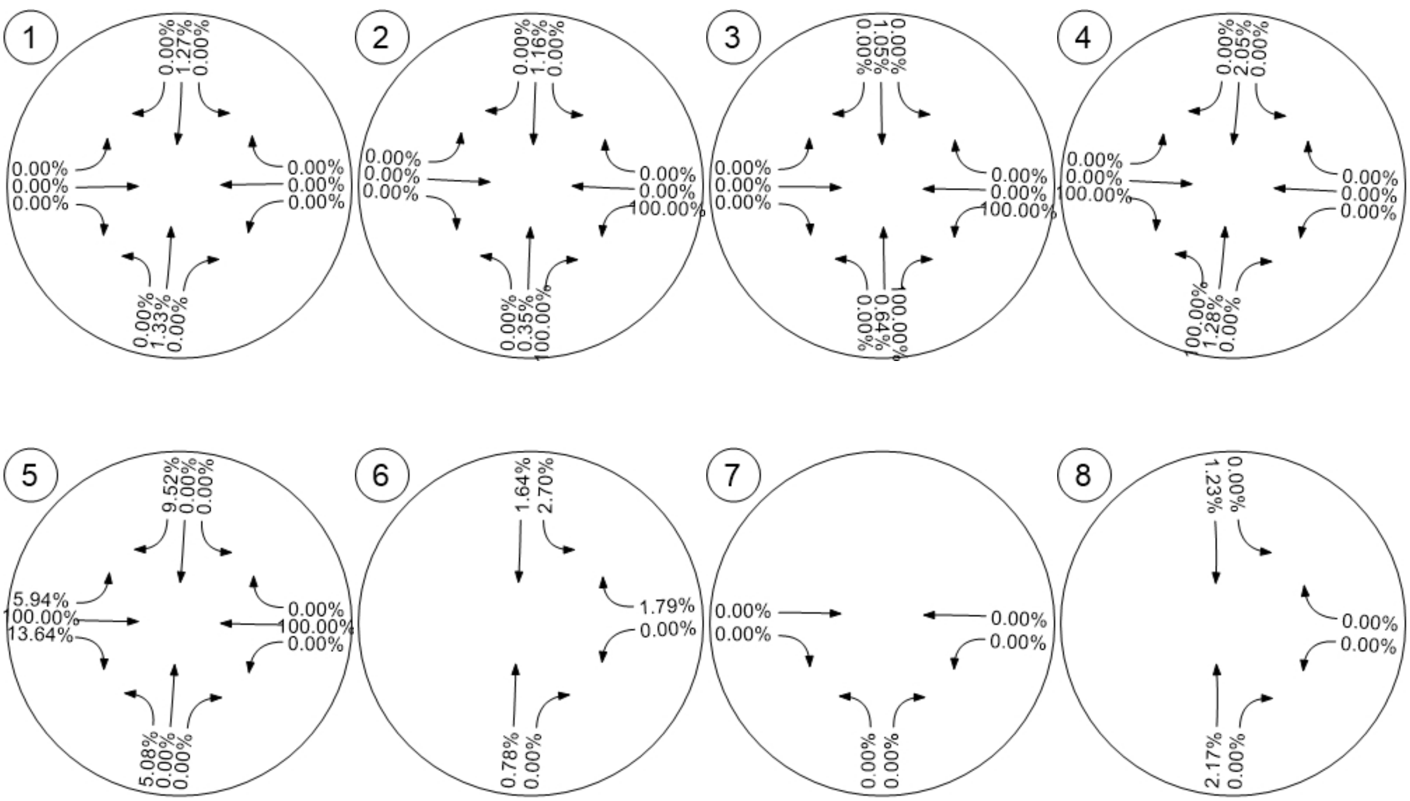


Generated with PTV VISTRO

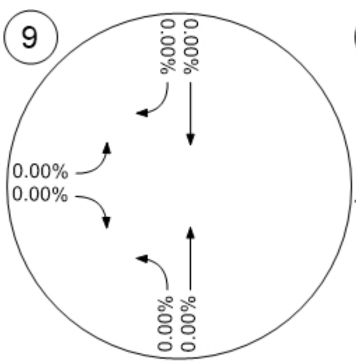
Version 4.00-03

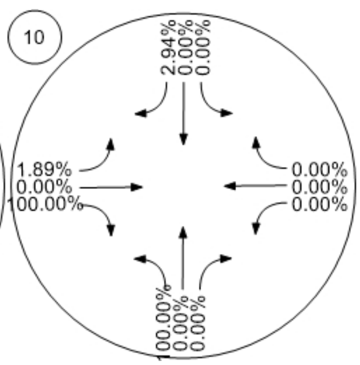
Fair Share - Fair Share % of Net New Site - Zone 2: Riverside #1



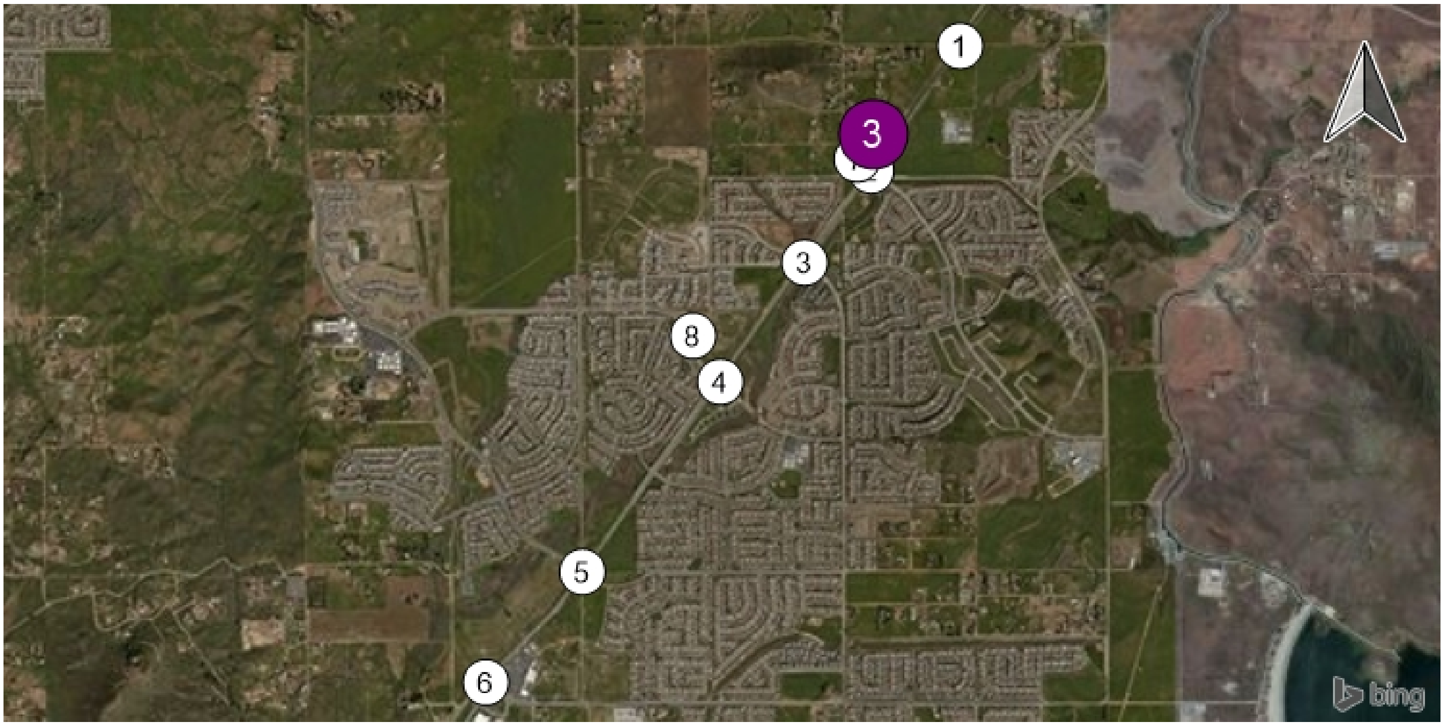


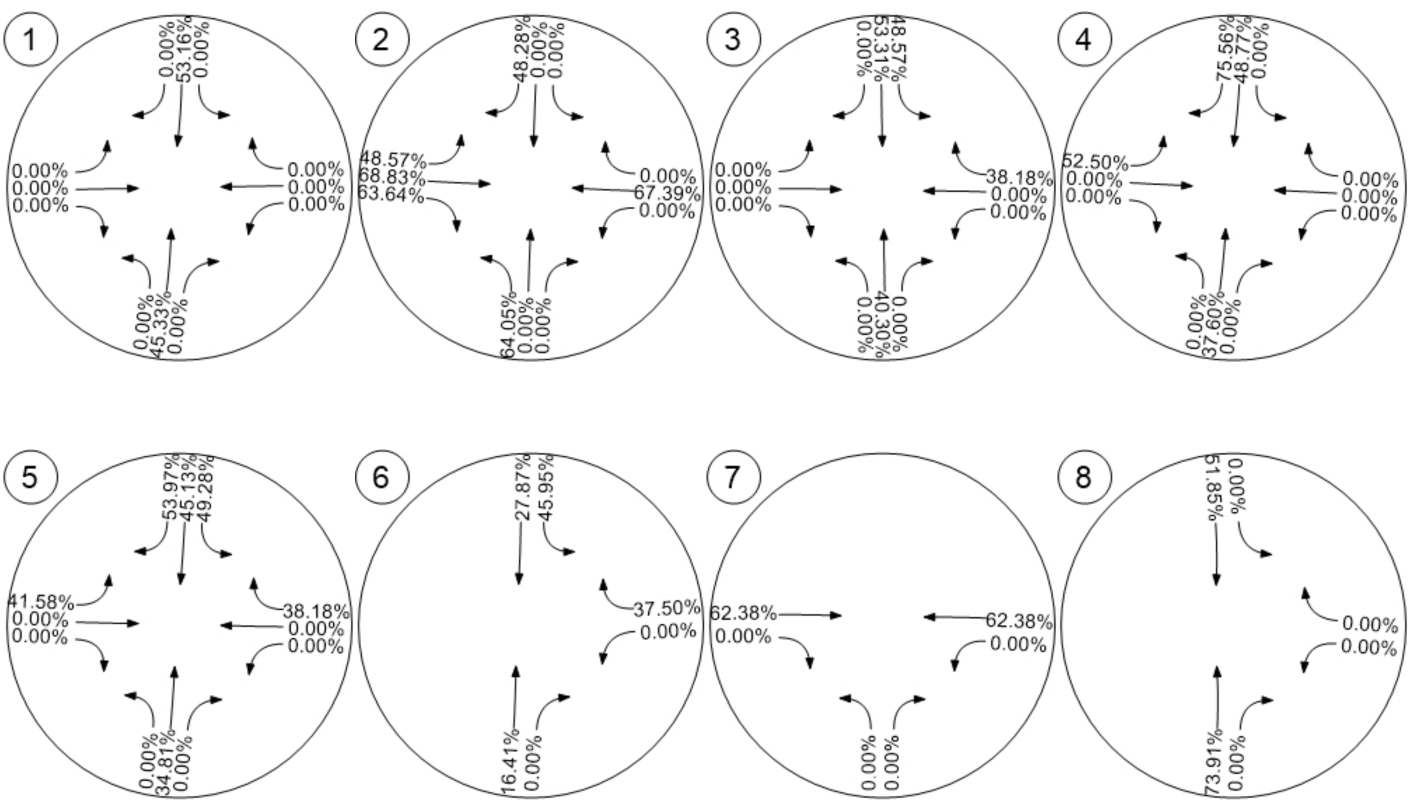
Fair Share - Fair Share % of Net New Site - Zone 2: Riverside #1



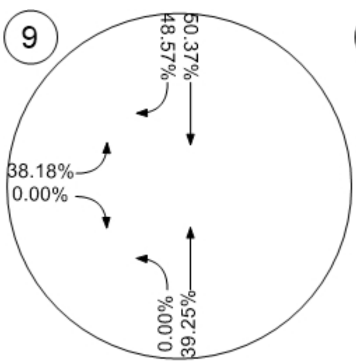


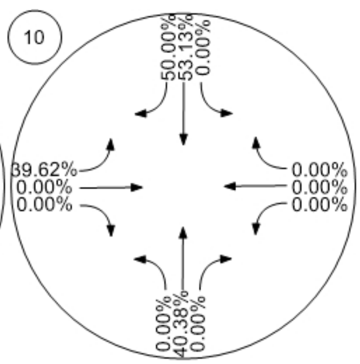
Fair Share - Fair Share % of Net New Site - Zone 3: Riverside #2



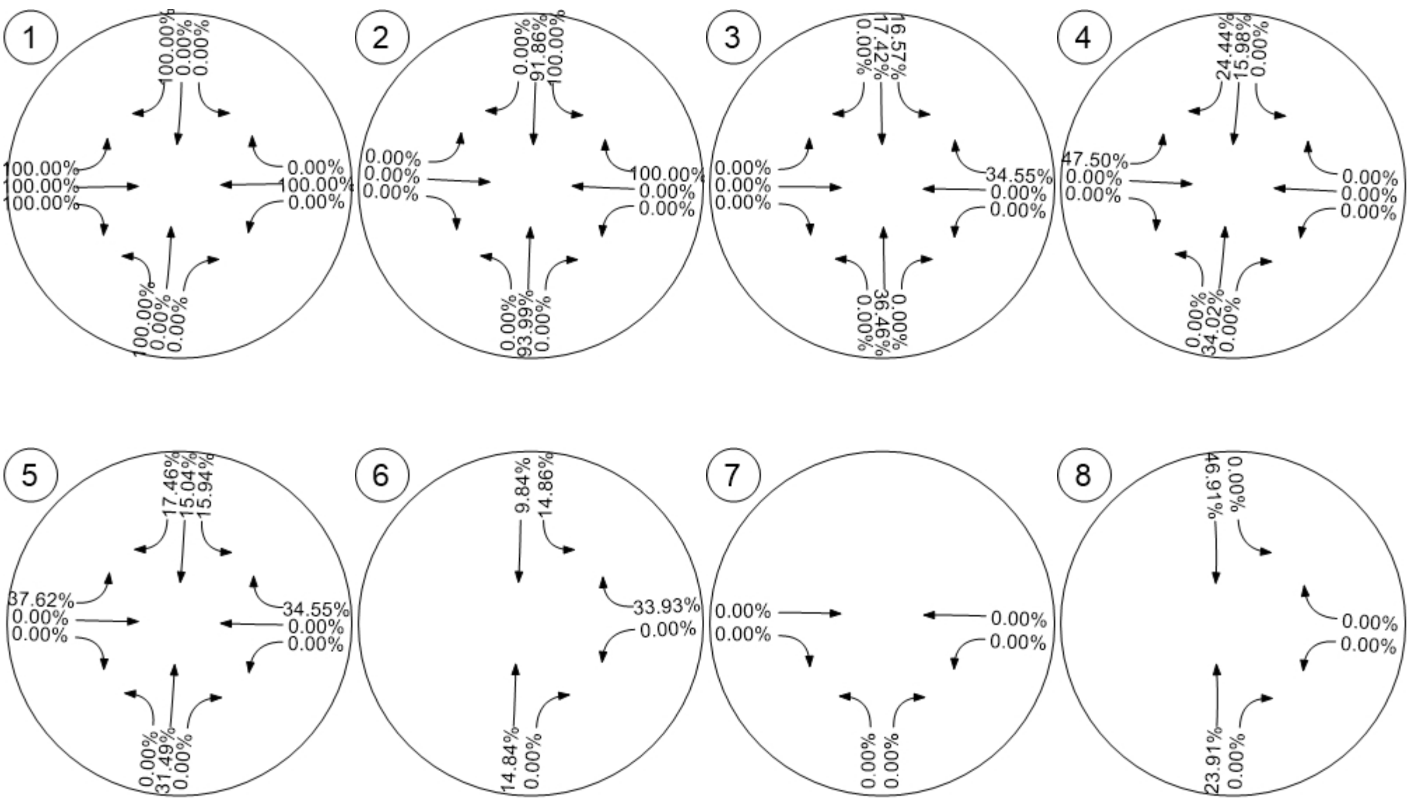


Fair Share - Fair Share % of Net New Site - Zone 3: Riverside #2

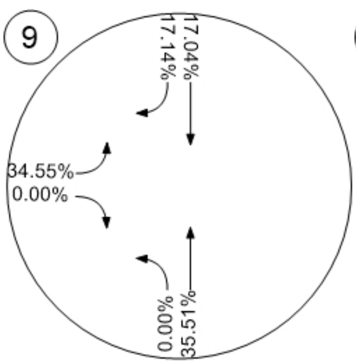


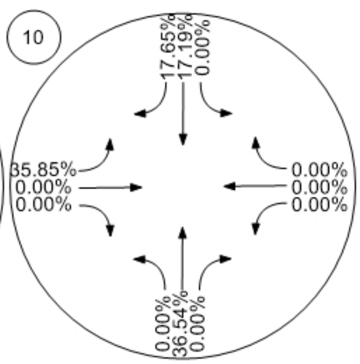


Fair Share - Fair Share % of Net New Site - Zone 4: Riverside #3

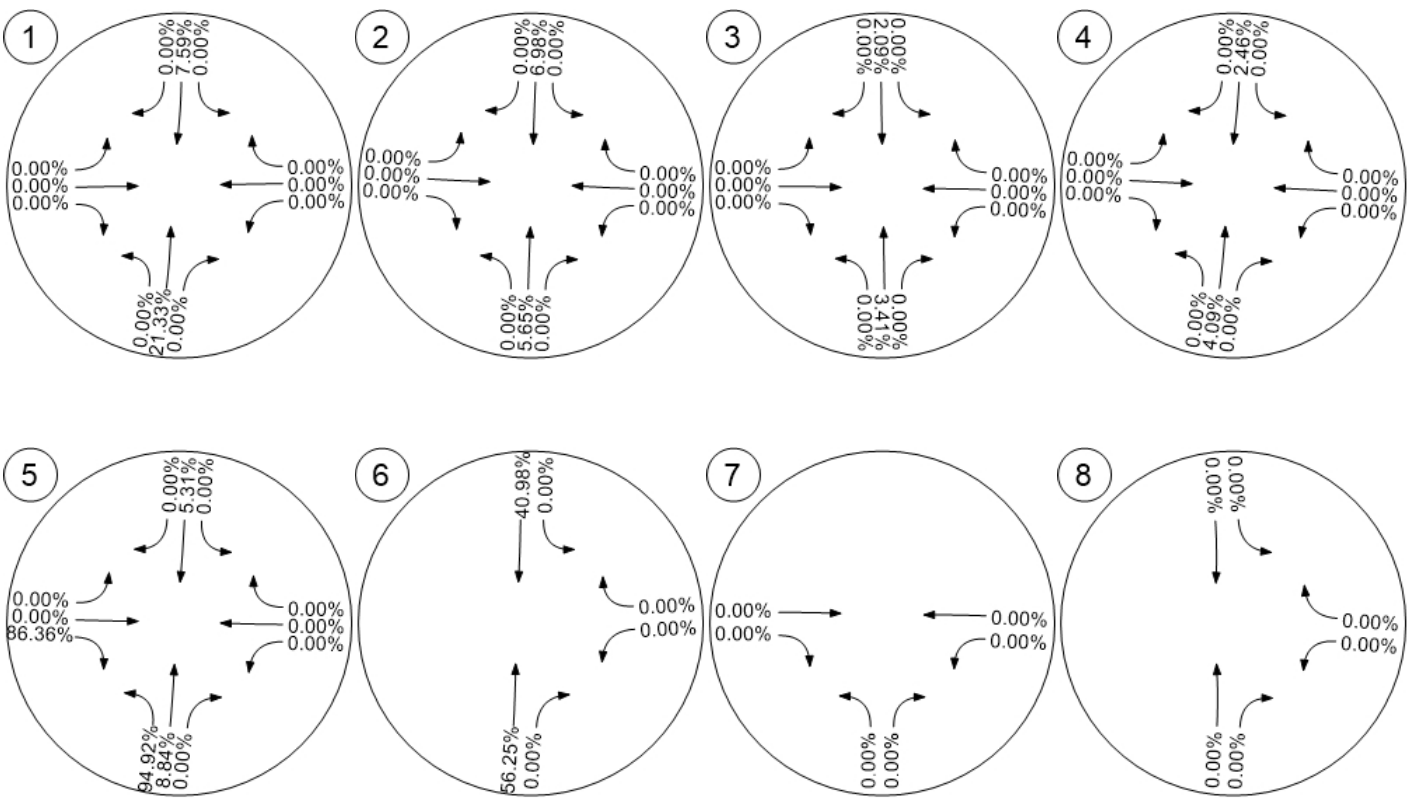


Fair Share - Fair Share % of Net New Site - Zone 4: Riverside #3

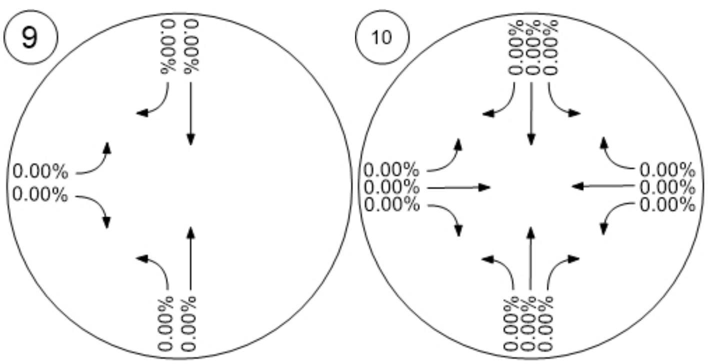




Fair Share - Fair Share % of Net New Site - Zone 5: Murrieta #1



Fair Share - Fair Share % of Net New Site - Zone 5: Murrieta #1



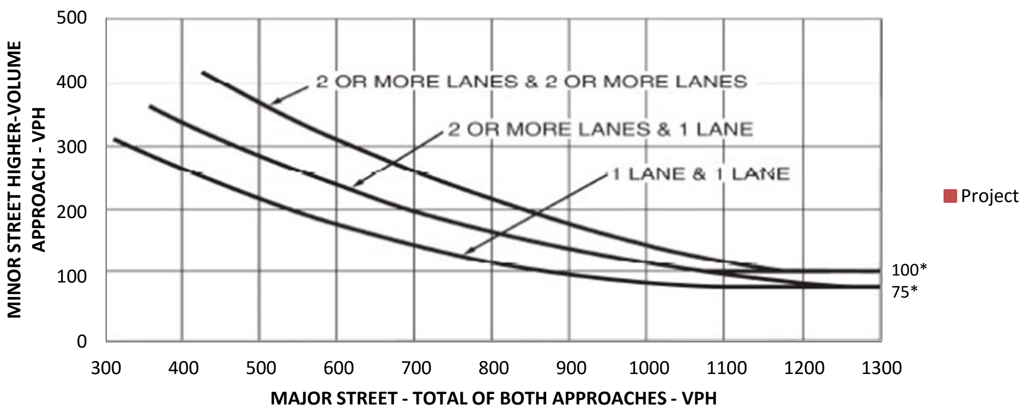
Appendix J Signal Warrant Calculations

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: Existing AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	98
		Number of Apporach Lanes =	4

Minor Street Name:	Pat Road	High Volume Approach (VPH) =	81
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

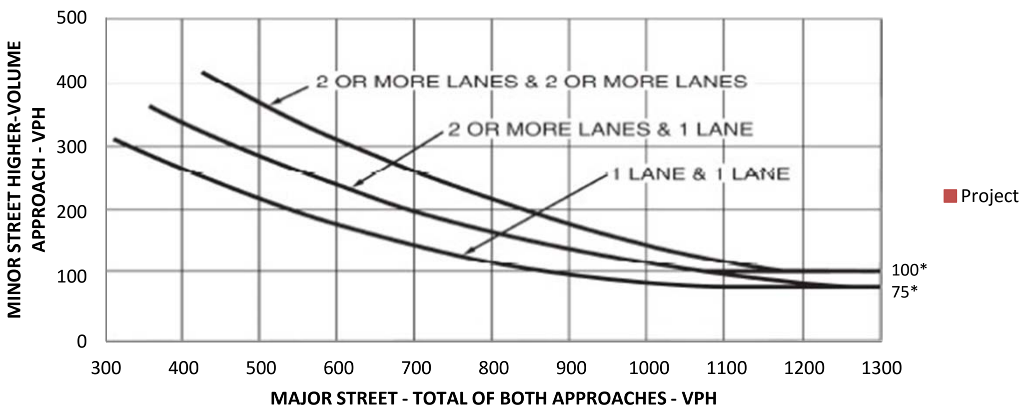
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: Existing AM

Major Street Name:	Jean Nicholas Road	Total of Both Approaches (VPH) =	49
		Number of Apporach Lanes =	4

Minor Street Name:	Elliot Road	High Volume Approach (VPH) =	13
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

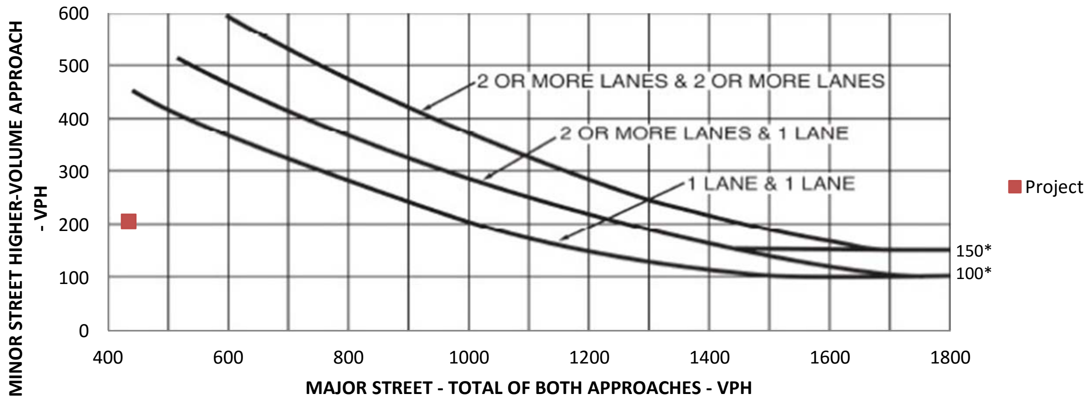
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: Existing AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	434
		Number of Apporach Lanes =	5

Minor Street Name:	Skyview Road	High Volume Approach (VPH) =	207
		Number of Apporach Lanes =	2



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

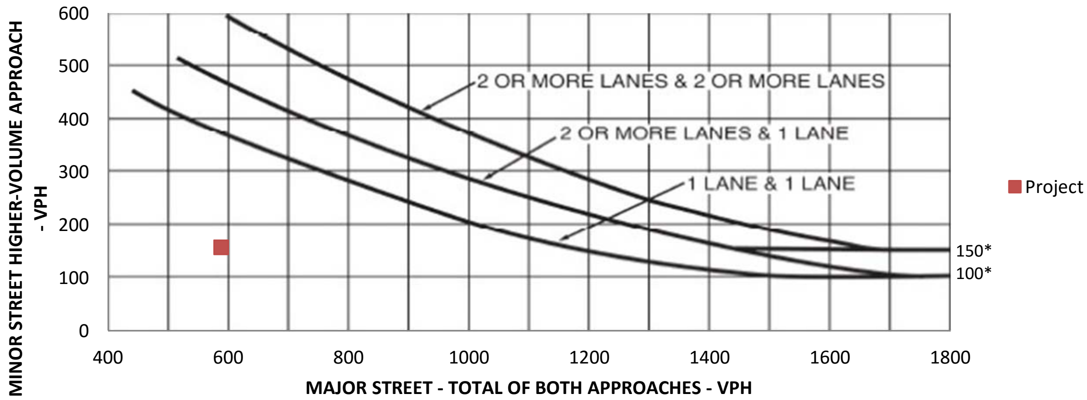
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: Existing AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	588
		Number of Apporach Lanes =	2

Minor Street Name:	Thompson Road	High Volume Approach (VPH) =	158
		Number of Apporach Lanes =	4



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

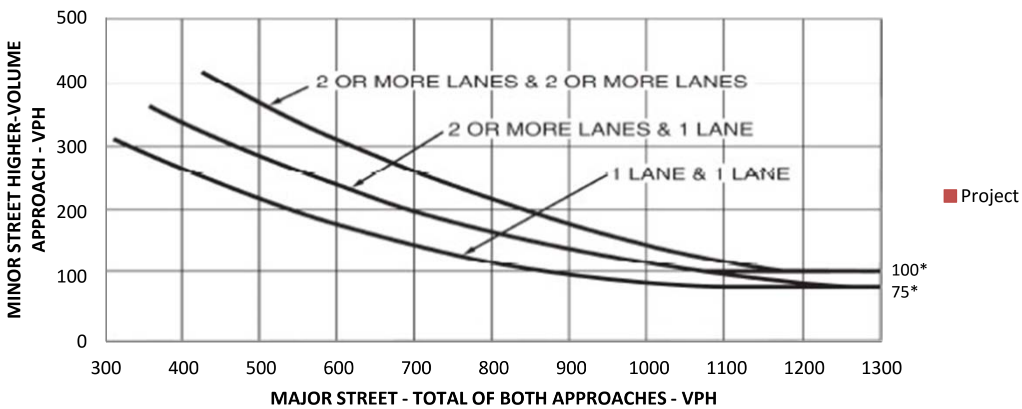
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: Existing AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	37
		Number of Apporach Lanes =	4

Minor Street Name:	Pat Road	High Volume Approach (VPH) =	84
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

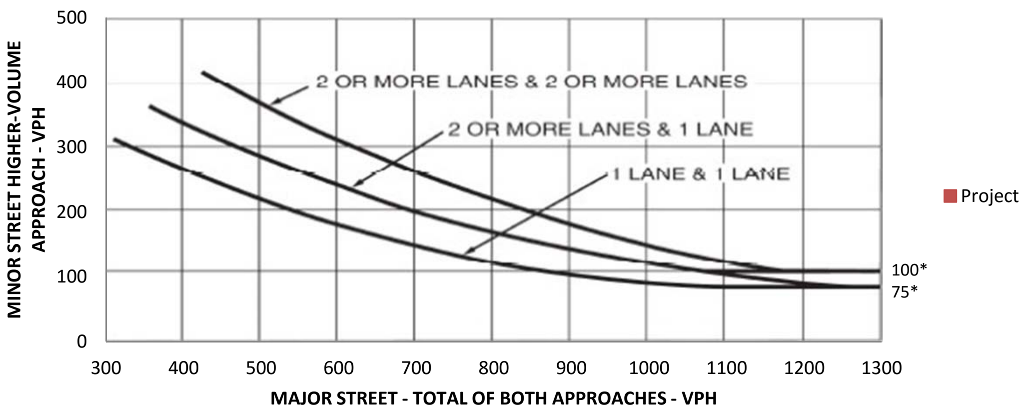
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: Existing AM

Major Street Name:	Jean Nicholas Road	Total of Both Approaches (VPH) =	37
		Number of Apporach Lanes =	4

Minor Street Name:	Elliot Road	High Volume Approach (VPH) =	33
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

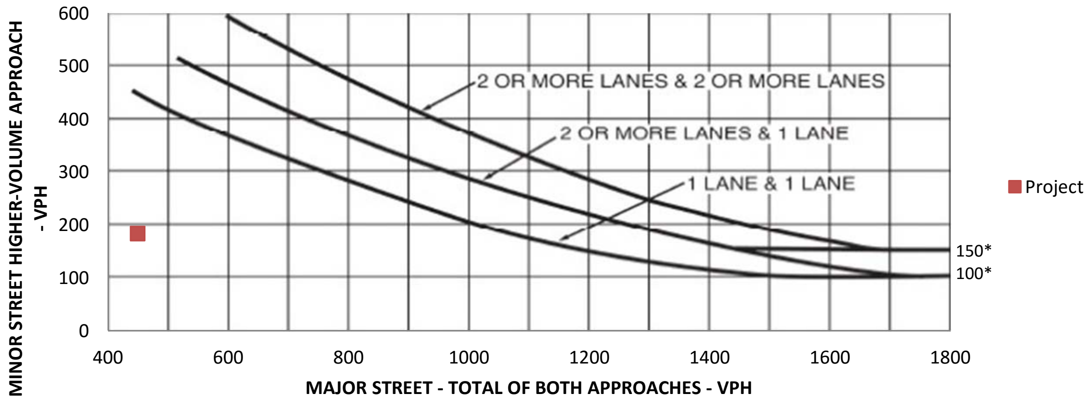
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: Existing PM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	449
		Number of Apporach Lanes =	5

Minor Street Name:	Skyview Road	High Volume Approach (VPH) =	184
		Number of Apporach Lanes =	2



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

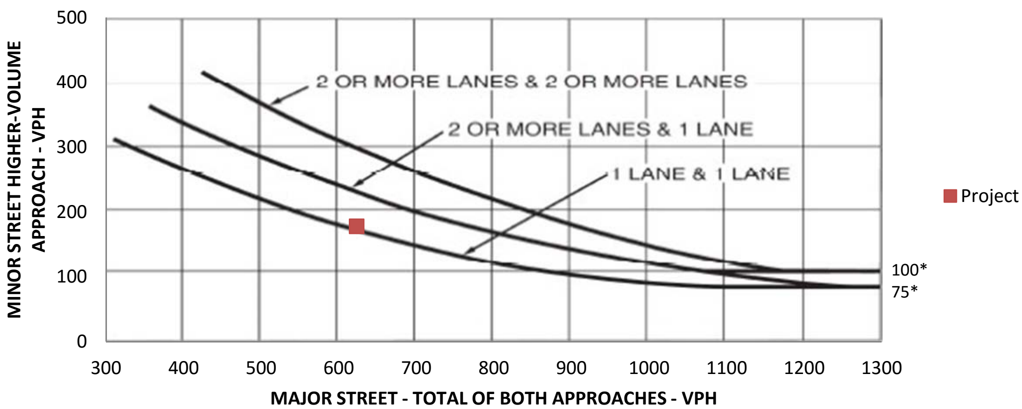
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: Existing AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	623
		Number of Apporach Lanes =	2

Minor Street Name:	Thompson Road	High Volume Approach (VPH) =	178
		Number of Apporach Lanes =	4



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

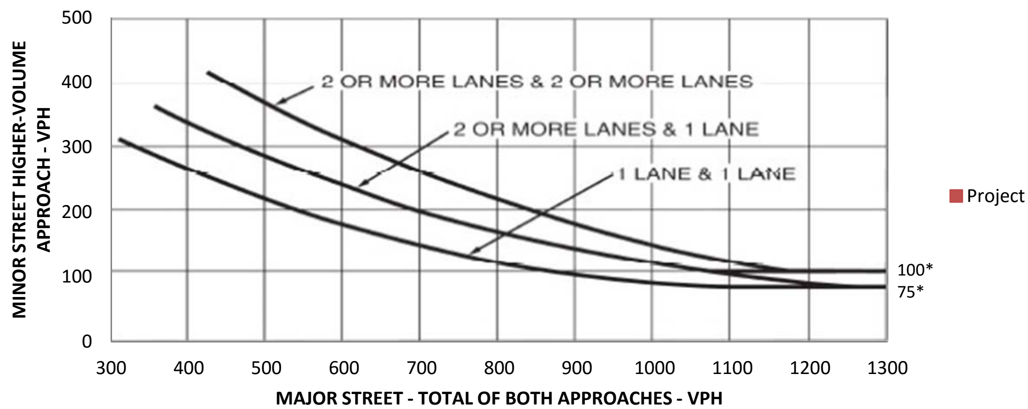
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: E+A+P+C AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	1308
		Number of Apporach Lanes =	4

Minor Street Name:	Pat Road	High Volume Approach (VPH) =	144
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

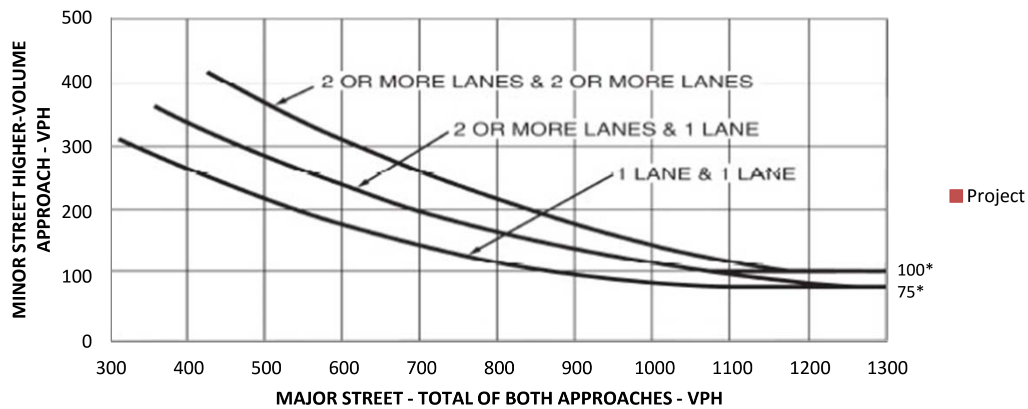
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: E+A+P+C AM

Major Street Name:	Jean Nicholas Road	Total of Both Approaches (VPH) =	211
		Number of Apporach Lanes =	4

Minor Street Name:	Elliot Road	High Volume Approach (VPH) =	40
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

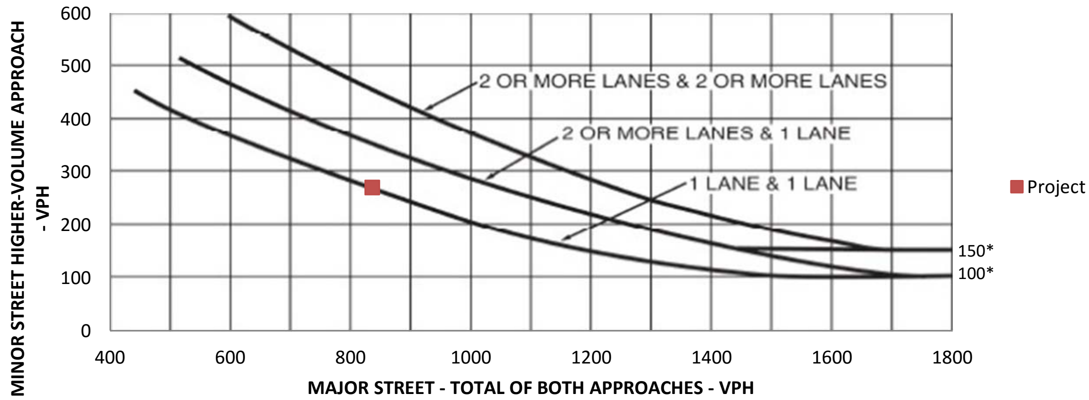
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: E+A+P+C AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	836
		Number of Apporach Lanes =	5

Minor Street Name:	Skyview Road	High Volume Approach (VPH) =	271
		Number of Apporach Lanes =	2



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

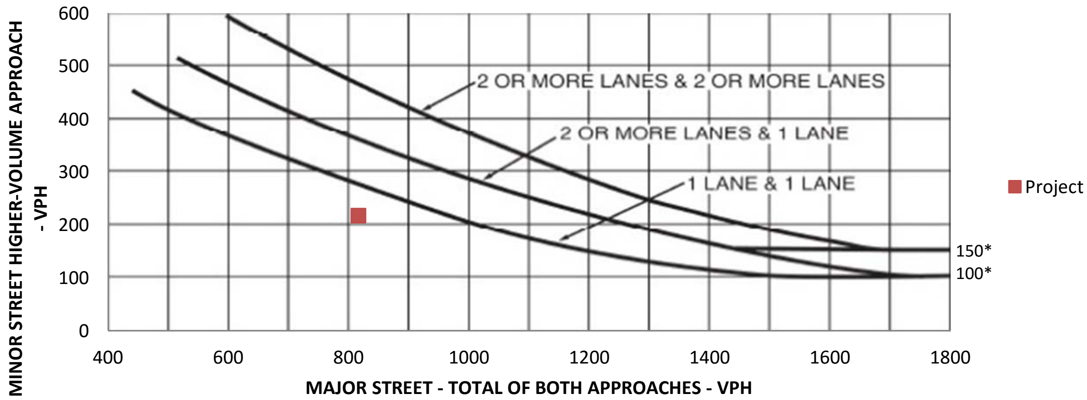
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: E+A+P+C AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	816
		Number of Apporach Lanes =	2

Minor Street Name:	Thompson Road	High Volume Approach (VPH) =	218
		Number of Apporach Lanes =	4



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

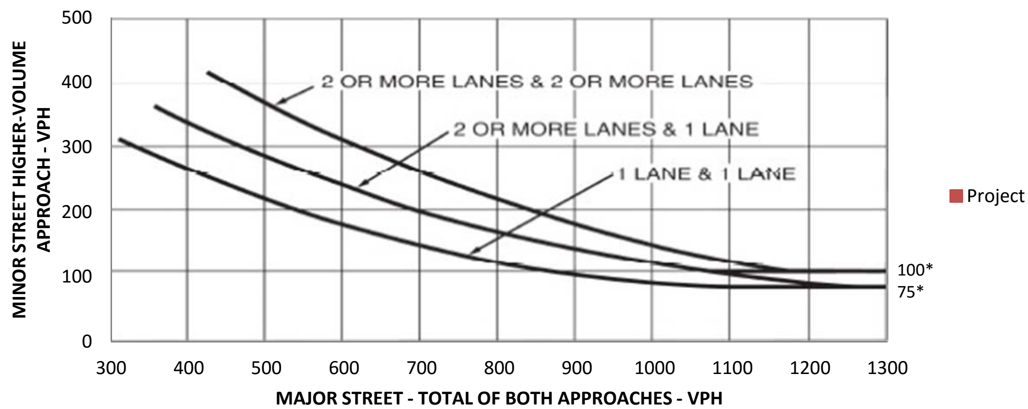
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: E+A+P+C PM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	1456
		Number of Apporach Lanes =	4

Minor Street Name:	Pat Road	High Volume Approach (VPH) =	95
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

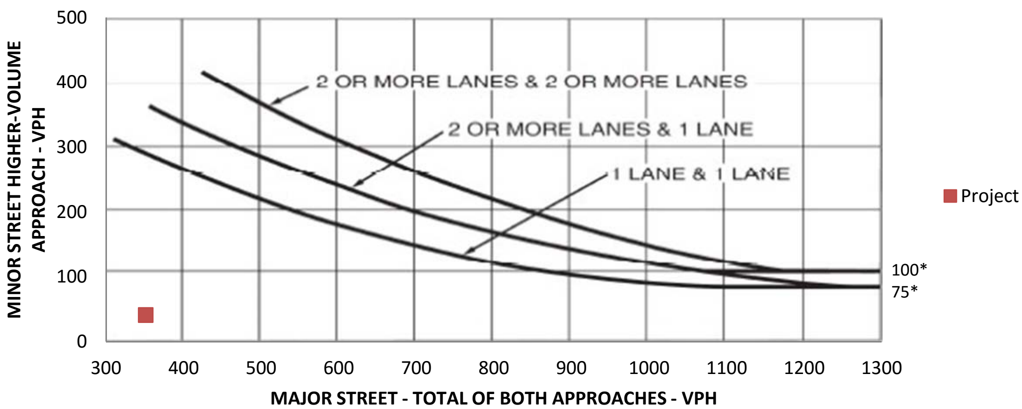
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: E+A+P+C PM

Major Street Name:	Jean Nicholas Road	Total of Both Approaches (VPH) =	351
		Number of Apporach Lanes =	4

Minor Street Name:	Elliot Road	High Volume Approach (VPH) =	41
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

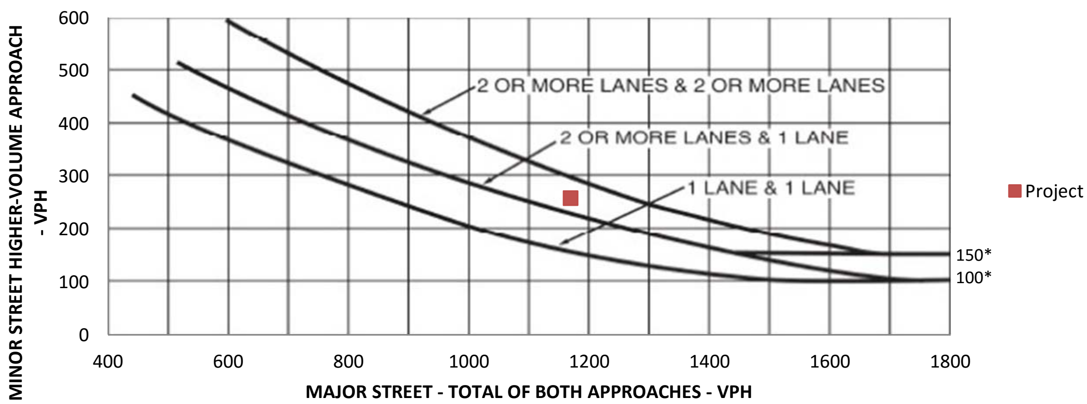
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: E+A+P+C PM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	1169
		Number of Apporach Lanes =	5

Minor Street Name:	Skyview Road	High Volume Approach (VPH) =	259
		Number of Apporach Lanes =	2



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

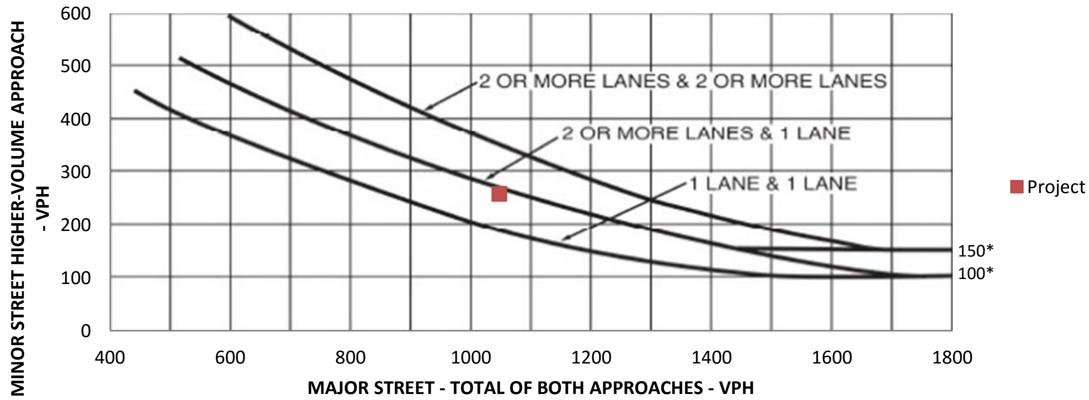
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: E+A+P+C PM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	1047
		Number of Apporach Lanes =	2

Minor Street Name:	Thompson Road	High Volume Approach (VPH) =	259
		Number of Apporach Lanes =	4



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

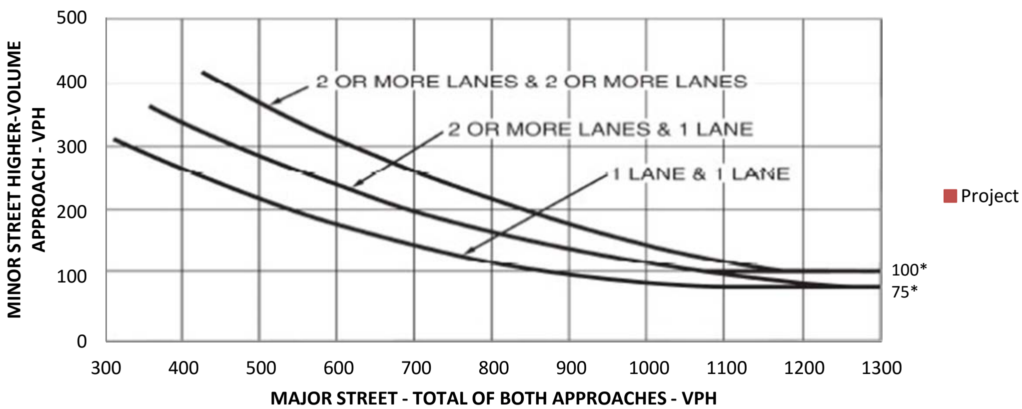
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: Existing AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	98
		Number of Apporach Lanes =	4

Minor Street Name:	Pat Road	High Volume Approach (VPH) =	81
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

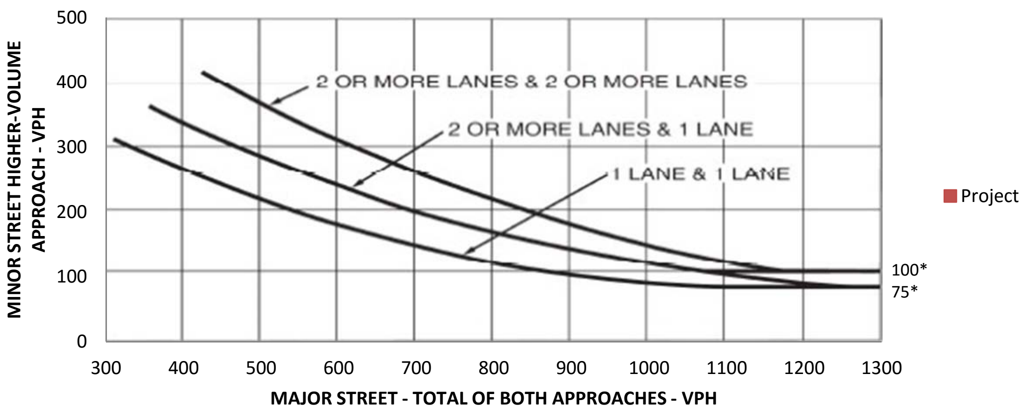
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: Existing AM

Major Street Name:	Jean Nicholas Road	Total of Both Approaches (VPH) =	49
		Number of Apporach Lanes =	4

Minor Street Name:	Elliot Road	High Volume Approach (VPH) =	13
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

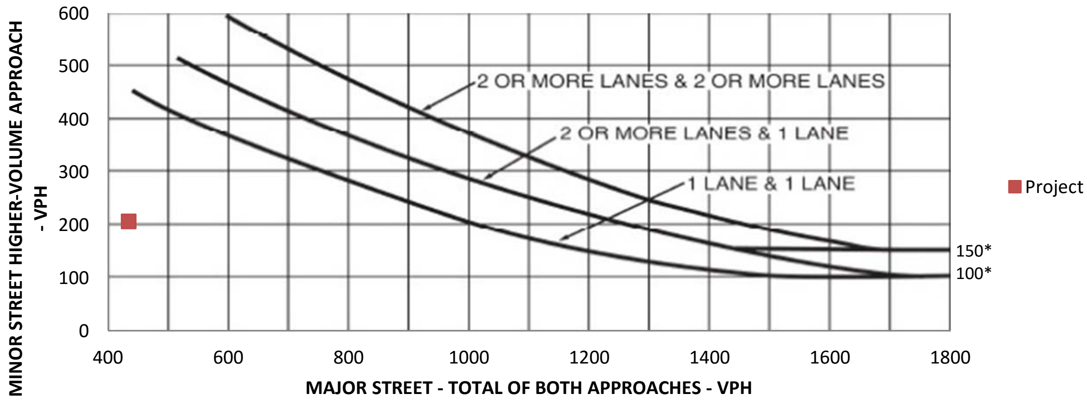
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: Existing AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	434
		Number of Apporach Lanes =	5

Minor Street Name:	Skyview Road	High Volume Approach (VPH) =	207
		Number of Apporach Lanes =	2



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

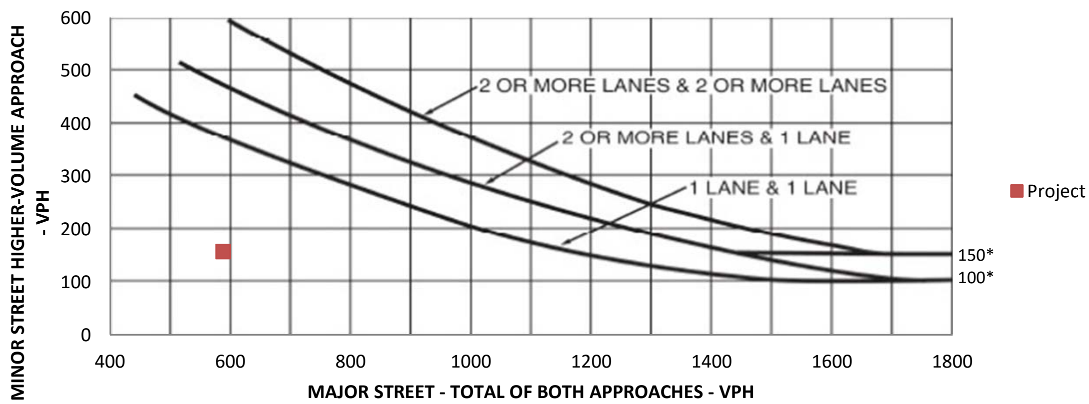
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: Existing AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	588
		Number of Apporach Lanes =	2

Minor Street Name:	Thompson Road	High Volume Approach (VPH) =	158
		Number of Apporach Lanes =	4



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition

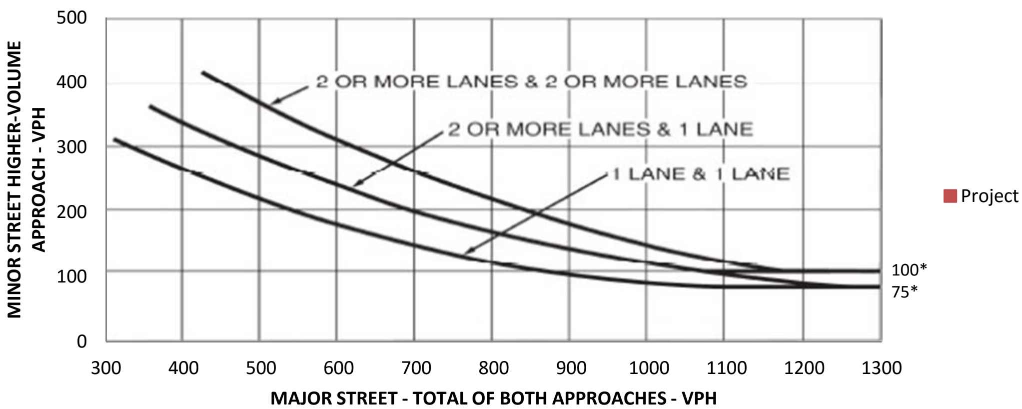
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: Existing AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	37
		Number of Apporach Lanes =	4

Minor Street Name:	Pat Road	High Volume Approach (VPH) =	84
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

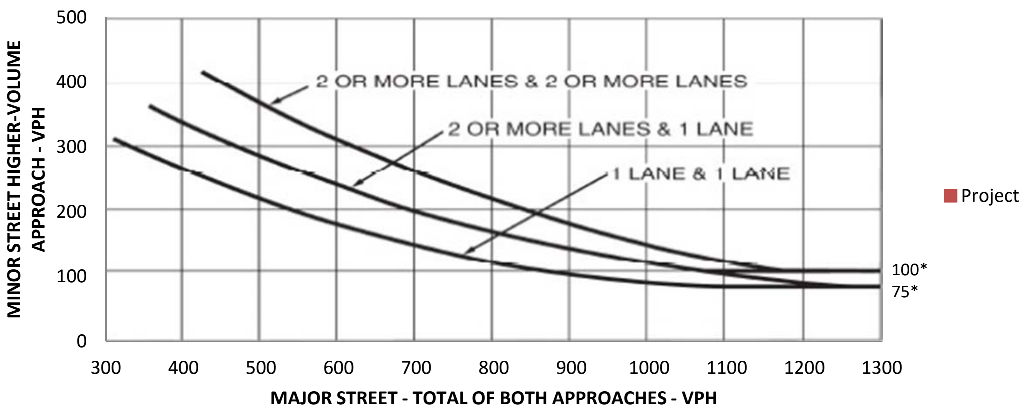
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: Existing AM

Major Street Name:	Jean Nicholas Road	Total of Both Approaches (VPH) =	37
		Number of Apporach Lanes =	4

Minor Street Name:	Elliot Road	High Volume Approach (VPH) =	33
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

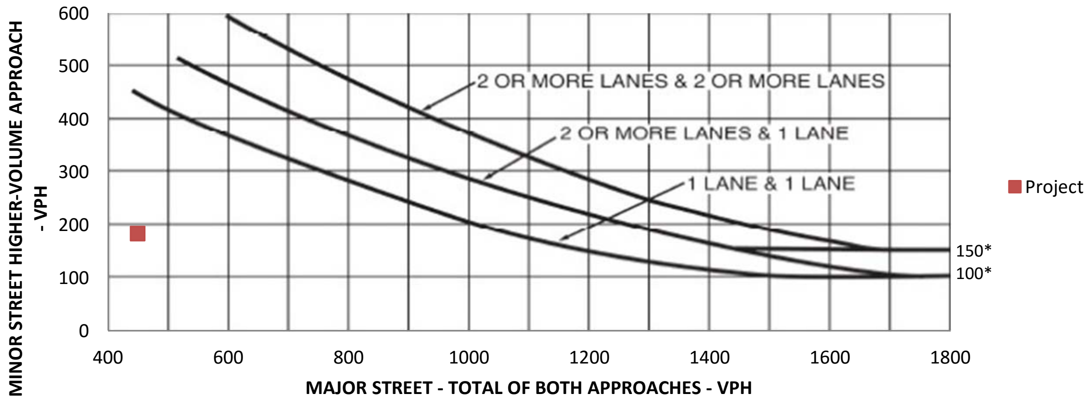
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: Existing PM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	449
		Number of Apporach Lanes =	5

Minor Street Name:	Skyview Road	High Volume Approach (VPH) =	184
		Number of Apporach Lanes =	2



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

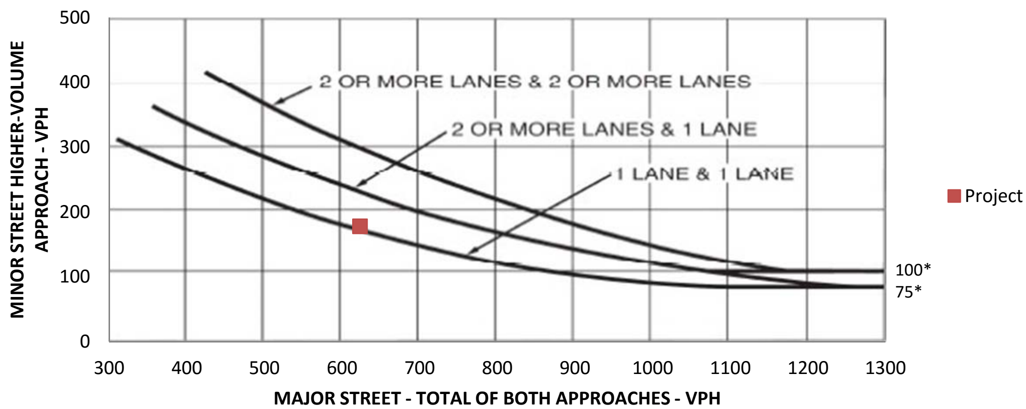
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: Existing AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	623
		Number of Apporach Lanes =	2

Minor Street Name:	Thompson Road	High Volume Approach (VPH) =	178
		Number of Apporach Lanes =	4



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

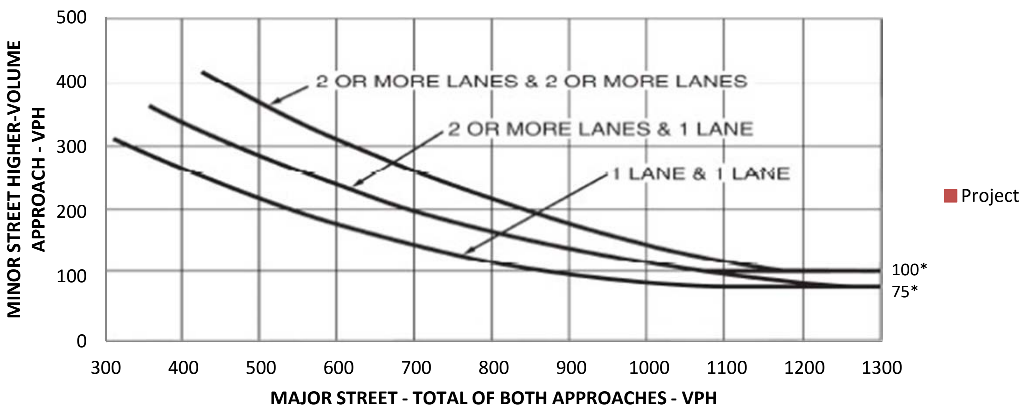
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: E+A+P+C AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	1308
		Number of Apporach Lanes =	4

Minor Street Name:	Pat Road	High Volume Approach (VPH) =	144
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

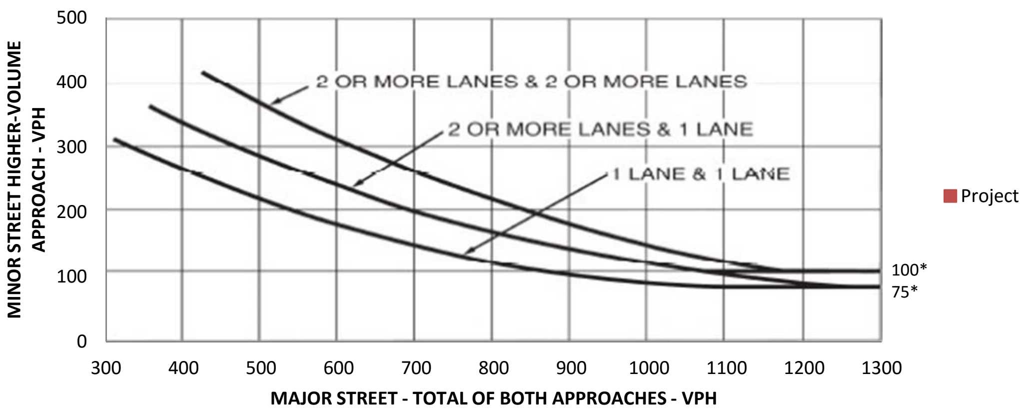
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: E+A+P+C AM

Major Street Name:	Jean Nicholas Road	Total of Both Approaches (VPH) =	211
		Number of Apporach Lanes =	4

Minor Street Name:	Elliot Road	High Volume Approach (VPH) =	40
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

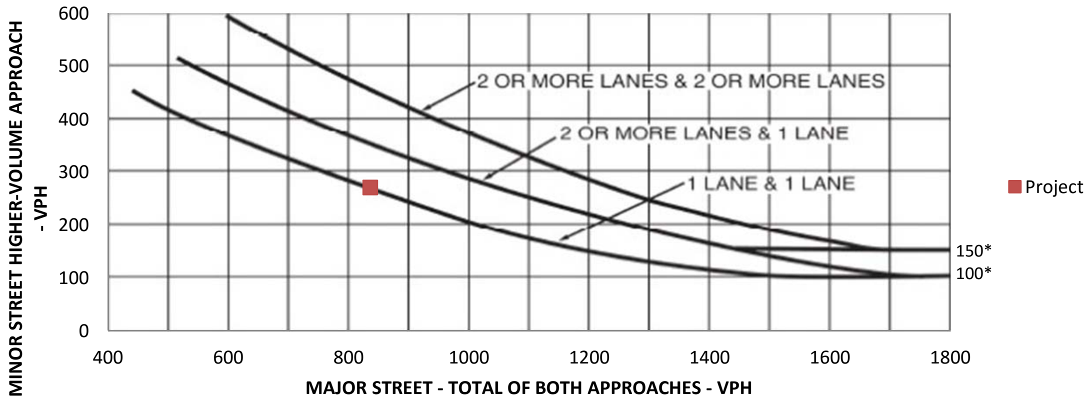
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: E+A+P+C AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	836
		Number of Apporach Lanes =	5

Minor Street Name:	Skyview Road	High Volume Approach (VPH) =	271
		Number of Apporach Lanes =	2



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition

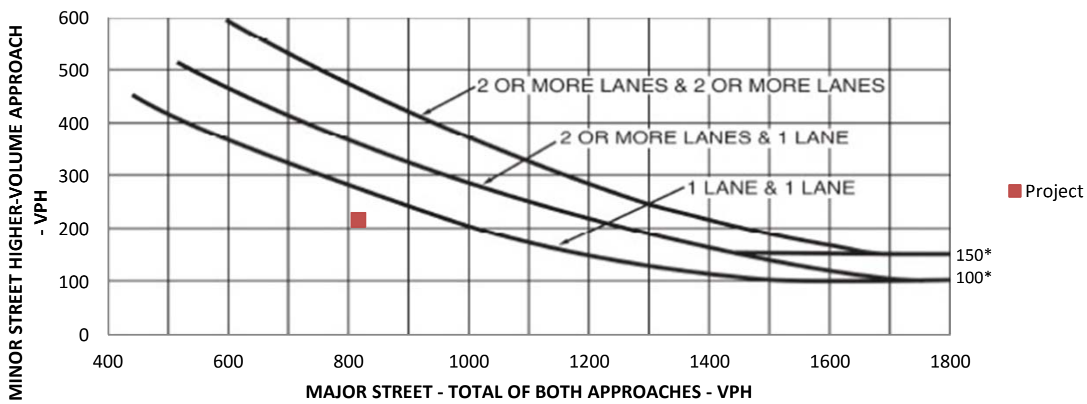
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: E+A+P+C AM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	816
		Number of Apporach Lanes =	2

Minor Street Name:	Thompson Road	High Volume Approach (VPH) =	218
		Number of Apporach Lanes =	4



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

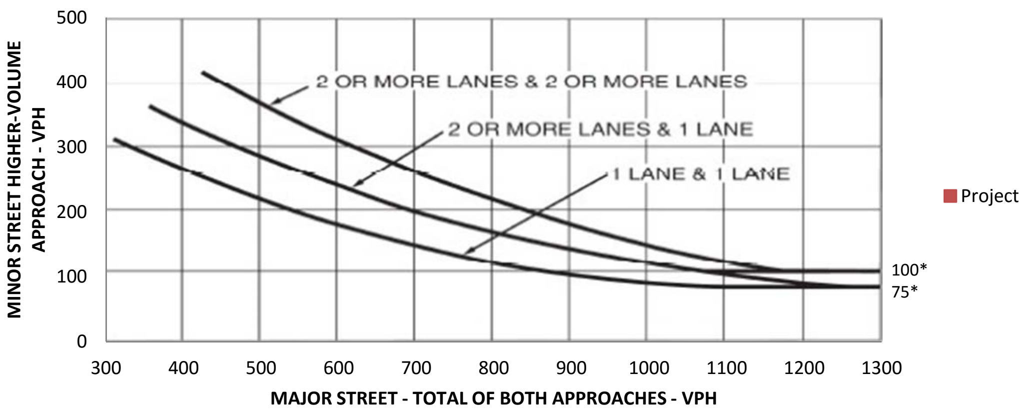
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: E+A+P+C PM

Major Street Name: Pourroy Road	Total of Both Approaches (VPH) = 1456
	Number of Apporach Lanes = 4

Minor Street Name: Pat Road	High Volume Approach (VPH) = 95
	Number of Apporach Lanes = 1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

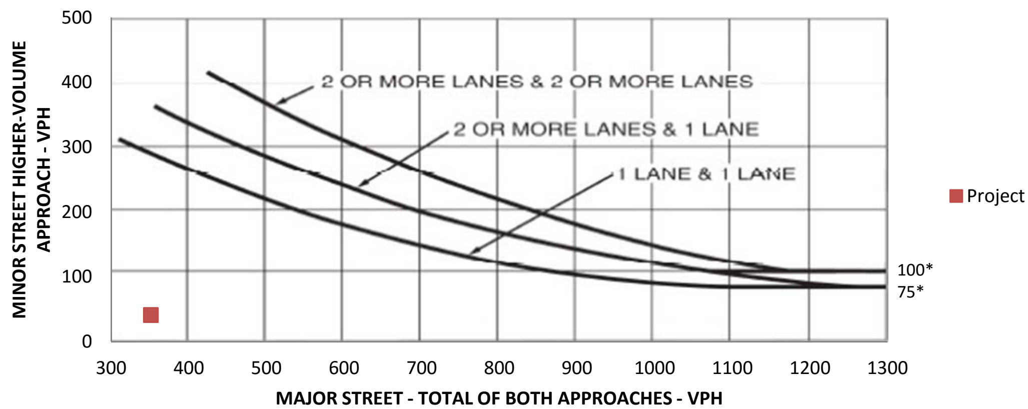
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour (70% Factor)

Traffic Conditions: E+A+P+C PM

Major Street Name:	Jean Nicholas Road	Total of Both Approaches (VPH) =	351
		Number of Apporach Lanes =	4

Minor Street Name:	Elliot Road	High Volume Approach (VPH) =	41
		Number of Apporach Lanes =	1



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

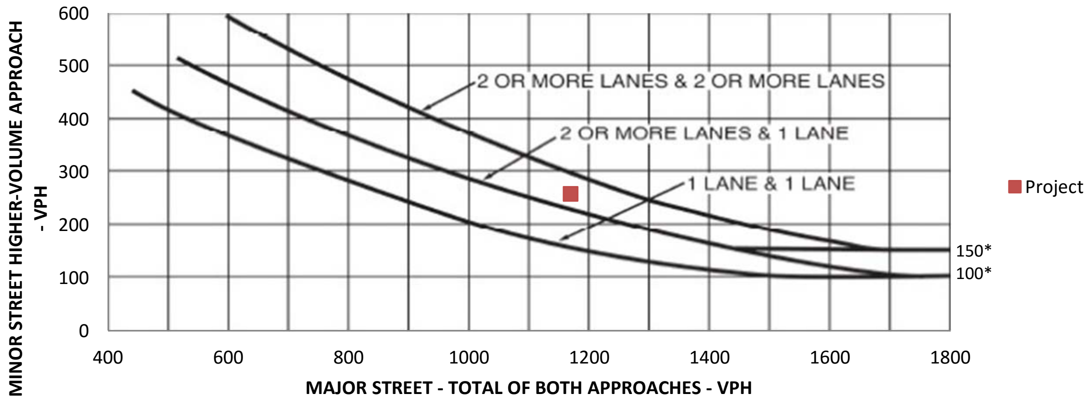
Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: E+A+P+C PM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	1169
		Number of Apporach Lanes =	5

Minor Street Name:	Skyview Road	High Volume Approach (VPH) =	259
		Number of Apporach Lanes =	2



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition

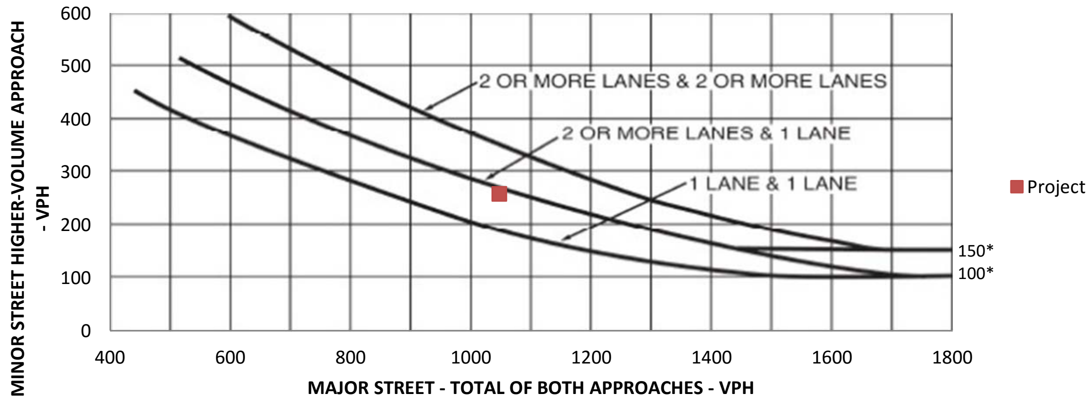
VPH - Vehicles Per Hour

Warrant 3, Peak Hour

Traffic Conditions: E+A+P+C PM

Major Street Name:	Pourroy Road	Total of Both Approaches (VPH) =	1047
		Number of Apporach Lanes =	2

Minor Street Name:	Thompson Road	High Volume Approach (VPH) =	259
		Number of Apporach Lanes =	4



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: California Manual on Uniform Traffic Countrol Devices 2014 Edition
VPH - Vehicles Per Hour

Appendix

This page intentionally left blank.