



RIVERSIDE COUNTY
PLANNING DEPARTMENT

John Hildebrand
Planning Director

August 10, 2021

TO: Foremost Center LLC
c/o Michael Canfield
27271 Las Ramblas Unit: 100
Mission Viejo, CA 92691

RE: Special Multiple Family Development Design Review No. 210001

The **Riverside County Planning Department** approved the above referenced case.

Action taken on the above referenced Planning Department case is considered final.

Sincerely,

RIVERSIDE COUNTY PLANNING DEPARTMENT
John Hildebrand, Director

Steven Jones, Principal Planner



RIVERSIDE COUNTY PLANNING DEPARTMENT

John Hildebrand
Planning Director

NOTICE OF EXEMPTION

TO: Office of Planning and Research (OPR)
P.O. Box 3044
Sacramento, CA 95812-3044
 County of Riverside County Clerk

FROM: Riverside County Planning Department
 4080 Lemon Street, 12th Floor
P. O. Box 1409
Riverside, CA 92502-1409

38686 El Cerrito Road
Palm Desert, CA 92201

Project Title/Case No.: Highgrove Town Center/SMF210001/PPT210011/CEQ210014

Project Location: Center Street/Spring Street near Garfield Avenue, Highgrove, Riverside, CA 92507

Project Description: Special multiple family request to create 846 attached residential dwelling units within several detached buildings across 65.20 acres gross. The project also includes trails, open space, public and private parks, landscaping, off-site parking, and public and private streets. The project will require subsequent approvals from the County of Riverside, including a Tentative Tract Map.

Name of Public Agency Approving Project: Riverside County Planning Department


Project Applicant & Address: Foremost Center Street, LLC 27271 Las Ramblas Unit:100, Mission Viejo, CA 92691

Exempt Status:

- Ministerial (*Pub. Resources Code, § 21080(b)(1); State CEQA Guidelines, § 15060(c)(1), 15268*)
- Statutory Exemption (*Gov. Code, § 65583.2, subd. (i)*)

Reasons why project is exempt: The project is not a discretionary project subject to CEQA because the Project is permitted "by right." (Pub. Resources Code, § 21080, subd. (b)(1) [CEQA does not apply to ministerial projects]; State CEQA Guidelines, §§ 15060, subd. (c)(1), 15060(c)(1), and 15352.) Here, the approval of the project concerns ministerial activity not subject to CEQA because the County's Housing Element provides that housing projects, like the project here, on sites with a Highest Density Residential or Mixed-Use Area (MUA) land use designation allow "owner-occupied and rental multifamily developments" as a "use by right." Notably, the project is located within the Mixed Use (MU) Zone of the unincorporated area of the Riverside County. The intent of the MU Zone is to implement MUA land use designation of the Riverside County General Plan, which assists the County in accommodating its share of the regional housing needs assessment (RHNA) allocation pursuant to the Riverside County Housing Element. Multiple family dwellings that only include a residential use are permitted by right within the MU Zone. Moreover, the project is additionally not subject to CEQA under Government Code section 65583.2, subdivision (i), which provides that the local government's review of owner-occupied or multifamily residential use may not require a conditional use permit, planned unit development permit, or other discretionary local government review or approval that would constitute a 'project' for purposes of [CEQA]." (Gov. Code, § 65583.2, subd. (i).)

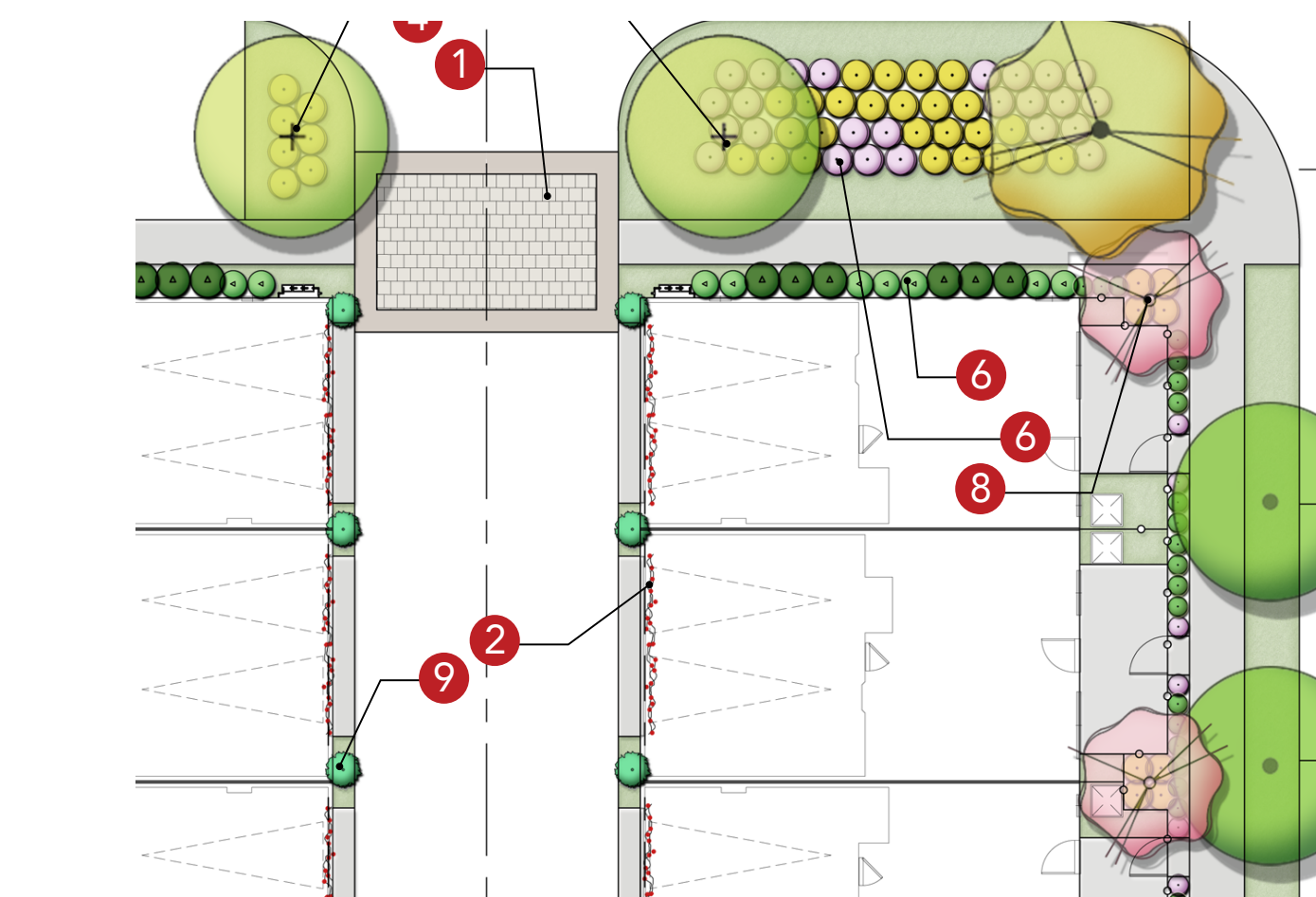
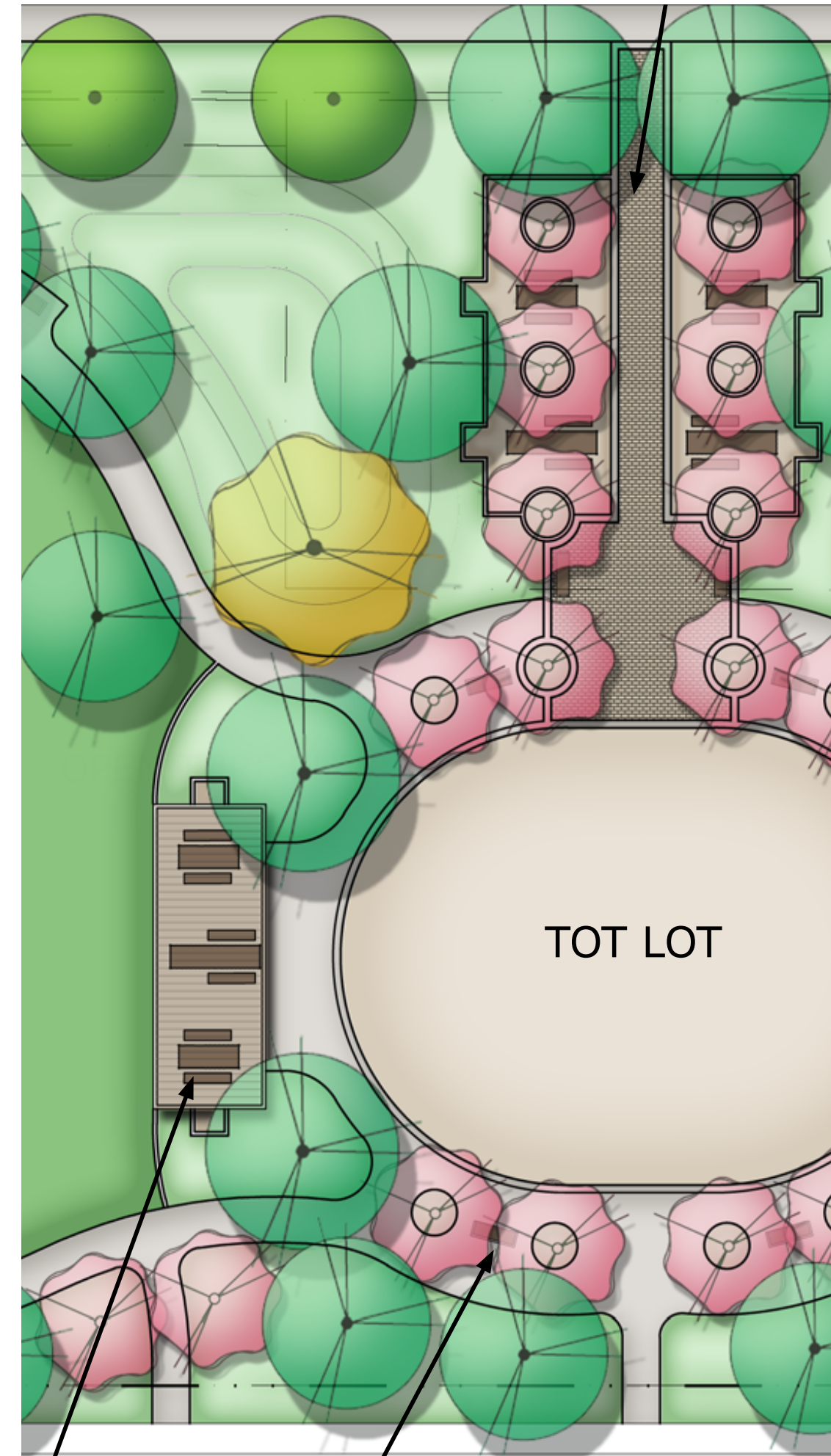
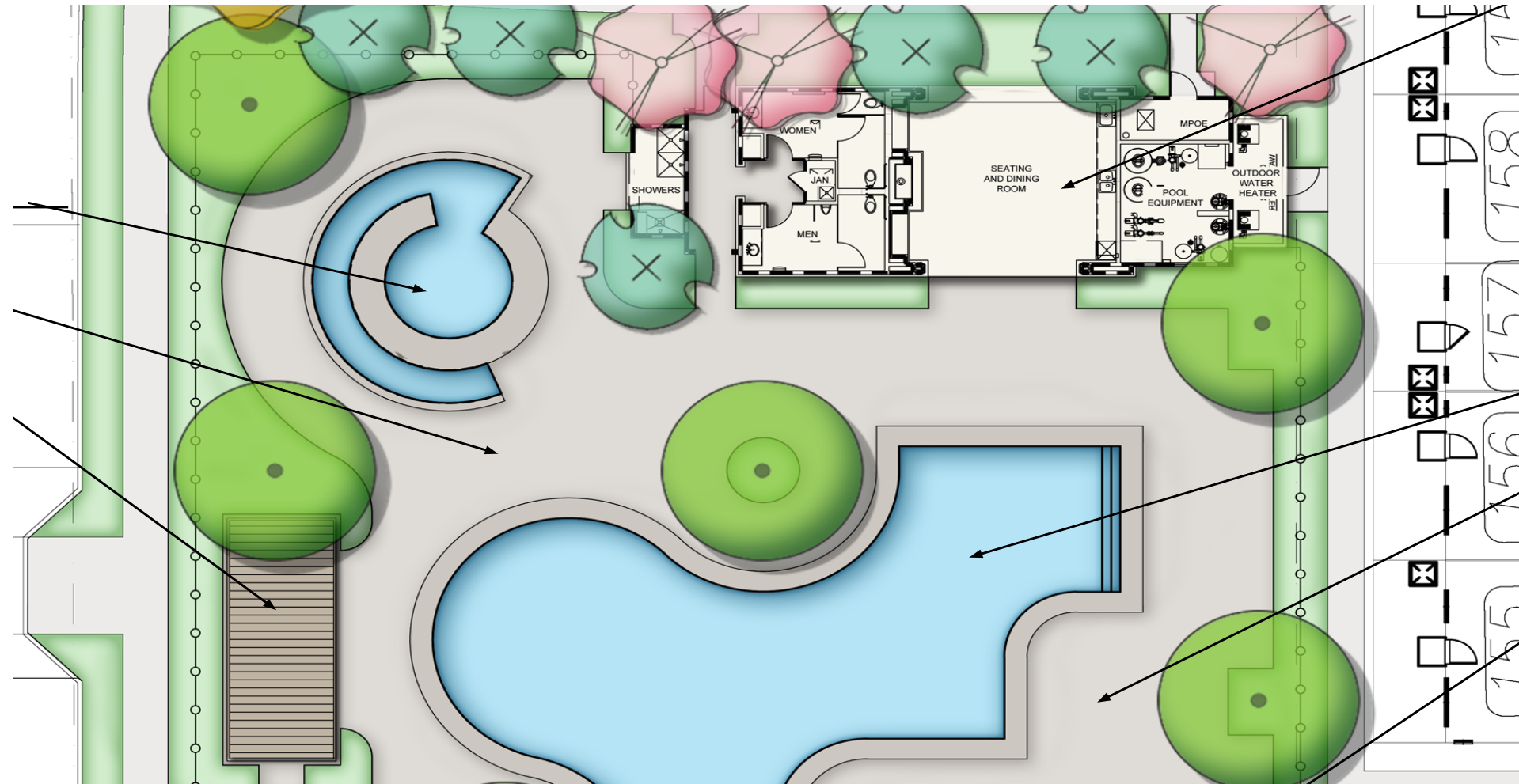
Steven Jones 951-955-0314

 Principal Planner August 9, 2021

Date Received for Filing and Posting at OPR: _____

Please charge deposit fee case#: PPT No. **210011** CEQ No. **210014** - County Clerk Posting Fee
FOR COUNTY CLERK'S USE ONLY





OUR TEAM

Foremost Center Street, LLC

Contact: Mike Canfield, Manager
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27271 Las Ramblas, Suite 100 Mission Viejo, CA 92691

WHA. Architects . Planners . Designers .

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Contact: Joel Morse
714 505-6360 x105 | jmorse@tbplanning.com
3200 El Camino Real, Suite 100 Irvine, CA 92602

Adkan Engineering

Contact: Mitch Adkison Project Manager
909 213-0827 | madkison@adkan.com
6879 Airport Drive, Riverside, CA 92504

Land Concern

Contact: Mike Sweeney
949 333-6318 | msweeney@landconcern.com
1750 E. Deere Ave. Santa Ana, CA 92705-5719

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- SP1 Conceptual Site Plan
- SP2 Technical Site Plan and Improvement Phasing
- SP3 Enhanced Architecture Diagram
- SP4 Common Open Space Diagram
- SP5 Site Plan Conceptual Elevation Plotting
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- 1.2 Paseo Townhomes - Plan 2 Floor Plan
- 1.3 Paseo Townhomes - Plan 3 Floor Plan
- 1.4 Paseo Townhomes - Building 100 Composite Floor Plan
- 1.5 Paseo Townhomes - Building 100 Roof Plans
- 1.6 Paseo Townhomes - Building 100 Spanish Elevation
- 1.7 Paseo Townhomes - Building 100 Craftsman Elevation
- 1.8 Paseo Townhomes - Building 200 Composite Floor Plan
- 1.9 Paseo Townhomes - Building 200 Roof Plans
- 1.10 Paseo Townhomes - Building 200 Spanish Elevation
- 1.11 Paseo Townhomes - Building 200 Craftsman Elevation
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- 1.13 Paseo Townhomes - Building 300 Roof Plans
- 1.14 Paseo Townhomes - Building 300 Spanish Elevation
- 1.15 Paseo Townhomes - Building 300 Craftsman Elevation
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- 1.17 Paseo Townhomes - Building 400 Roof Plans
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- 2.6 Yard Townhomes - Building 100 Roof Plans
- 2.7 Yard Townhomes - Building 100 Spanish Elevation
- 2.8 Yard Townhomes - Building 100 Craftsman Elevation
- C.1 Yard Townhomes | Exterior Color & Materials

ADMINISTRATIVE
07/26/2021
APPROVAL
County of Riverside Planning
Department

FOREMOST CENTER STREET, LLC.

ADMINISTRATIVE APPROVAL

HIGHGROVE TOWN CENTER
COUNTY OF RIVERSIDE, CA

SPECIAL MULTI-FAMILY DESIGN REVIEW

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ARCHITECTS . PLANNERS . DESIGNERS
WHA.

ORANGE COUNTY . LOS ANGELES . BAY AREA
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PROJECT SUMMARY

TOTAL UNITS: 846 DU

- 'PASEO' TOWNHOMES 461 DU (54%)
- 'YARD' TOWNHOMES 385 DU (46%)

PHASE 1B-NW

PASEO TOWNS: 123 DU
 YARD TOWNS: 100 DU
 TOTAL: 223 DU

GUEST PARKING SUMMARY
 PARKING REQ: 129 SP
 PARKING PROV: 136 SP

PHASE 2A-SW

PASEO TOWNS: 114 DU
 YARD TOWNS: 80 DU
 TOTAL: 194 DU

GUEST PARKING SUMMARY
 PARKING REQ: 110 SP
 PARKING PROV: 110 SP

PHASE 1A-NE

PASEO TOWNS: 141 DU
 YARD TOWNS: 125 DU
 TOTAL: 266 DU

GUEST PARKING SUMMARY
 PARKING REQ: 156 SP
 PARKING PROV: 170 SP

*INCLUDES PARKING ADJACENT TO REC

PHASE 2B-SE

PASEO TOWNS: 83 DU
 YARD TOWNS: 80 DU
 TOTAL: 163 DU

GUEST PARKING SUMMARY
 PARKING REQ: 99 SP
 PARKING PROV: 99 SP

*INCLUDES PARKING ADJACENT TO REC

COMMUNITY PARK
 PARKING PROV: 20 SP



CONCEPTUAL SITE PLAN

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

FOREMOST CENTER STREET, LLC.

ADMINISTRATIVE APPROVAL

SP.1

0 50 100 200

SPECIAL MULTI-FAMILY DESIGN REVIEW

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PROPOSED PRODUCT

PASEO & YARD TOWNHOMES
2-STORY PRODUCT

TYPE: VB (NON-RATED CONSTRUCTION)
OCCUPANCY: R3/U (TOWNHOME & PRIVATE GARAGE)
FIRE SPRINKLERS: NFPA-13D

1 IMPROVEMENTS AND PHASING

1.1 PRIOR TO FIRST CERTIFICATE OF OCCUPANCY

The following improvements will be made prior to issuance of the Certificate of Occupancy for the First production (non-model) home within the Project.

- **Center Street** – Center Street is currently built out to its ultimate half-section. As such, there are no roadway improvements required. However, the Project will construct/install parkway improvements along the Project's frontage.
- **Entry Monumentation** – Project will install entry monumentation at Center Street and A Street.
- **Street A** - Project will construct curb-to-curb improvements of Street A from Center Street to Spring Street at its ultimate full-section width as a Local road (60-foot right-of-way).
- **Garfield Avenue** - Project will widen the west side of Garfield Avenue from Center Street to Spring Street to its ultimate full-section curb to curb width as a Local road (60-foot right-of-way).
- **Street A & Center Street** – Project will install a stop control on the northbound approach and a northbound shared left-right turn lane.
- **Street A & Spring Street** –
 - Install a stop control on the northbound approach and a northbound shared left-through-right turn lane.
 - Install a stop control on the southbound approach and a southbound shared left-through-right turn lane.

1.2 PRIOR TO 101ST CERTIFICATE OF OCCUPANCY

The following improvements will be made prior to issuance of the Certificate of Occupancy for the 101st production (non-model) home within the Project.

- **Spring Street** - Project will widen the north side of Spring Street from California Avenue to Garfield Avenue at its ultimate full-section

- **South Recreation Center** – Project will complete the construction of the building and the pool of the South Recreation Center.

1.6 PRIOR TO 251ST CERTIFICATE OF OCCUPANCY SOUTH OF SPRING STREET

The following improvements will be made prior to issuance of the Certificate of Occupancy for the 251st production (non-model) home within the Project south of Spring Street.

- **Springbrook Wash Park** – Project will construct the Springbrook Wash Park.
- **Regional Trail** – Project will construct the Regional Trail from Spring Street through to the west side of Springbrook Wash Park.

2 CONTRIBUTIONS TOWARD OFF-SITE TRAFFIC IMPROVEMENTS

2.1 PRIOR TO FIRST CERTIFICATE OF OCCUPANCY

The Project will make the following fair-share contributions prior to issuance of the Certificate of Occupancy for the First production (non-model) home within the Project (see Table 1-1). The amounts noted in this section below are current as of July 1, 2021 and will be adjusted - on January 1, 2022 and every year thereafter until paid - based upon the Construction Cost Index for Riverside-San Bernardino, or such other similar index as determined by Riverside County Transportation Department.

- **Iowa Ave. & Center St.** - \$43,311 to Riverside County as the Project's 30.7% Fair Share Cost of modifying the traffic signal to protect the EB and WB left turns.
- **Iowa Ave. & Palmyrita Ave.** - \$41,280 to City of Riverside as the Project's 17.6% Fair Share Cost of a) NB right turn lane, and b) modifying the traffic signal to implement overlap phasing for the NB right turn lane.

width as a Collector (74-foot right-of-way), including construction/installation of the parkway on the north side.

- **Garfield & Spring Street** – Project will install a crosswalk at the intersection of Garfield Avenue & Spring Street.
- **Street A** - Project will construct/install parkways along both sides of Street A from Center Street to Spring Street.
- **Garfield Avenue** - Project will construct/install parkway on west side of Garfield Avenue from Center Street to Spring Street.
- **North Recreation Center** – Project will complete the construction of the building and the pool of the North Recreation Center.

1.3 PRIOR TO 301ST CERTIFICATE OF OCCUPANCY

The following improvements will be made prior to issuance of the Certificate of Occupancy for the 301st production (non-model) home within the Project.

- **Highgrove Town Center Park** – Project will construct the Highgrove Town Center Park.
- **Prior to First Certificate of Occupancy South of Spring Street** The following improvements will be made prior to issuance of the Certificate of Occupancy for the First production (non-model) home in the Project south of Spring Street.
 - **Spring Street** - Project will widen the south side of Spring Street from California Avenue to Garfield Avenue at its ultimate full-section width as a Collector (74-foot right-of-way), including construction/installation of the parkway on the south side.
 - **Street B & Spring Street** – Install a stop control on the northbound approach and a northbound shared left-right turn lane.

1.5 PRIOR TO 101ST CERTIFICATE OF OCCUPANCY SOUTH OF SPRING STREET

The following improvements will be made prior to issuance of the Certificate of Occupancy for the 101st production (non-model) home in the Project south of Spring Street.

- **Iowa Ave. & Spruce St.** - \$20,682 to City of Riverside as the Project's 22% Fair Share Cost to a) restripe the SB approach to provide dual left turn lanes, two through lanes, and one right turn lane, and b) restripe the EB approach to provide one left turn lane, one through lane, and one shared through-right turn lane.
- **Garfield Ave. & Center St.** - \$96,714 to Riverside County as the Project's 12.6% Fair Share Cost to a) install a traffic signal, and b) restripe the WB approach to provide one left turn lane and two through lanes.

2.2 AT BUILDING PERMIT ISSUANCE

The Project will pay the following fees per unit at issuance of building permits by the County:

- **WRCOG TUMF** – The multi-family per unit TUMF fee.
- **County DIF** – The multi-family per unit DIF fee (which includes components for traffic improvement facilities and traffic signals).
- **City of Riverside Traffic & Railroad Signal Mitigation Fee** – The multi-family per unit fee.
- **City of Riverside Transportation Impact Fee** – The multi-family per unit fee.



PHASE ACCESS

- ➔ PRIMARY ACCESS
- ➔ SECONDARY ACCESS
- ➔ EMERGENCY VEHICLE ACCESS



Parking standards taken from county ORDINANCE NO. 348.4913, SECTION 18.12. OFF-STREET VEHICLE PARKING, A. PARKING DESIGN STANDARDS, 2. NUMBER OF REQUIRED PARKING SPACES.

PHASE 1A-NE

PASEO TOWNS: 141 DU
YARD TOWNS: 125 DU
TOTAL: 266 DU

GUEST PARKING SUMMARY

PARKING REQ: 156 SP
PARKING PROV: 170 SP

*INCLUDES PARKING ADJACENT TO REC

PHASE 1A-NE PARKING:

Phase 1A-NE					
Paseo Townhomes		53%			
Plan	DU	Parking Required	Garage	Open/ Guest	
Plan 1: 1 - BR	26	1.25	32.5	26	6.50
Plan 2: 2 - BR	61	2.25	137.25	122	15.25
Plan 3: 3 - BR	54	2.75	148.5	108	40.50
	141		318.25	256	62.25
Yard Townhomes		47%			
Plan	DU	Parking Required	Garage	Open/ Guest	
3 - BR	125	2.75	343.75	250	93.75
	125		343.75	250	93.75
		Total Parking Required:	662.00	Guest Sp Required:	156.00
		Total Parking Provided:	676.00	Guest Sp Provided:	170.00
		266	Total DU		

PHASE 1B-NW

PASEO TOWNS: 123 DU
YARD TOWNS: 100 DU
TOTAL: 223 DU

GUEST PARKING SUMMARY

PARKING REQ: 129 SP
PARKING PROV: 136 SP

PHASE 1B-NW PARKING:

Phase 1B-NW					
Paseo Townhomes		55%			
Plan	DU	Parking Required	Garage	Open/ Guest	
Plan 1: 1 - BR	23	1.25	28.75	23	5.75
Plan 2: 2 - BR	54	2.25	121.5	108	13.50
Plan 3: 3 - BR	46	2.75	126.5	92	34.50
	123		276.75	223	53.75
Yard Townhomes		45%			
Plan	DU	Parking Required	Garage	Open/ Guest	
3 - BR	100	2.75	275.00	200	75.00
	100		275.00	200	75.00
		Total Parking Required:	551.75	Guest Sp Required:	128.75
		Total Parking Provided:	559.00	Guest Sp Provided:	136.00
		223	Total DU		

PHASE 2A-SW

PASEO TOWNS: 114 DU
YARD TOWNS: 80 DU
TOTAL: 194 DU

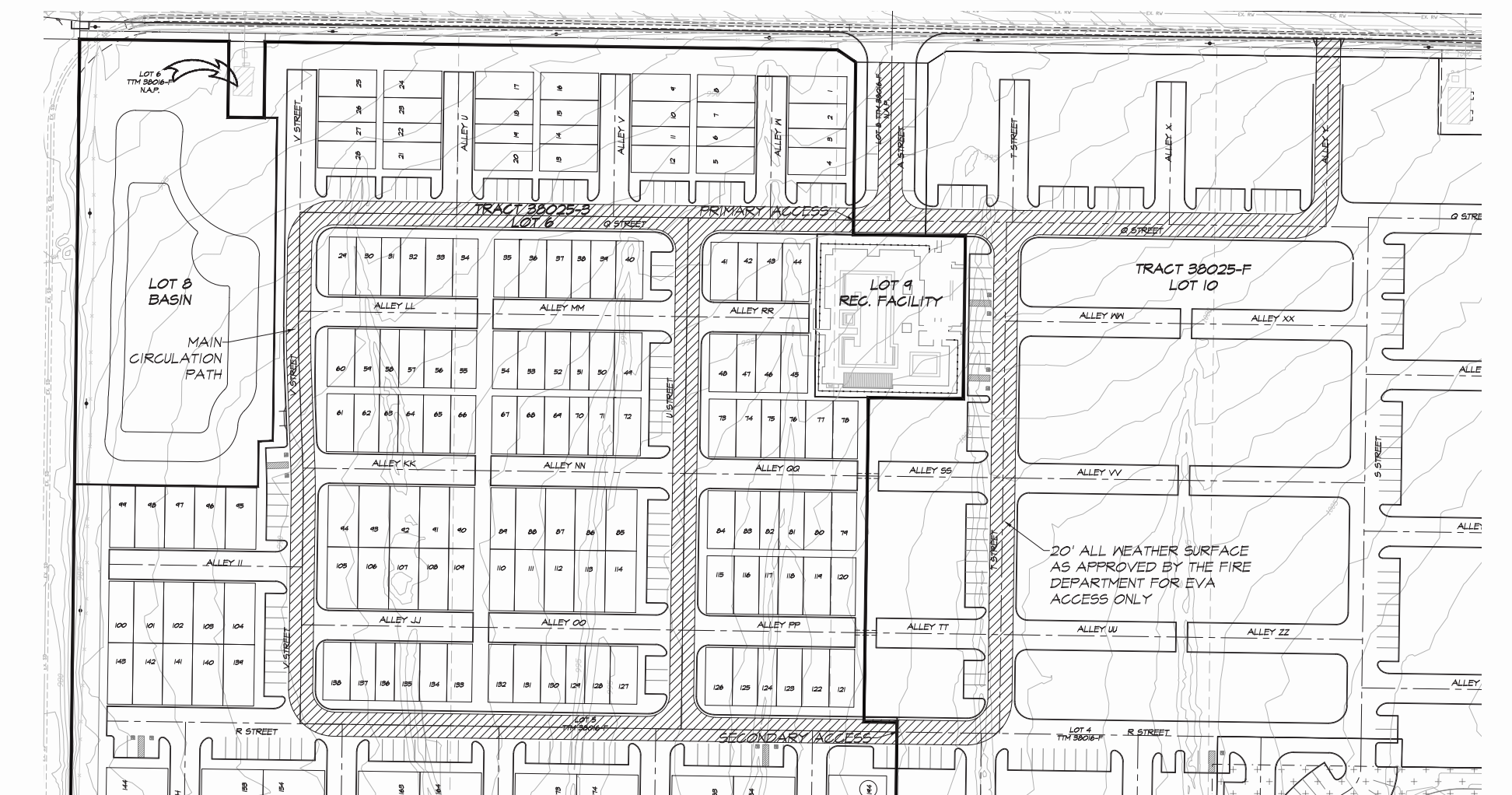
GUEST PARKING SUMMARY

PARKING REQ: 110 SP
PARKING PROV: 110 SP

PHASE 2A-SW PARKING:

Phase 2A-SW					
Paseo Townhomes		59%			
Plan	DU	Parking Required	Garage	Open/ Guest	
Plan 1: 1 - BR	22	1.25	27.5	22	5.50
Plan 2: 2 - BR	48	2.25	108	96	12.00
Plan 3: 3 - BR	44	2.75	121	88	33.00
	114		256.50	206	50.50
Yard Townhomes		41%			
Plan	DU	Parking Required	Garage	Open/ Guest	
3 - BR	80	2.75	220.00	160	60.00
	80		220.00	160	60.00
		Total Parking Required:	476.50	Guest Sp Required:	110.50
		Total Parking Provided:	477.00	Guest Sp Provided:	111.00
		194	Total DU		

PHASE 2A-SW: ACCESS PLAN



PHASE 2B-SE

PASEO TOWNS: 83 DU
YARD TOWNS: 80 DU
TOTAL: 163 DU

GUEST PARKING SUMMARY

PARKING REQ: 99 SP
PARKING PROV: 99 SP

*INCLUDES PARKING ADJACENT TO REC

PHASE 2B-SE PARKING:

Phase 2B-SE					
Paseo Townhomes		51%			
Plan	DU	Parking Required	Garage	Open/ Guest	
Plan 1: 1 - BR	14	1.25	17.5	14	3.50
Plan 2: 2 - BR	33	2.25	74.25	66	8.25
Plan 3: 3 - BR	36	2.75	99	72	27.00
	83		190.75	152	38.75
Yard Townhomes		49%			
Plan	DU	Parking Required	Garage	Open/ Guest	
3 - BR	80	2.75	220.00	160	60.00
	80		220.00	160	60.00
		Total Parking Required:	410.75	Guest Sp Required:	98.75
		Total Parking Provided:	411.00	Guest Sp Provided:	99.00
		163	Total DU		

TECHNICAL SITE PLAN AND IMPROVEMENT PHASING

HIGHGROVE TOWN CENTER
COUNTY OF RIVERSIDE, CA

FOREMOST CENTER
STREET, LLC.

SP.2

0 50 100 200

SPECIAL MULTI-FAMILY DESIGN REVIEW

ARCHITECTS . PLANNERS . DESIGNERS



LEGEND

 ENHANCED ARCHITECTURAL ELEVATIONS*

*REFER TO ARCHITECTURAL ELEVATIONS



ENHANCED ARCHITECTURE DIAGRAM

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

**FOREMOST CENTER
STREET, LLC.**

ADMINISTRATIVE APPROVAL

SP.3

0 50 100 200

SPECIAL MULTI-FAMILY DESIGN REVIEW

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LEGEND

COMMON OPEN SPACE REQUIRED
84,600 SF (846 UNITS X 100 SF/UNIT)

COMMON OPEN SPACE PROVIDED
348,670 SF (SHOWN)

INDIVIDUAL USABLE OPEN SPACE REQUIRED
169,200 SF (846 UNITS X 200 SF/UNIT)

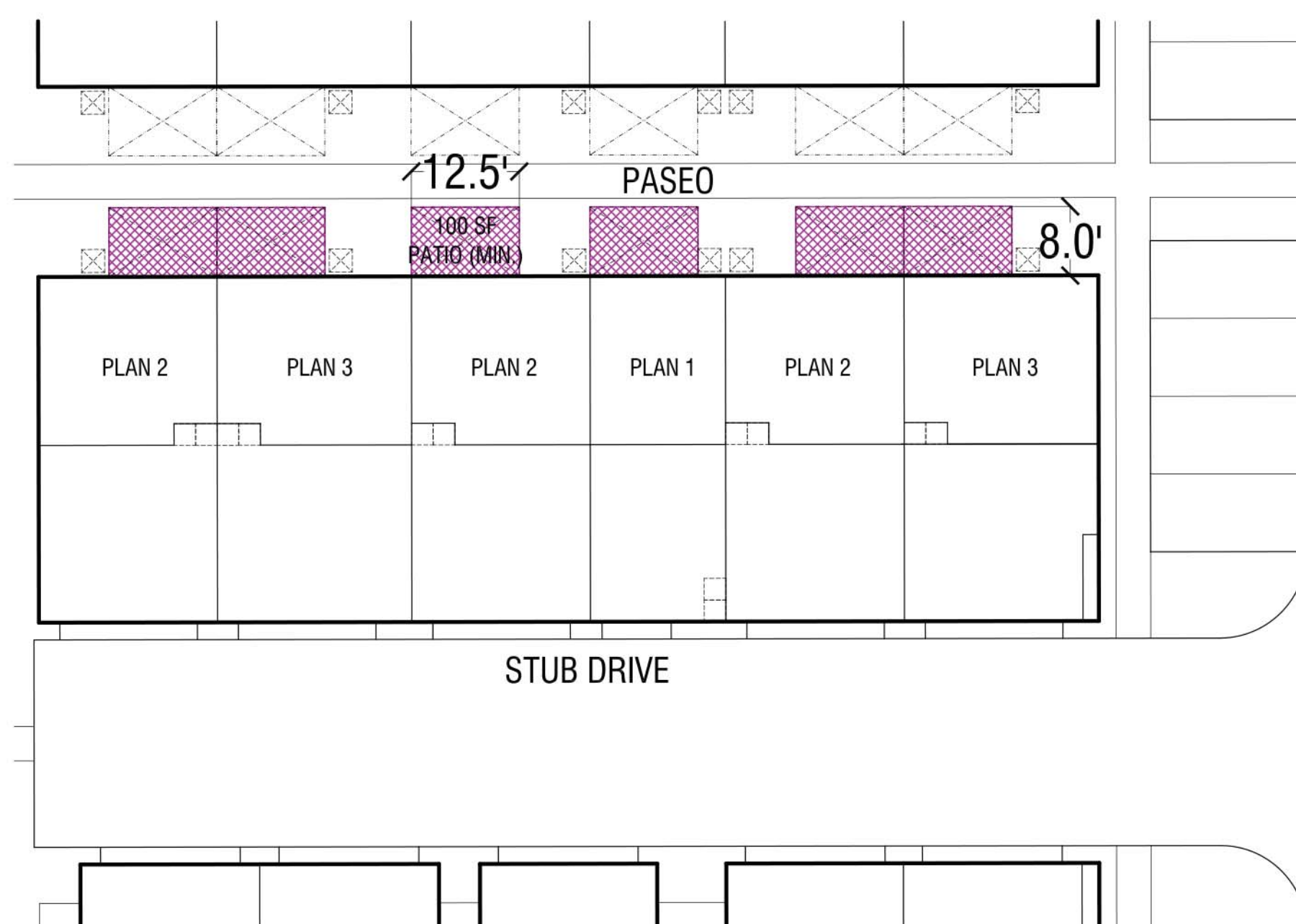
INDIVIDUAL USABLE CONTIGUOUS OPEN SPACE REQUIRED
84,600 SF (846 UNITS X 100 SF/UNIT)

INDIVIDUAL USABLE CONTIGUOUS OPEN SPACE PROVIDED
129,645 SF (153 SF AVG.)

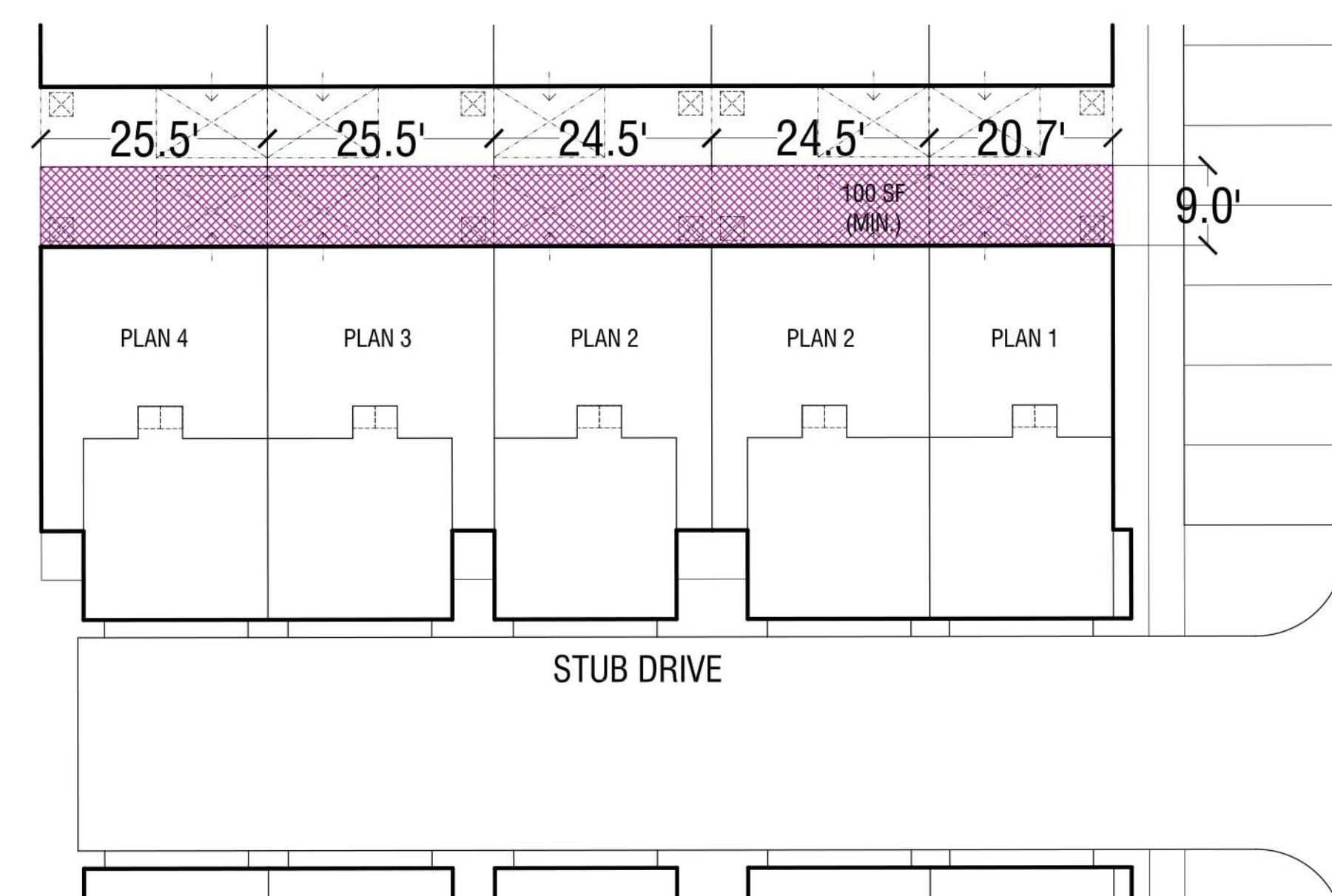
INDIVIDUAL USABLE NON-CONTIGUOUS OPEN SPACE REQUIRED
169,200 SF - 129,645 SF = 39,555 SF

INDIVIDUAL USABLE NON-CONTIGUOUS OPEN SPACE PROVIDED
101,298 SF (SHOWN)

INDIVIDUAL USEABLE OPEN SPACE EXHIBITS:



TYPICAL PASEO TOWNHOMES INDIVIDUAL OPEN SPACE
(100 SF MIN.)
SCALE: 1" = 16'-0"



TYPICAL YARD TOWNHOMES INDIVIDUAL OPEN SPACE
(100 SF MIN.)
SCALE: 1" = 16'-0"



COMMON OPEN SPACE DIAGRAM

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

Open Space standards taken from county ORDINANCE NO. 348.4913, ARTICLE IXf MU ZONE (MIXED USE), SECTION 9.87. DEVELOPMENT STANDARDS,

B. RESIDENTIAL USES. In addition to the development standards in Section 9.87 subsection A., the following development standards shall apply to residential uses:

3. COMMON RECREATIONAL OPEN SPACE.
b. Development with more than one hundred (100) residential dwellings shall provide one hundred square feet (100') of common useable recreational open space per residential dwelling such as, but not limited to, pools, gyms, parks and recreational facilities.

4. INDIVIDUAL USEABLE OPEN SPACE. A residential dwelling shall include at least two hundred square feet (200') of contiguous or non-contiguous useable open space, such as patios or balconies, which is not encumbered with structures. At least one hundred square feet (100') of useable open space shall be attached to the dwelling. No length or width of the useable open space shall be less than eight feet (8').



LEGEND

'PASEO' TOWNHOMES

- SPANISH
- CRAFTSMAN

'YARD' TOWNHOMES

- SPANISH
- CRAFTSMAN

PHASE 1A-NE

PASEO TOWNS: 141 DU
 YARD TOWNS: 125 DU
 TOTAL: 266 DU

FLOOR (UNIT) PLANS REQUIRED: 6
 FLOOR (UNIT) PLANS PROVIDED: 7
 ELEVATIONS REQUIRED: 3
 ELEVATIONS PROVIDED: 9*
 *3-Plex Paseo TH Craftsman, 4-Plex Paseo TH Spanish, 4-Plex Paseo TH Craftsman, 5-Plex Paseo TH Spanish, 5-Plex Paseo TH Craftsman, 6-Plex Paseo TH Spanish, 6-Plex Paseo TH Craftsman, 5-Plex Yard TH Spanish and 5-Plex Yard TH Craftsman

PHASE 1B-NW

PASEO TOWNS: 123 DU
 YARD TOWNS: 100 DU
 TOTAL: 223 DU

FLOOR (UNIT) PLANS REQUIRED: 6
 FLOOR (UNIT) PLANS PROVIDED: 7
 ELEVATIONS REQUIRED: 3
 ELEVATIONS PROVIDED: 8*
 *4-Plex Paseo TH Spanish, 4-Plex Paseo TH Craftsman, 5-Plex Paseo TH Spanish, 5-Plex Paseo TH Craftsman, 6-Plex Paseo TH Spanish, 6-Plex Paseo TH Craftsman, 5-Plex Yard TH Spanish and 5-Plex Yard TH Craftsman

PHASE 2A-SW

PASEO TOWNS: 114 DU
 YARD TOWNS: 80 DU
 TOTAL: 194 DU

FLOOR (UNIT) PLANS REQUIRED: 5
 FLOOR (UNIT) PLANS PROVIDED: 7
 ELEVATIONS REQUIRED: 3
 ELEVATIONS PROVIDED: 6*
 *4-Plex Paseo TH Spanish, 4-Plex Paseo TH Craftsman, 6-Plex Paseo TH Spanish, 6-Plex Paseo TH Craftsman, 5-Plex Yard TH Spanish and 5-Plex Yard TH Craftsman

PHASE 2B-SE

PASEO TOWNS: 83 DU
 YARD TOWNS: 80 DU
 TOTAL: 163 DU

FLOOR (UNIT) PLANS REQUIRED: 5
 FLOOR (UNIT) PLANS PROVIDED: 7
 ELEVATIONS REQUIRED: 3
 ELEVATIONS PROVIDED: 9*
 *3-Plex Paseo TH Spanish, 3-Plex Paseo TH Craftsman, 4-Plex Paseo TH Spanish, 4-Plex Paseo TH Craftsman, 5-Plex Paseo TH Spanish, 5-Plex Paseo TH Craftsman, 6-Plex Paseo TH Spanish, 6-Plex Paseo TH Craftsman, 5-Plex Yard TH Spanish and 5-Plex Yard TH Craftsman

Floorplan and elevation standards taken from COUNTYWIDE DESIGN STANDARDS & GUIDELINES, County of Riverside, Adopted: January 13, 2004, Amended: August 20, 2014.

Section II. RESIDENTIAL, E. Streetscape Design 2. Multiple Floor Plans and Elevations

Floor Plans. At a minimum, there should be three different floor plans for tract maps with 50 or less units. Reverse floor plans are not included as different floor plan. For tract maps with from 51 to 99 units, there shall be at least four different floor plans. Tract maps with 100 units or more shall provide five different floor plans and an additional floor plan for every 100 dwelling units above 100 units. For development projects that are to be constructed in phases, a phasing plan shall be submitted to assure that the requirements for the number of floor plans is being met.

Elevations**. Each floor plan shall have at least three distinct elevations. One elevation shall not be repeated more than each fourth house. Please note that adding or deleting false shutters, or similar types of minimal elevation changes will not suffice as one of the required distinct elevations.

**Note: While efforts have been made to create a sense of architectural diversity throughout Highgrove Town Center, color and material palettes have been carefully selected to create a unified and harmonious community. Facing elevations along paseos have been purposefully paired to create a unified and identifiable sense of place in these locations.*

***Countywide Design Standards & Guidelines were drafted to apply to single-family dwellings as noted by the references to "houses." Because of this, we adapted these standards to a multi-family application - defining an "elevation" as a unique stylistic application to each building type.*

ELEVATION VARIATIONS:

1. Paseo Townhome, 3-Plex, Spanish, Color & Materials 1
2. Paseo Townhome, 3-Plex, Spanish, Color & Materials 2
3. Paseo Townhome, 3-Plex, Craftsman, Color & Materials 3
4. Paseo Townhome, 3-Plex, Craftsman, Color & Materials 4
5. Paseo Townhome, 4-Plex, Spanish, Color & Materials 1
6. Paseo Townhome, 4-Plex, Spanish, Color & Materials 2
7. Paseo Townhome, 4-Plex, Craftsman, Color & Materials 3
8. Paseo Townhome, 4-Plex, Craftsman, Color & Materials 4
9. Paseo Townhome, 5-Plex, Spanish, Color & Materials 1
10. Paseo Townhome, 5-Plex, Spanish, Color & Materials 2
11. Paseo Townhome, 5-Plex, Craftsman, Color & Materials 3
12. Paseo Townhome, 5-Plex, Craftsman, Color & Materials 4
13. Paseo Townhome, 6-Plex, Spanish, Color & Materials 1
14. Paseo Townhome, 6-Plex, Spanish, Color & Materials 2
15. Paseo Townhome, 6-Plex, Craftsman, Color & Materials 3
16. Paseo Townhome, 6-Plex, Craftsman, Color & Materials 4
17. Yard Townhome, 5-Plex, Spanish, Color & Materials 1
18. Yard Townhome, 5-Plex, Spanish, Color & Materials 2
19. Yard Townhome, 5-Plex, Craftsman, Color & Materials 3
20. Yard Townhome, 5-Plex, Craftsman, Color & Materials 4

CONCEPTUAL ELEVATION PLOTTING

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

FOREMOST CENTER STREET, LLC.

ADMINISTRATIVE APPROVAL

SP.5

0 50 100 200

SPECIAL MULTI-FAMILY DESIGN REVIEW

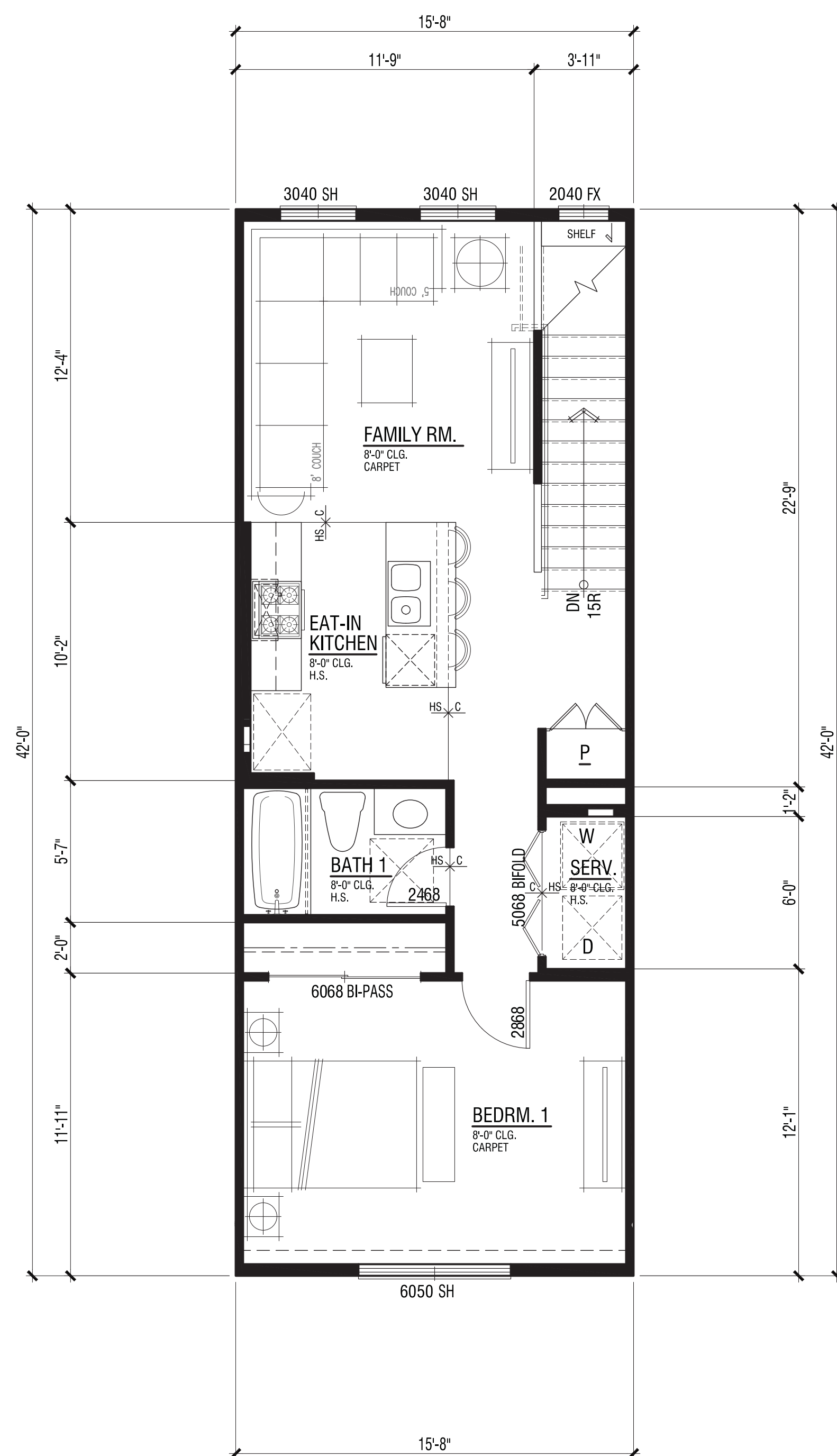
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ARCHITECTS . PLANNERS . DESIGNERS

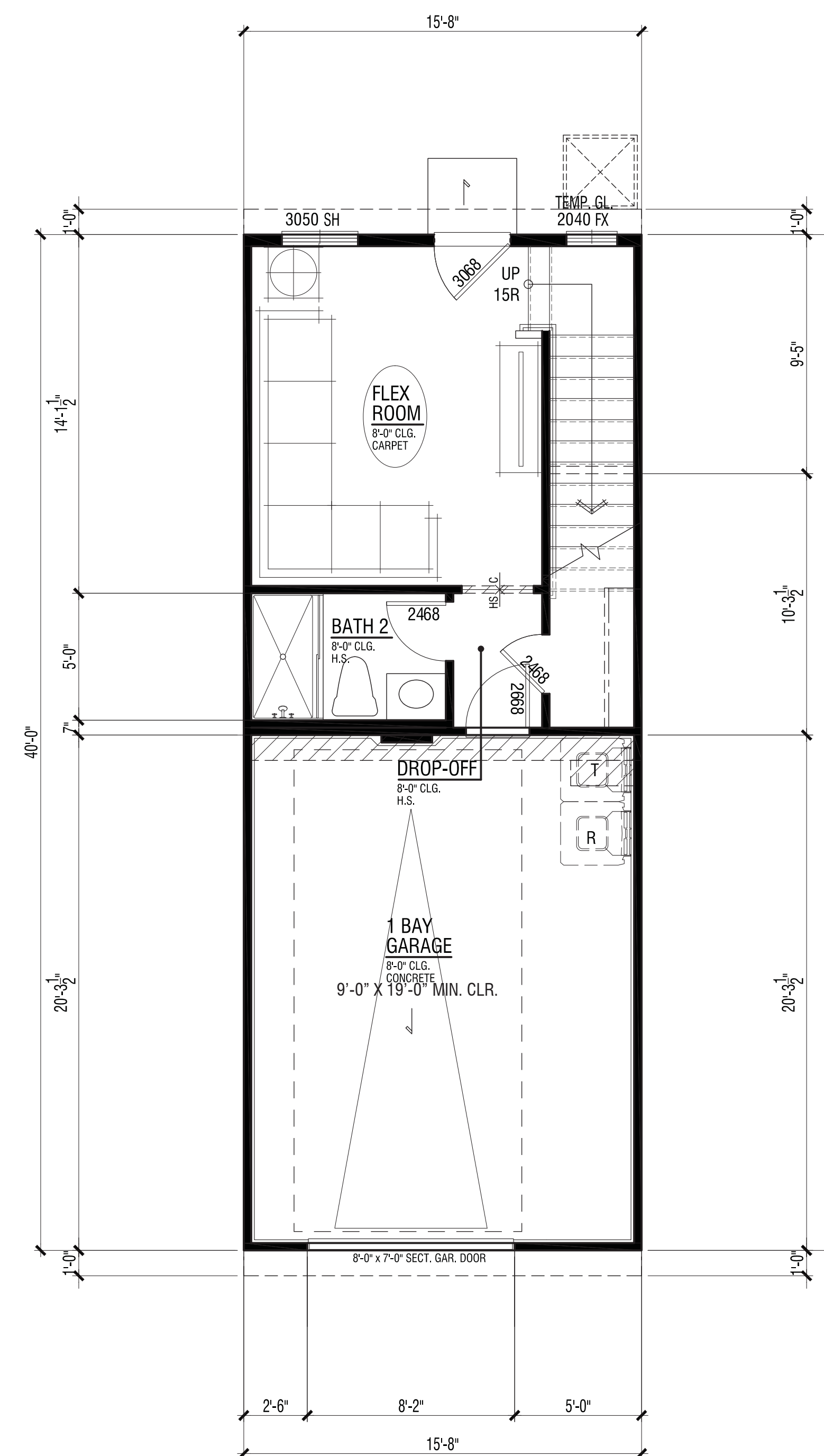


ORANGE COUNTY . LOS ANGELES . BAY AREA





SECOND FLOOR - 608 S.F.



FIRST FLOOR - 309 S.F.

Plan 1

1 Bdrm | 2 Bath | Flex |
 1- BAY Garage |
 917 S.F.
 8' | 8' Plates

Paseo Townhomes

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

0 2 4 8

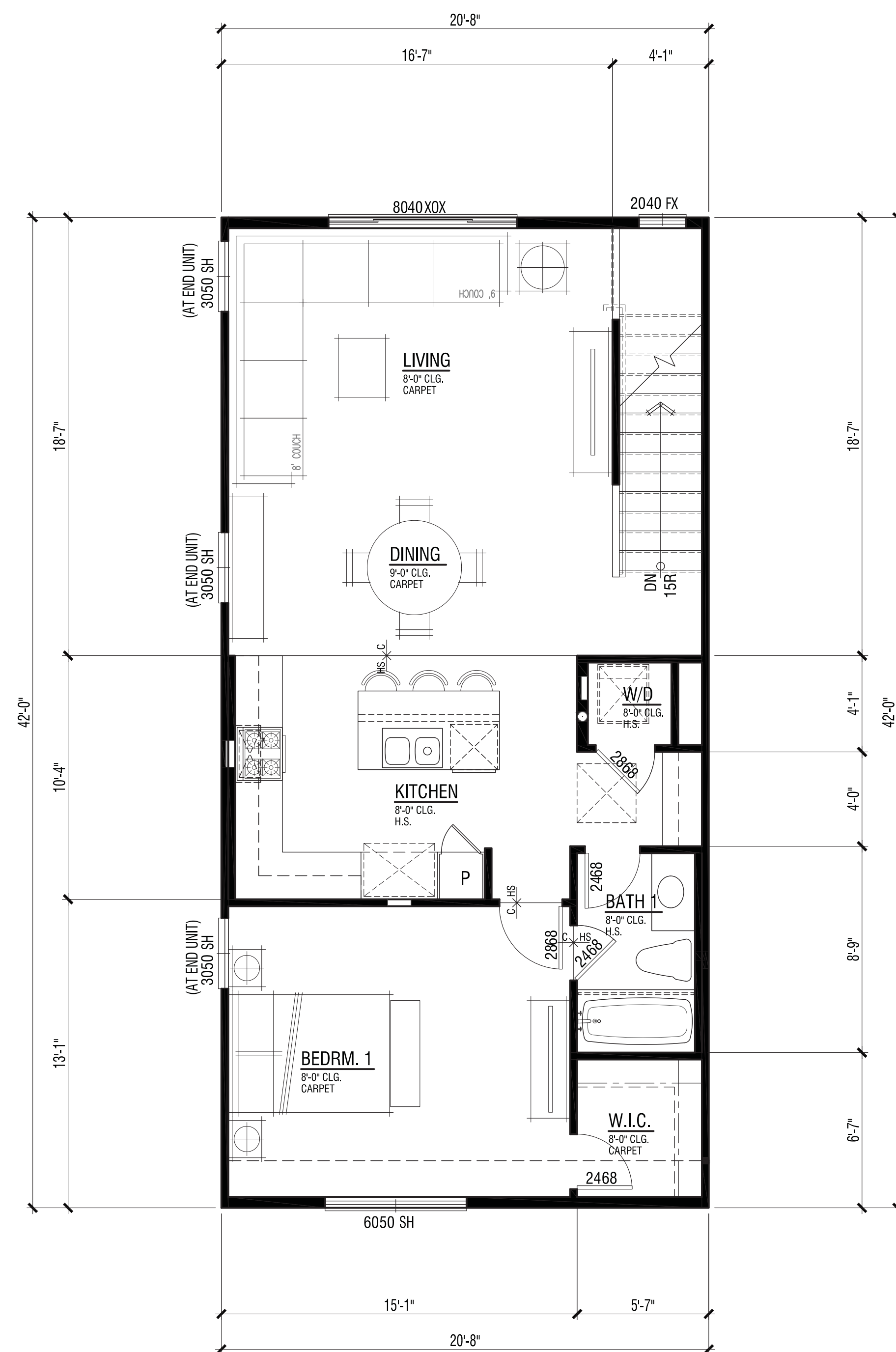
SPECIAL MULTI-FAMILY DESIGN REVIEW

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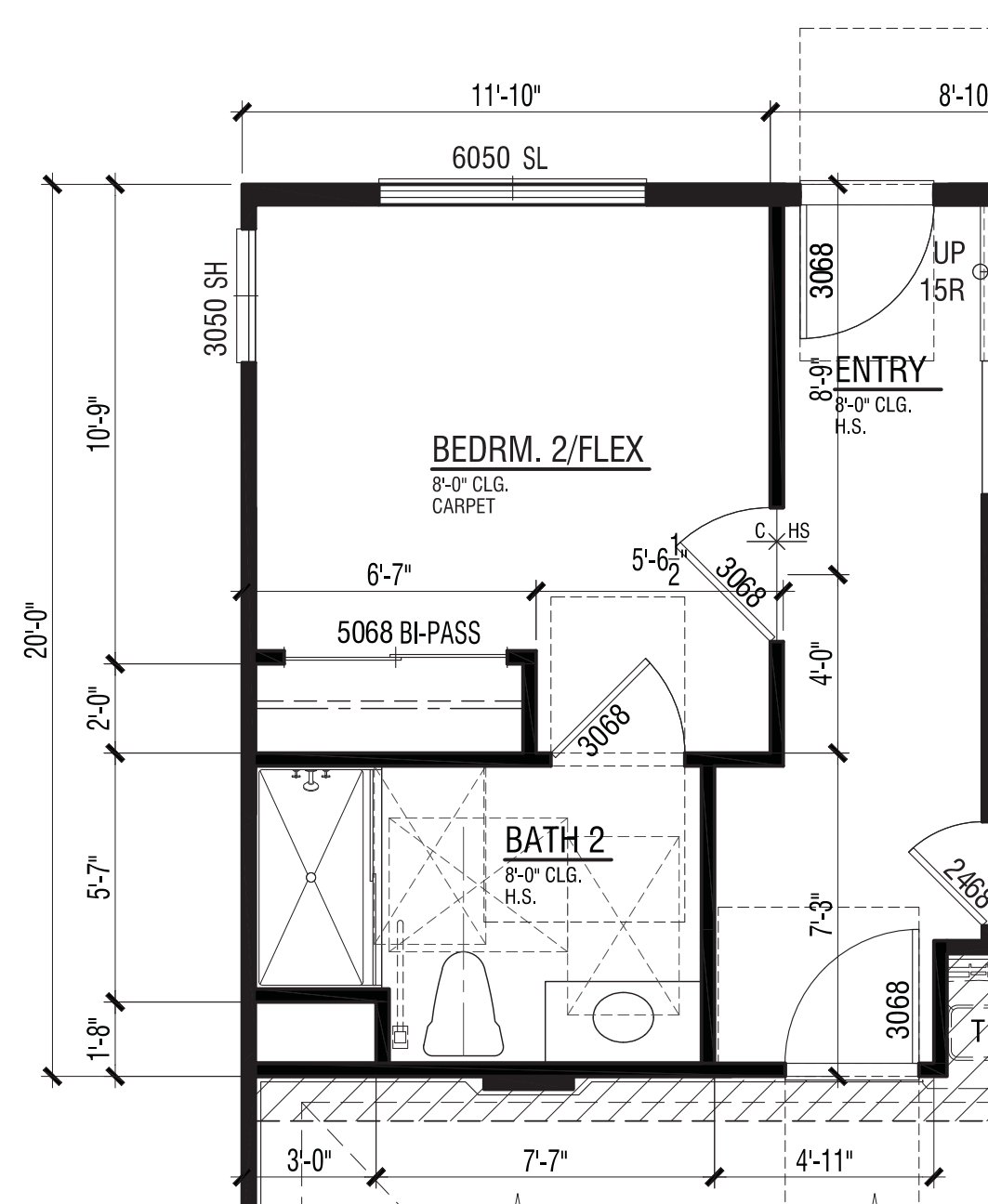
ARCHITECTS . PLANNERS . DESIGNERS



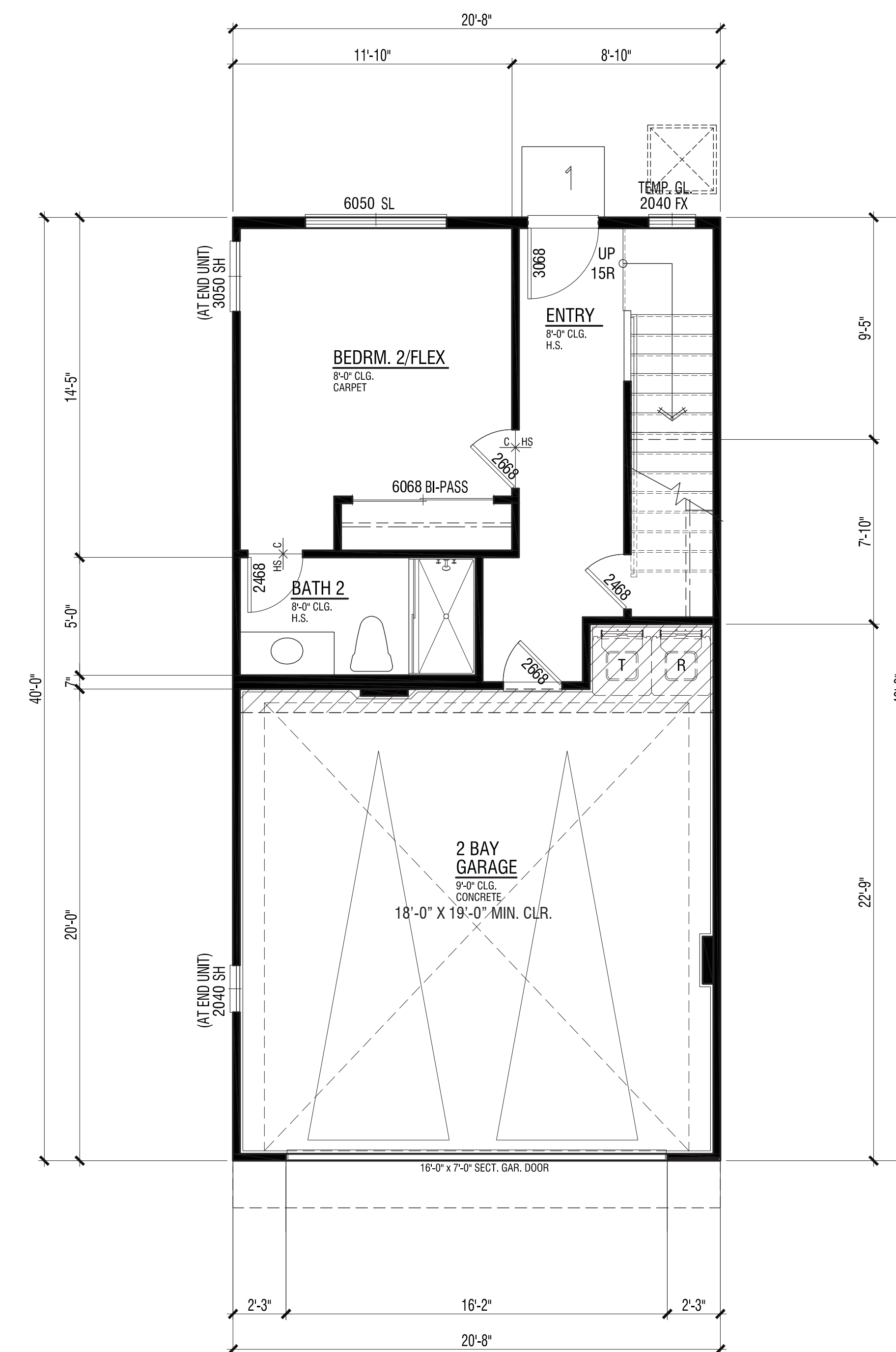
ORANGE COUNTY . LOS ANGELES . BAY AREA



SECOND FLOOR - 811 S.F.



ACCESSIBLE UNIT



FIRST FLOOR - 398 S.F.

Plan 2

2 Bdrm | 2 Bath | Flex |
 2- BAY Garage |
 1,209 S.F.
 8' | 8' Plates

Paseo Townhomes

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA



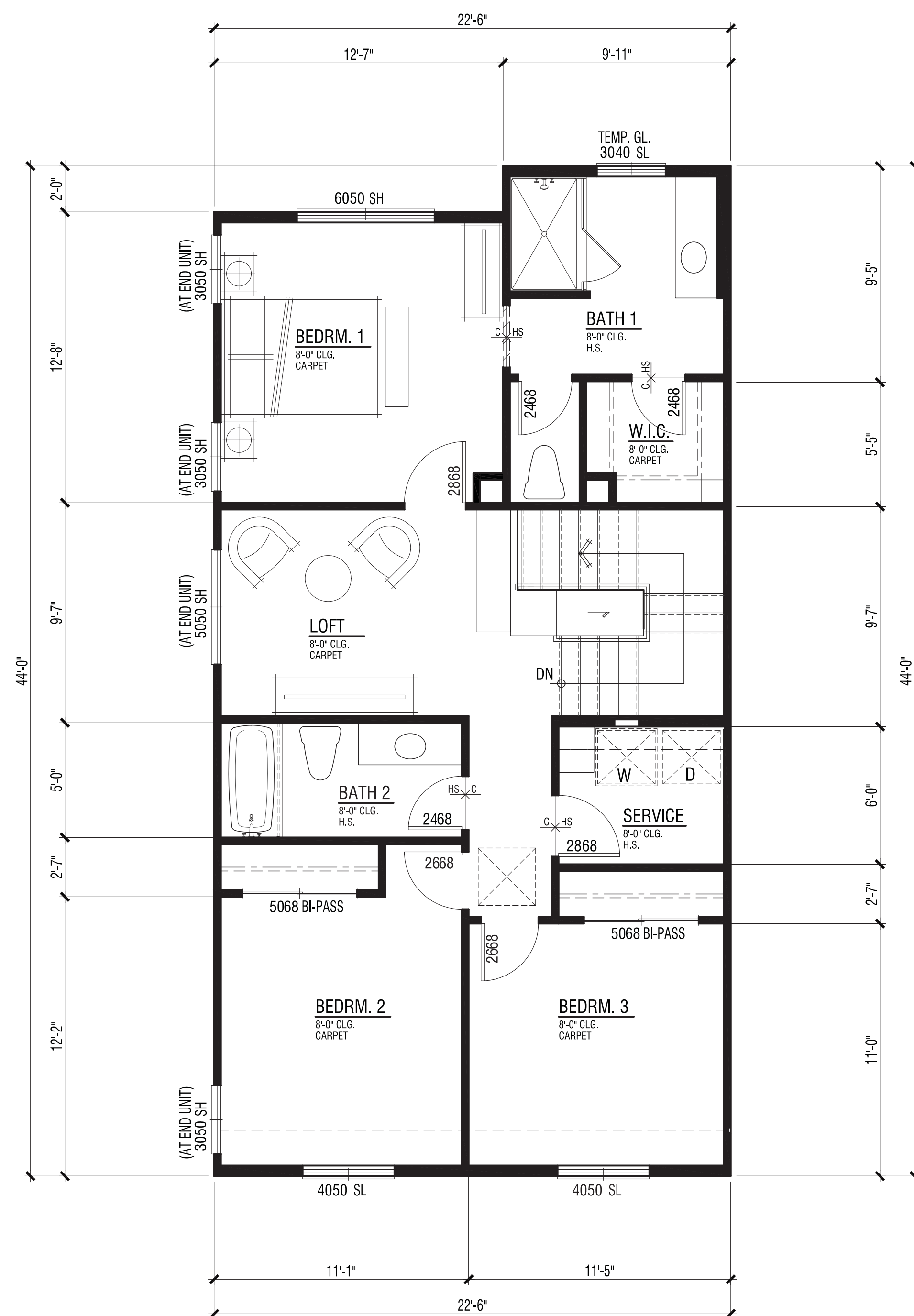
SPECIAL MULTI-FAMILY DESIGN REVIEW

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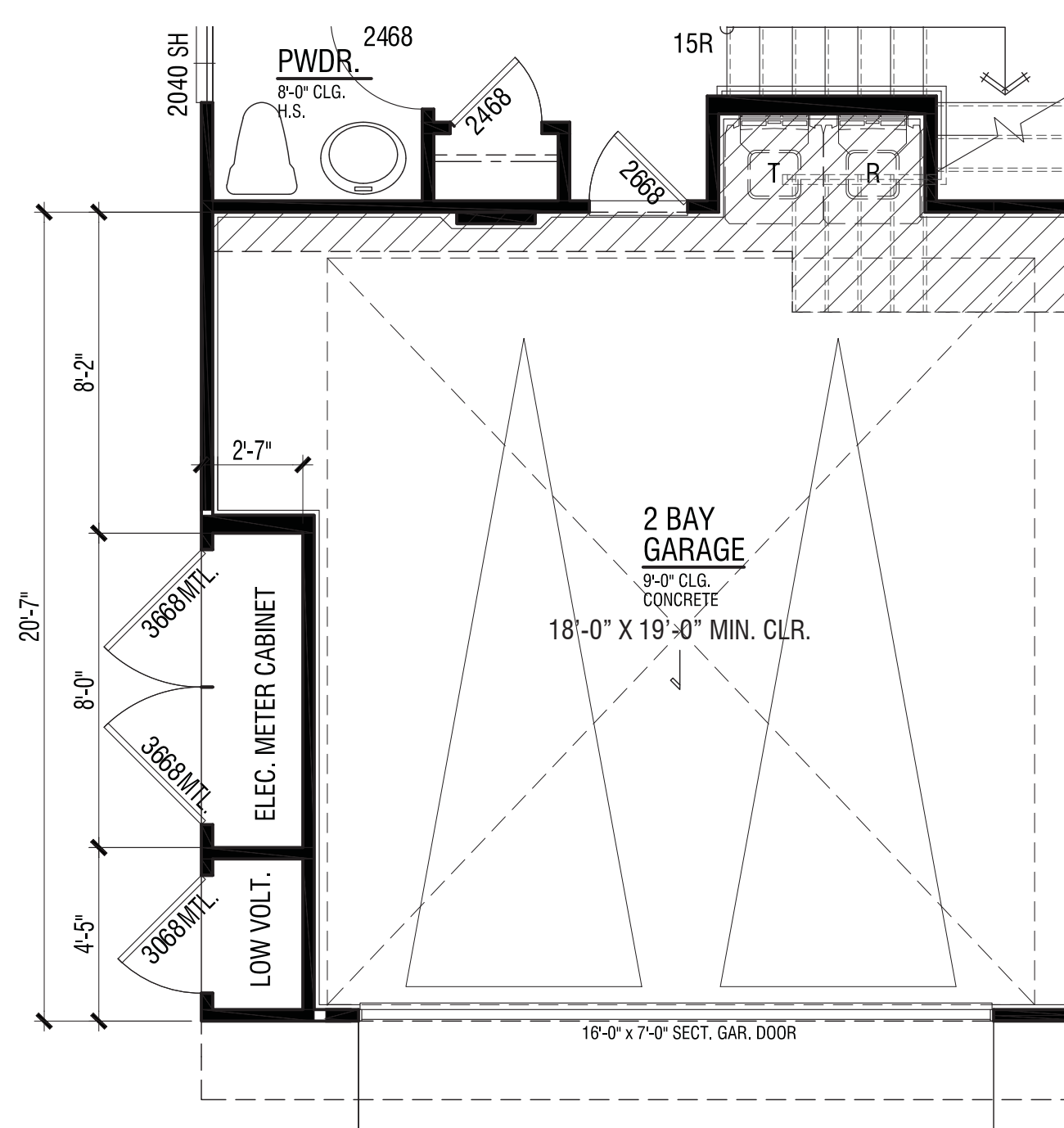
ARCHITECTS . PLANNERS . DESIGNERS



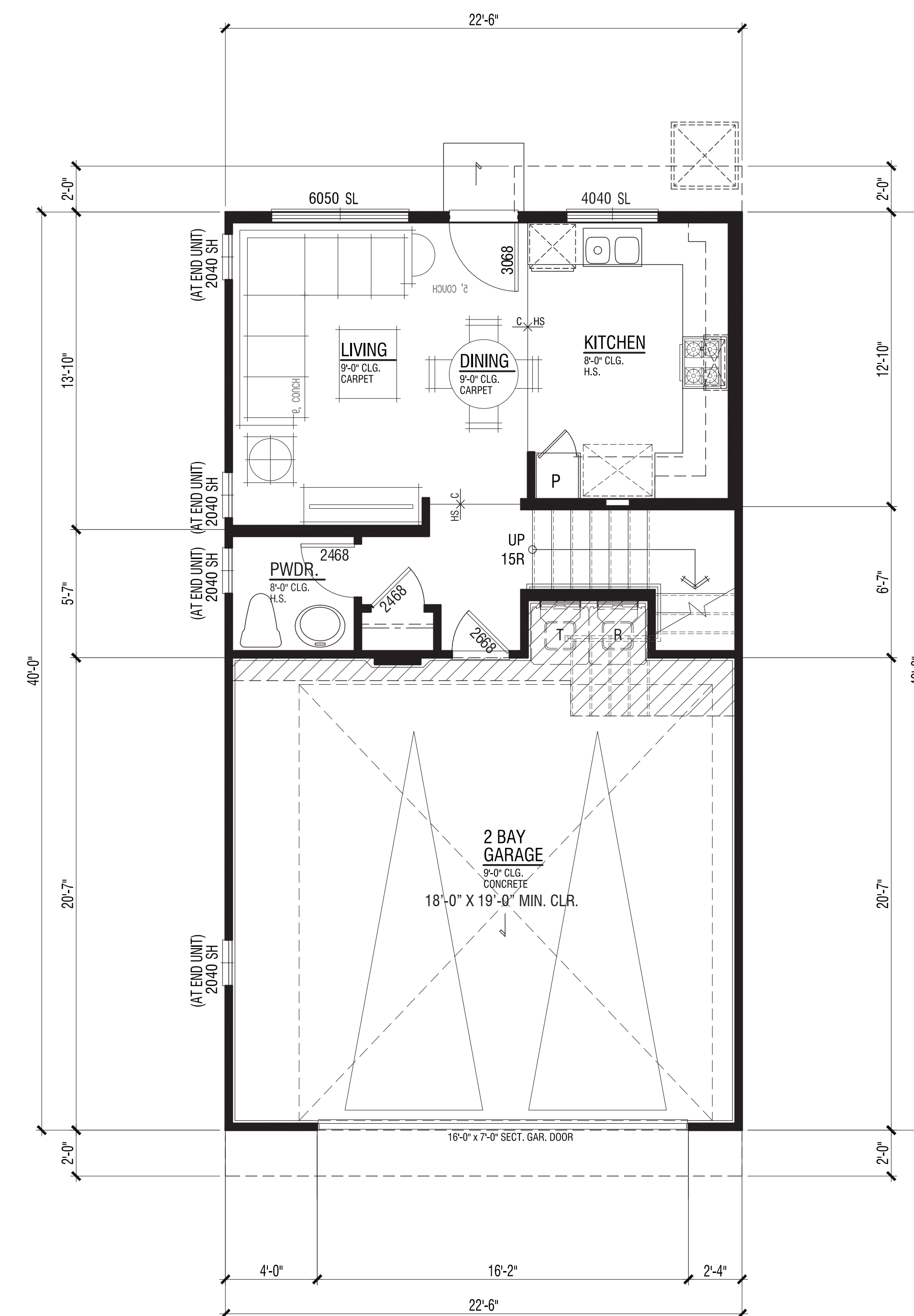
ORANGE COUNTY . LOS ANGELES . BAY AREA



SECOND FLOOR - 892 S.F.



END UNIT W/ UTILITY RM. (PLAN 7X)



FIRST FLOOR - 425 S.F.

Plan 3

3 Bdrm | 2.5 Bath | Loft |
 2- BAY Garage |
 1,316 S.F.
 8' | 8' Plates

Paseo Townhomes

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA



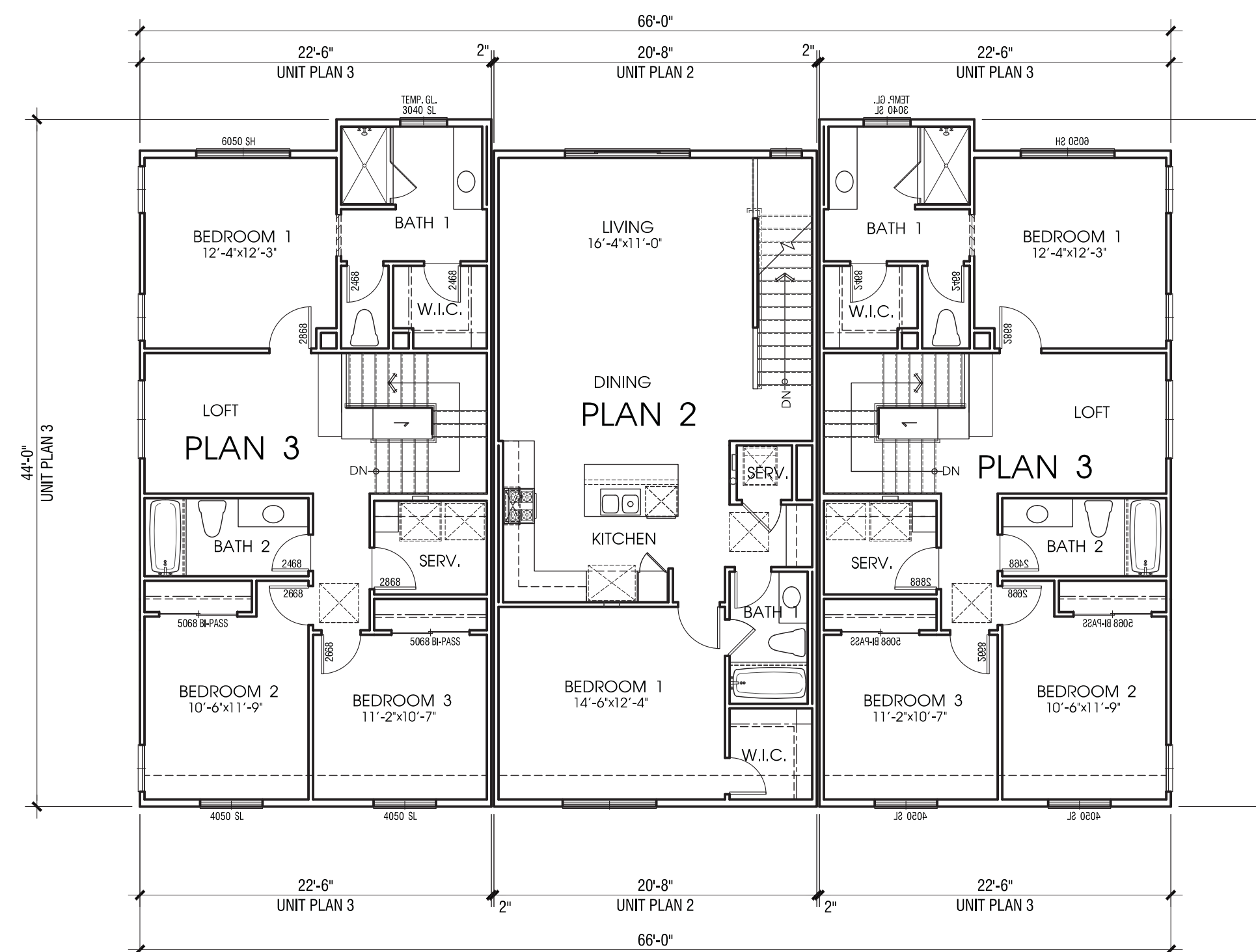
SPECIAL MULTI-FAMILY DESIGN REVIEW

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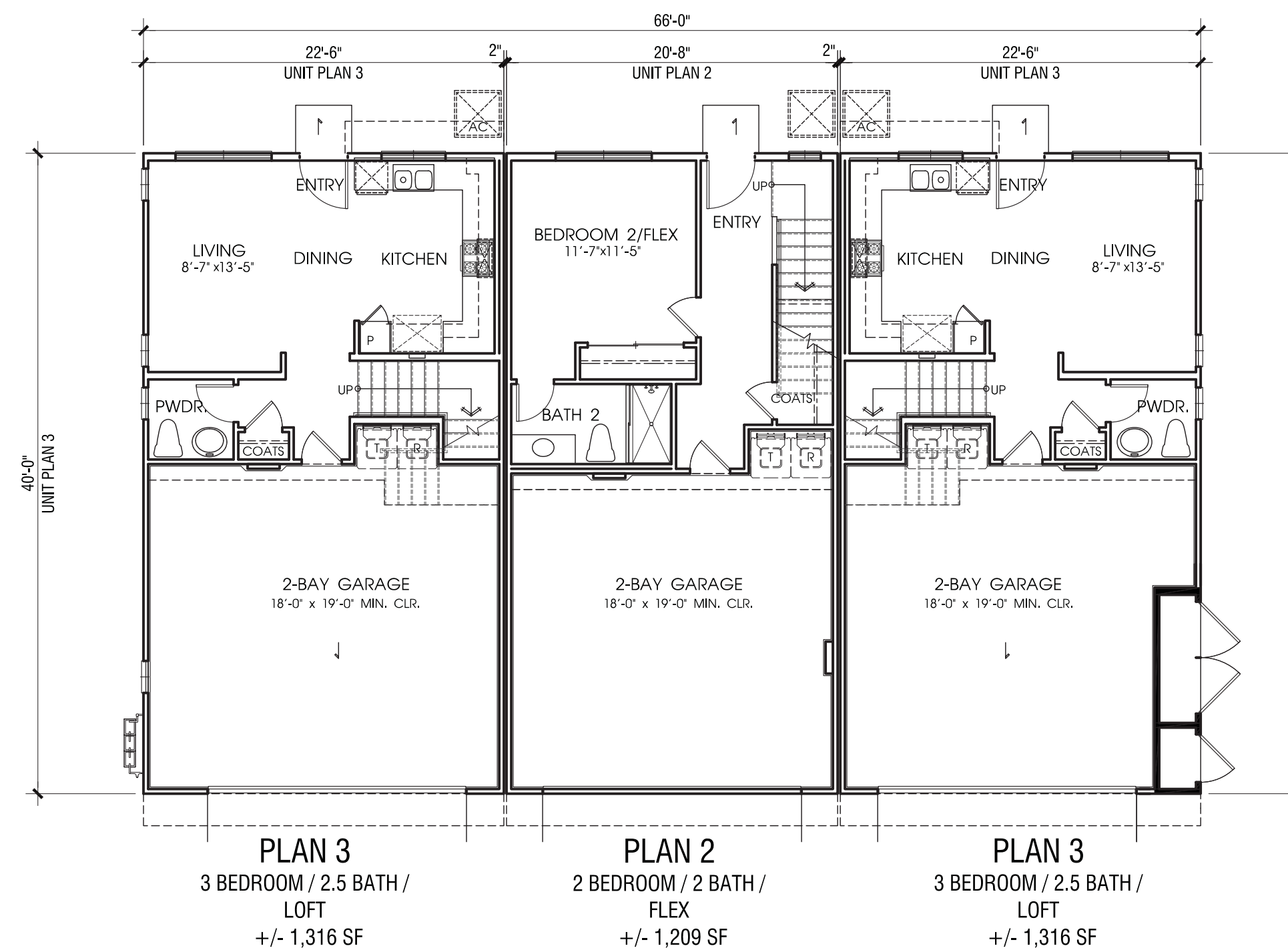
ARCHITECTS . PLANNERS . DESIGNERS



ORANGE COUNTY . LOS ANGELES . BAY AREA



Second Floor



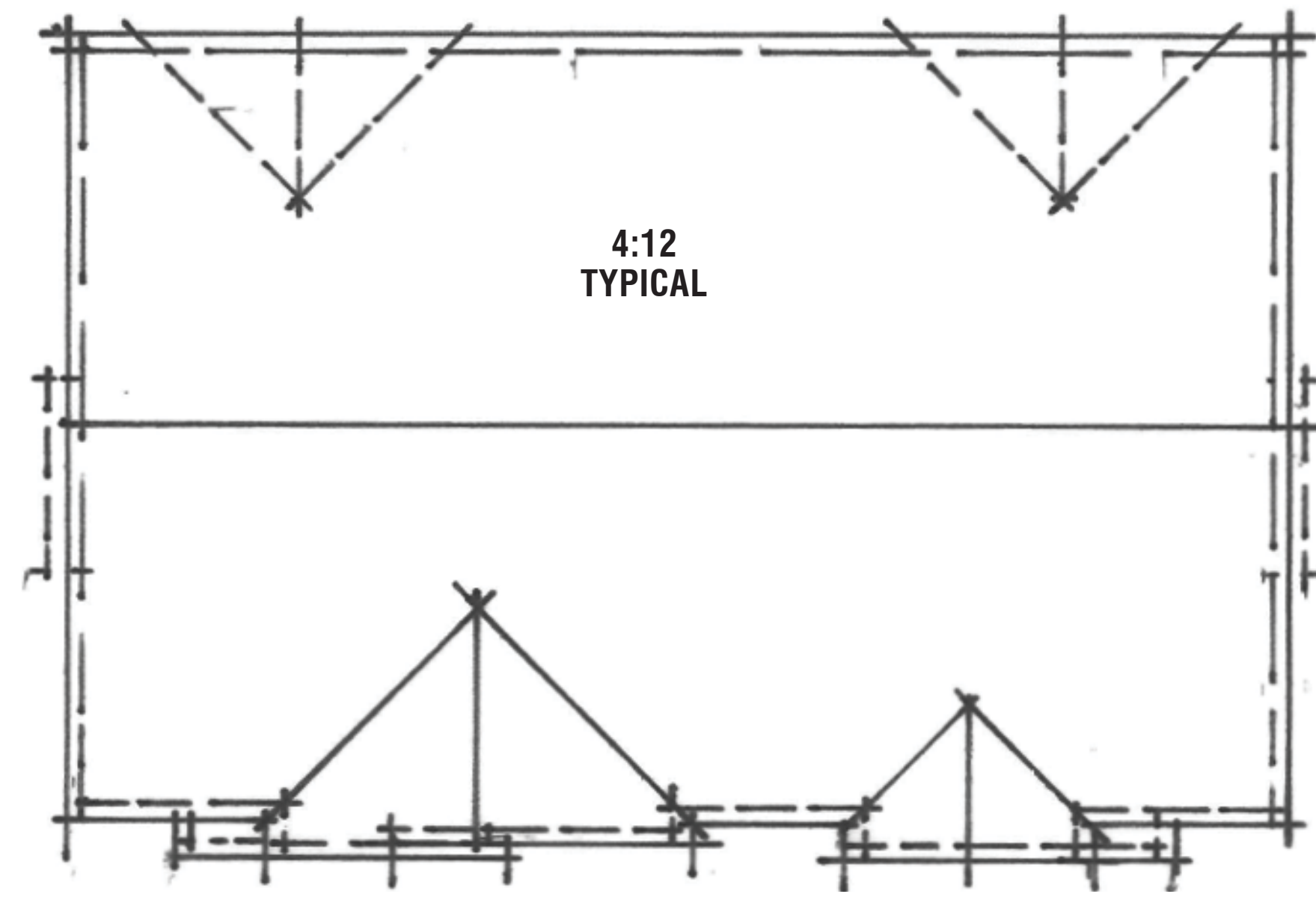
First Floor

Composite Floor Plans - 3 Plex Paseo Townhomes

HIGHGROVE TOWN CENTER COUNTY OF RIVERSIDE, CA

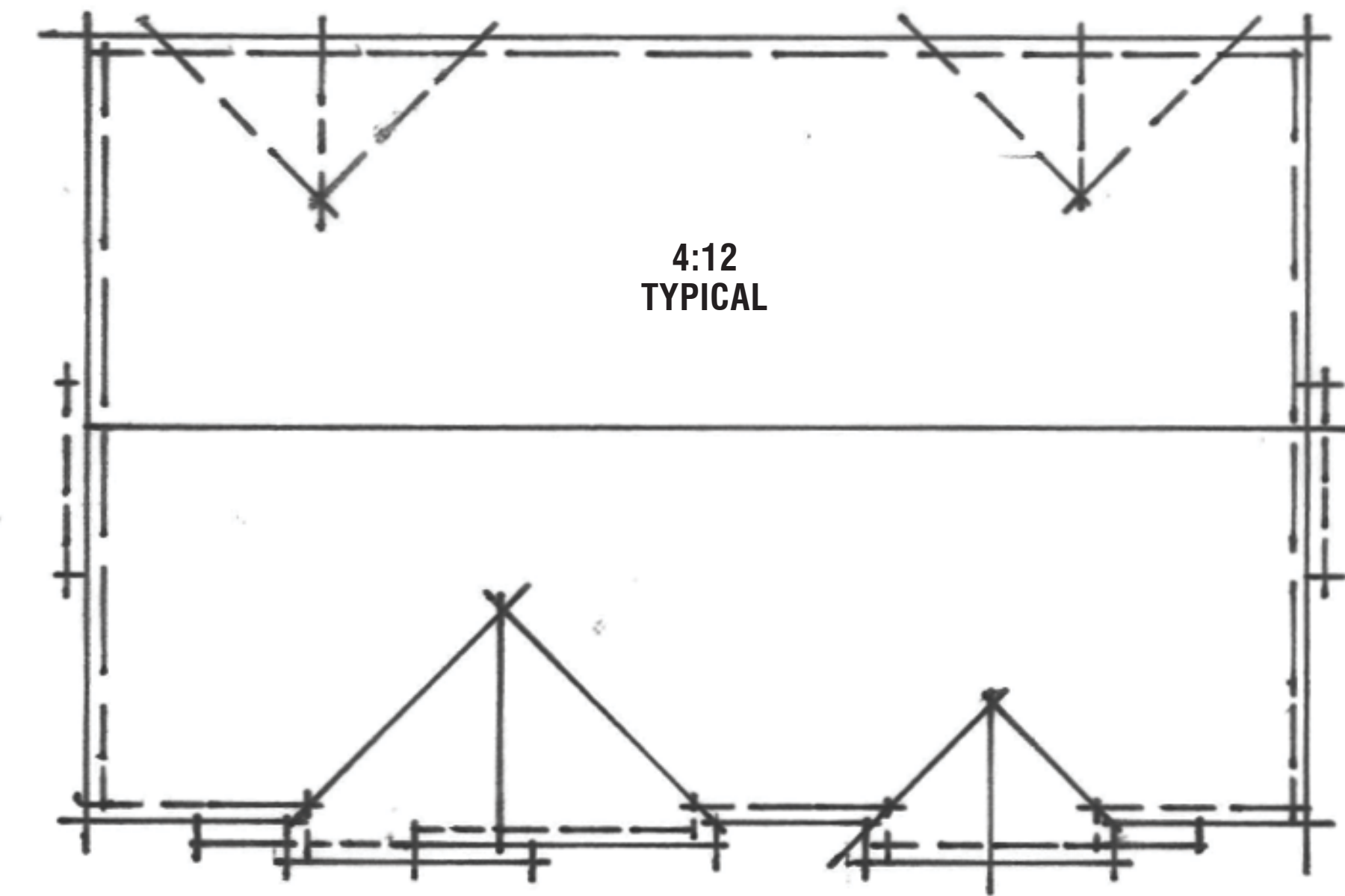
NOTE: SQUARE FOOTAGE MAY VARY DUE TO METHOD OF CALCULATION.

Occupancy: R3/U
Townhomes per CRC
Type of Const.: VB (non-rated)
Sprinkler System: NFPA-13D



SPANISH

Eave 12" | Rake 12"
Concrete "S" Tile



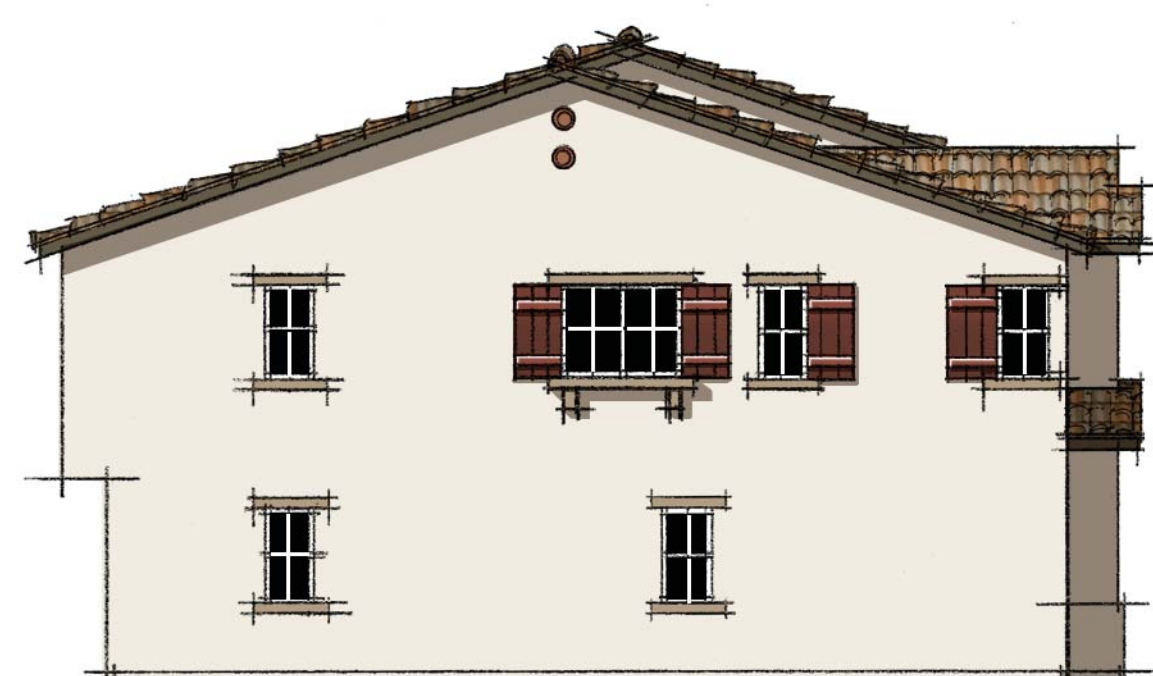
CRAFTSMAN

Eave 18" | Rake 12"
Concrete Flat Tile

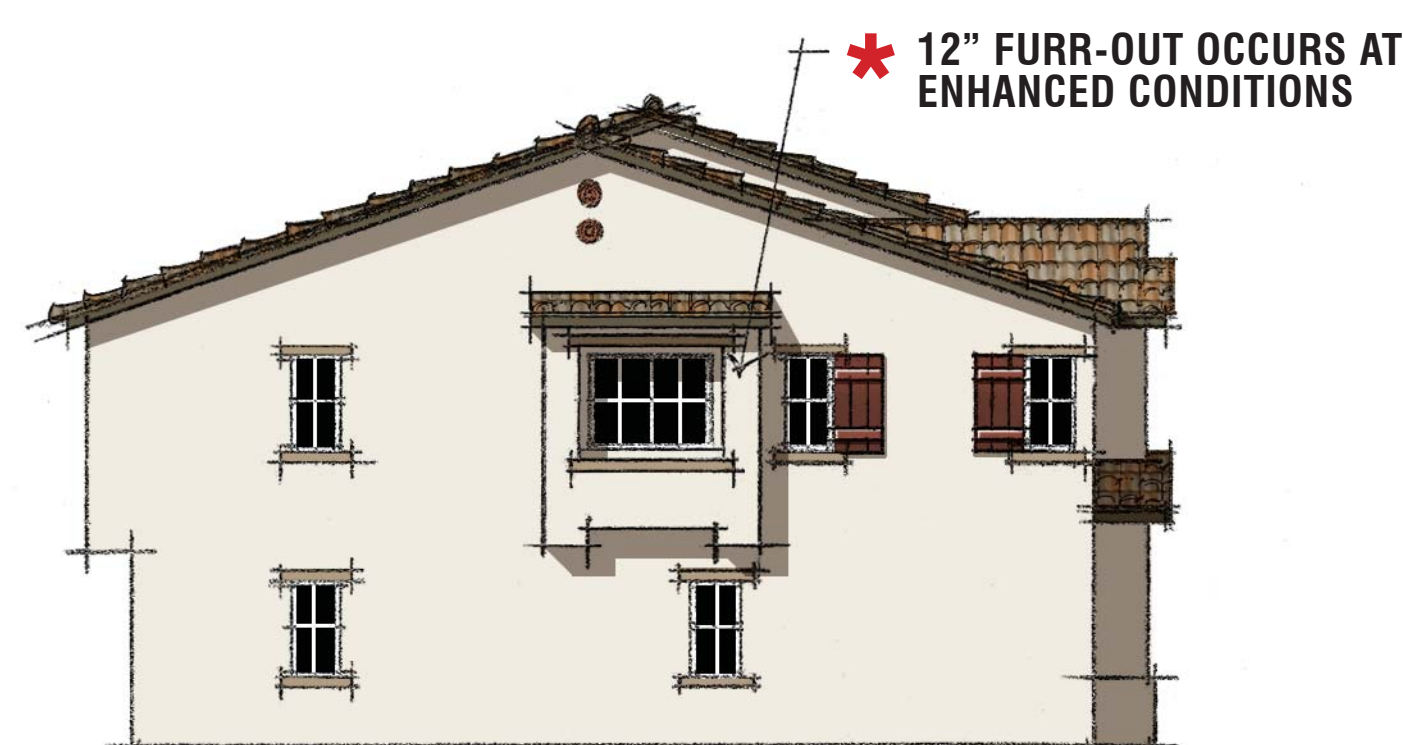
PASEO TOWNHOMES | BUILDING 100
Roof Plans

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA



Plan 3R STANDARD LEFT



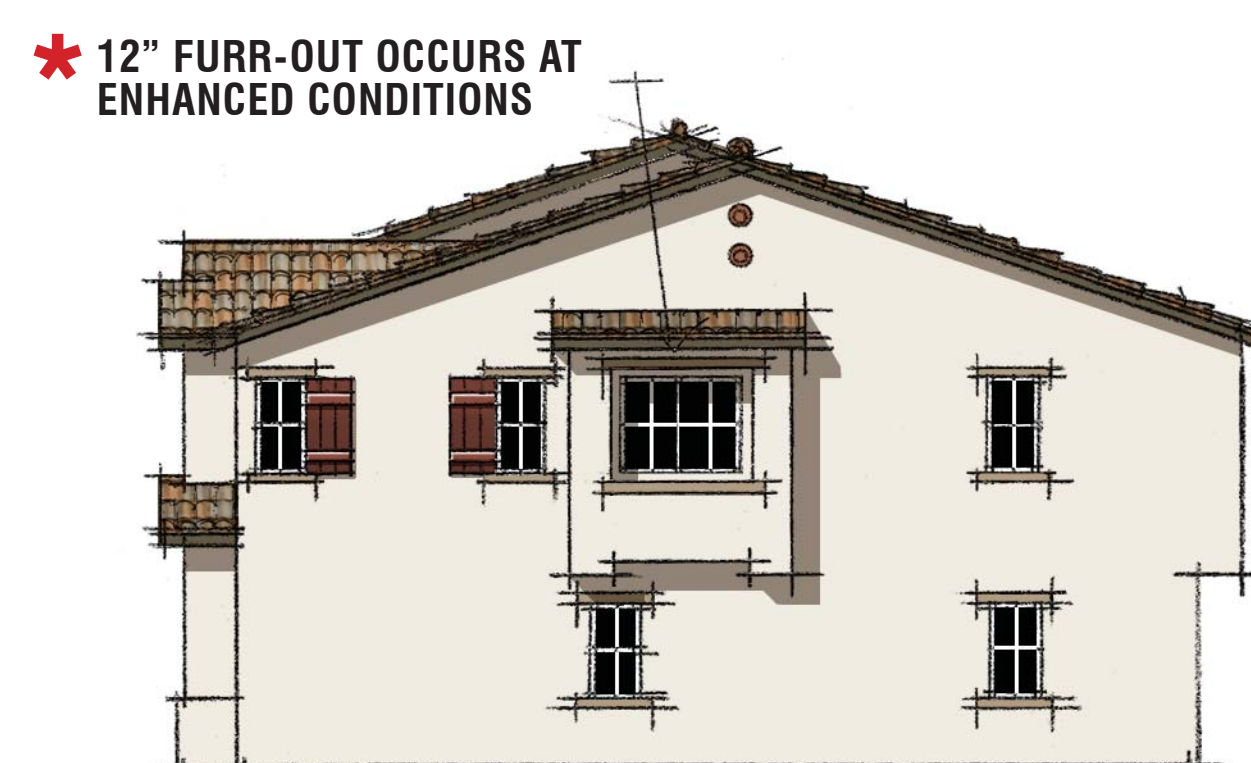
Plan 3R ENHANCED LEFT



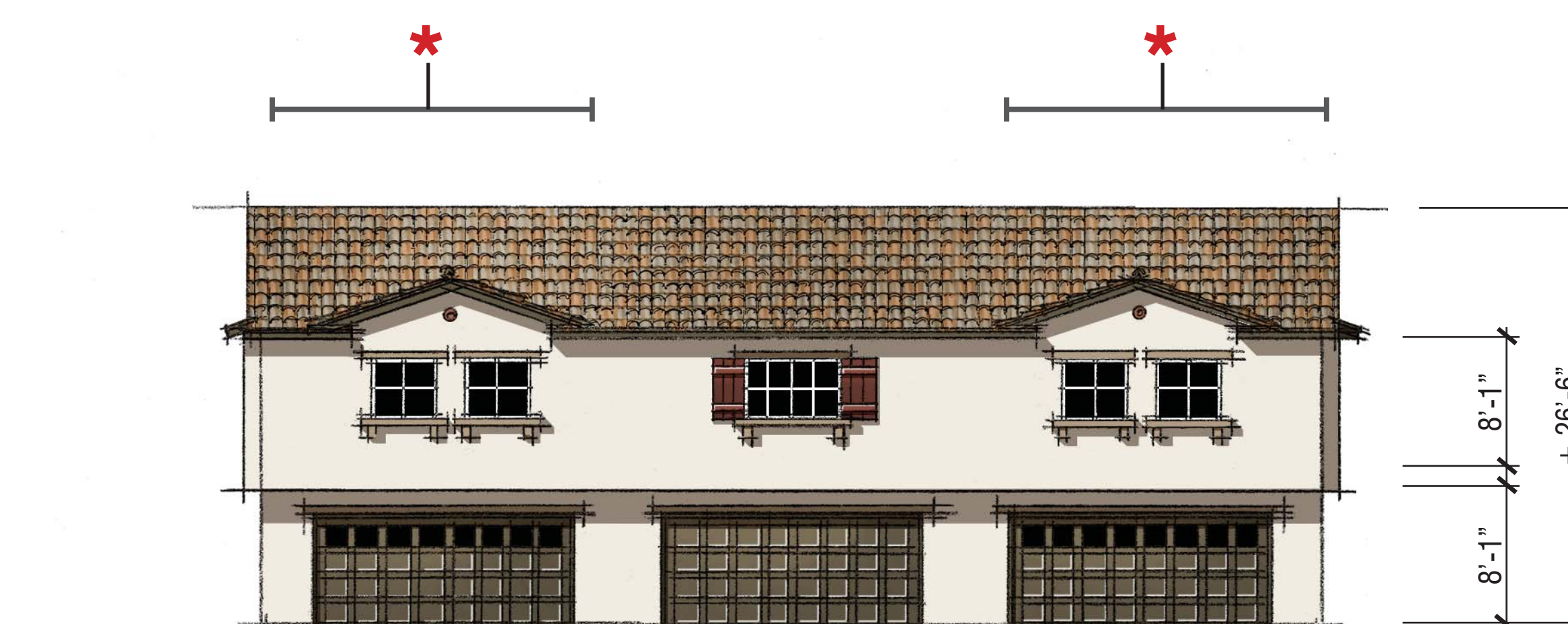
Plan 3R Plan 2 Plan 3 FRONT



Plan 3 STANDARD RIGHT



Plan 3 ENHANCED RIGHT



Plan 3 Plan 2 Plan 3R REAR

STYLE ELEMENTS: SPANISH

- Concrete Medium 'S' Tile
- Stucco With 16/20 Finish
- Foam Shutters
- Stucco Wrapped Potsshelf With Brackets
- Stucco Wrapped Shaped Corbels
- Gable End Foam Pipe Detail
- Windows With Divided Lights
- Stucco Wrapped Trim
- Stucco Wrapped Column
- Solid Panel Entry Door

- * EXTENDED GABLE END ROOF TO BE STANDARD AT ENHANCED ELEVATIONS SEE SITE PLAN FOR REQUIRED LOCATIONS.
- * MINIMUM OF 25% GARAGE DOORS SHALL HAVE GLAZING SHOWN ON PLAN 3'S (257) PLAN 3 UNITS/846 TOTAL DU=30.4 OF UNITS

PASEO TOWNHOMES | BUILDING 100

Spanish Elevations

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

FOREMOST CENTER STREET, LLC.

Note: Artist's Conception; Colors, Materials And Application May Vary.

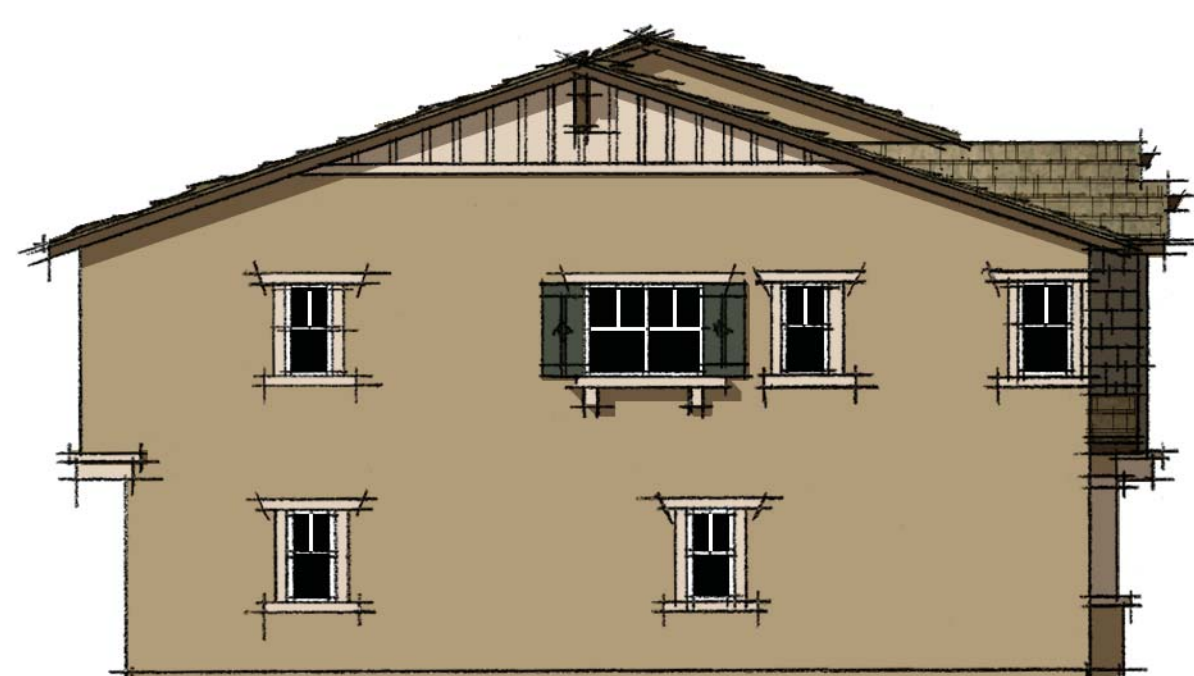
SPECIAL MULTI-FAMILY DESIGN REVIEW

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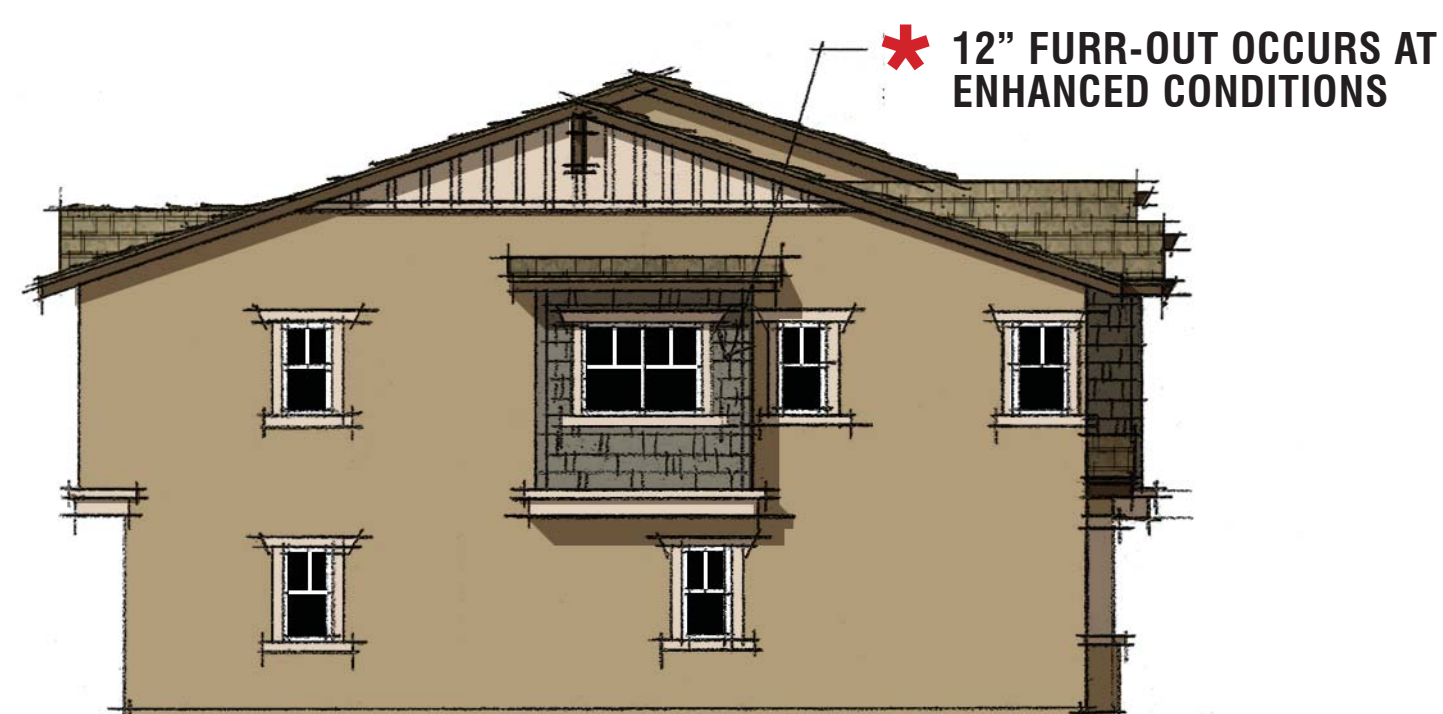
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ORANGE COUNTY . LOS ANGELES . BAY AREA
Page 12 of 430



Plan 3R STANDARD LEFT



Plan 3R ENHANCED LEFT



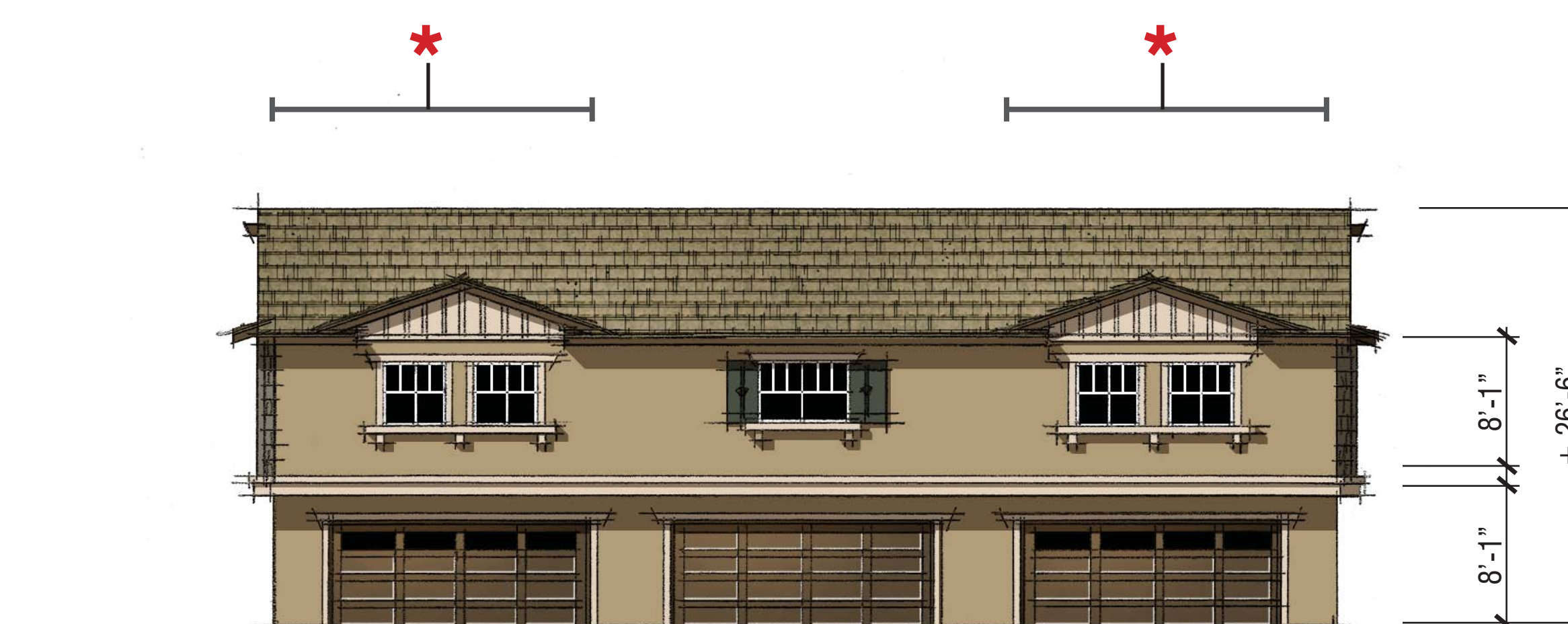
Plan 3R Plan 2 Plan 3 FRONT



Plan 3 STANDARD RIGHT



Plan 3 ENHANCED RIGHT



Plan 3 Plan 2 Plan 3R REAR

STYLE ELEMENTS: CRAFTSMAN

- Flat Concrete Tile
- Stucco With 16/20 Finish
- Cementitious Fiber Shake Siding
- Wood Outlookers
- Stucco Wrapped Shaped Corbels
- Stucco Wrapped Board And Batten Siding
- Windows With Divided Lights
- Stucco Wrapped Trim
- Stucco Wrapped Columns
- Solid Panel Entry Door

- * EXTENDED GABLE END ROOF TO BE STANDARD AT ENHANCED ELEVATIONS SEE SITE PLAN FOR REQUIRED LOCATIONS.
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PASEO TOWNHOMES | BUILDING 100

Craftsman Elevations

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

FOREMOST CENTER STREET, LLC.

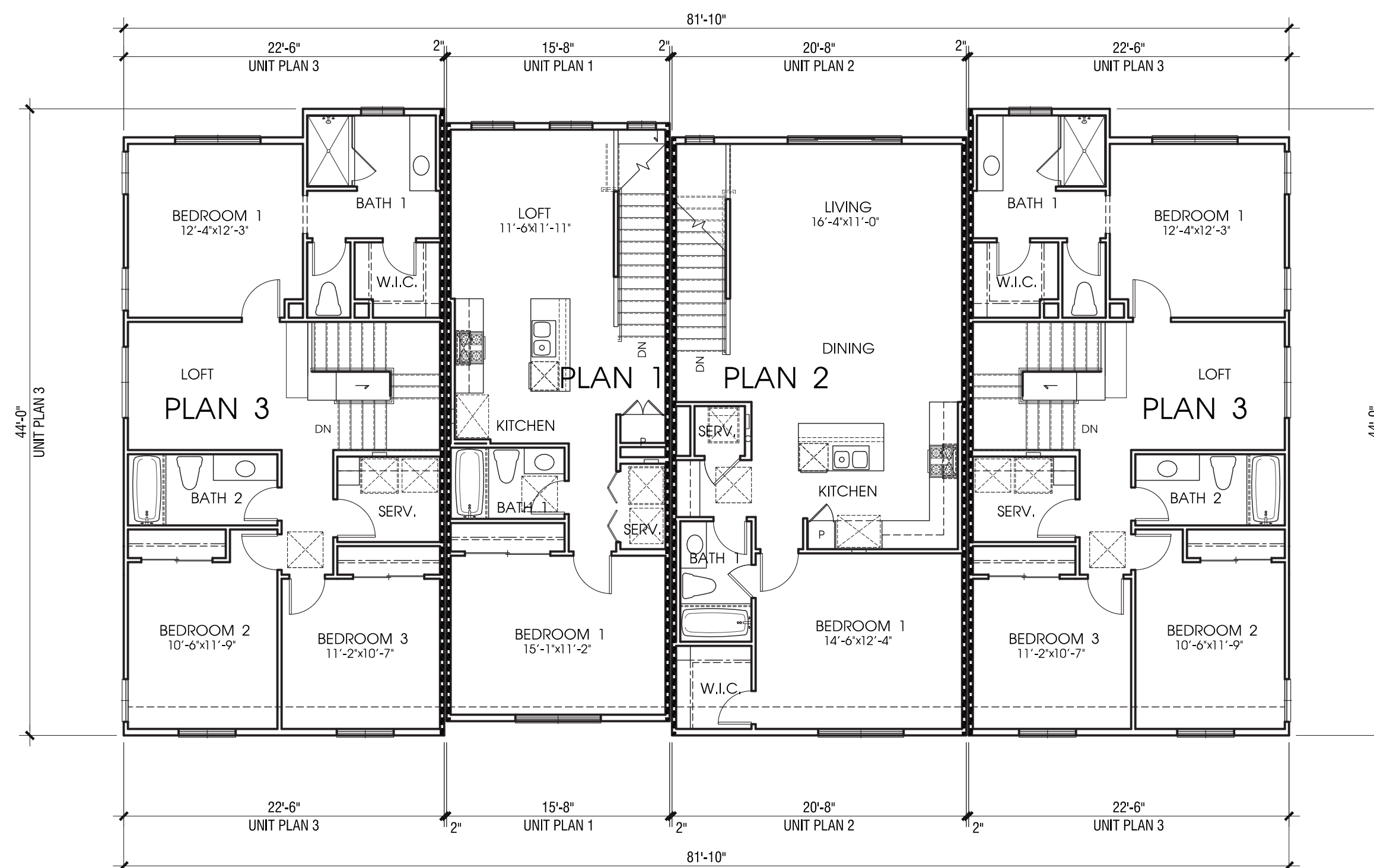
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SPECIAL MULTI-FAMILY DESIGN REVIEW

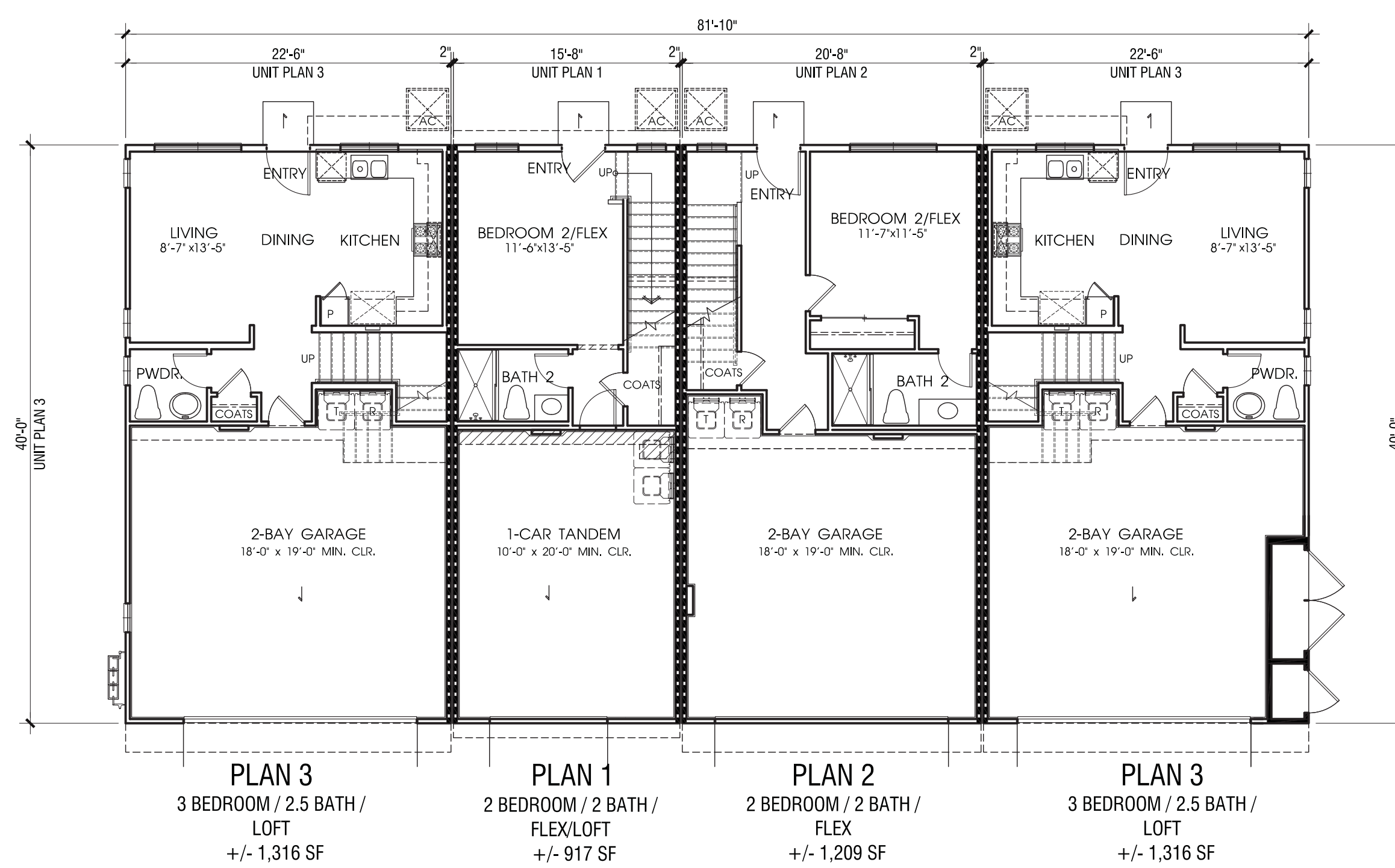
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1.7
0 4 8 16





Second Floor



First Floor

Composite Floor Plans - 4 Plex Paseo Townhomes

HIGHGROVE TOWN CENTER COUNTY OF RIVERSIDE, CA

Occupancy: R3/U
Townhomes per CRC
Type of Const.: VB (non-rated)
Sprinkler System: NFPA-13D

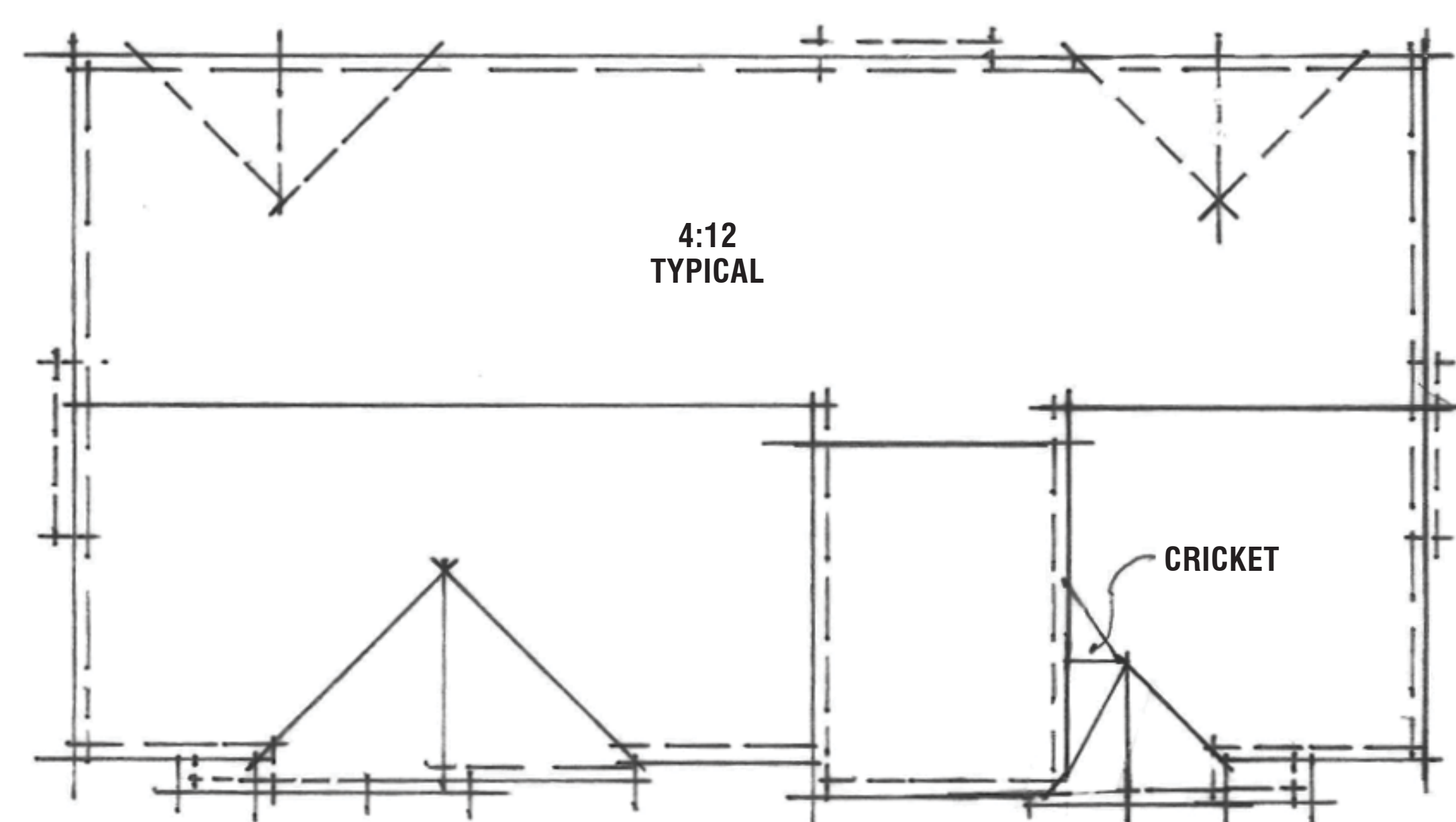
NOTE: SQUARE FOOTAGE MAY VARY DUE TO METHOD OF CALCULATION.

**FOREMOST CENTER
STREET, LLC.**

ADMINISTRATIVE APPROVAL

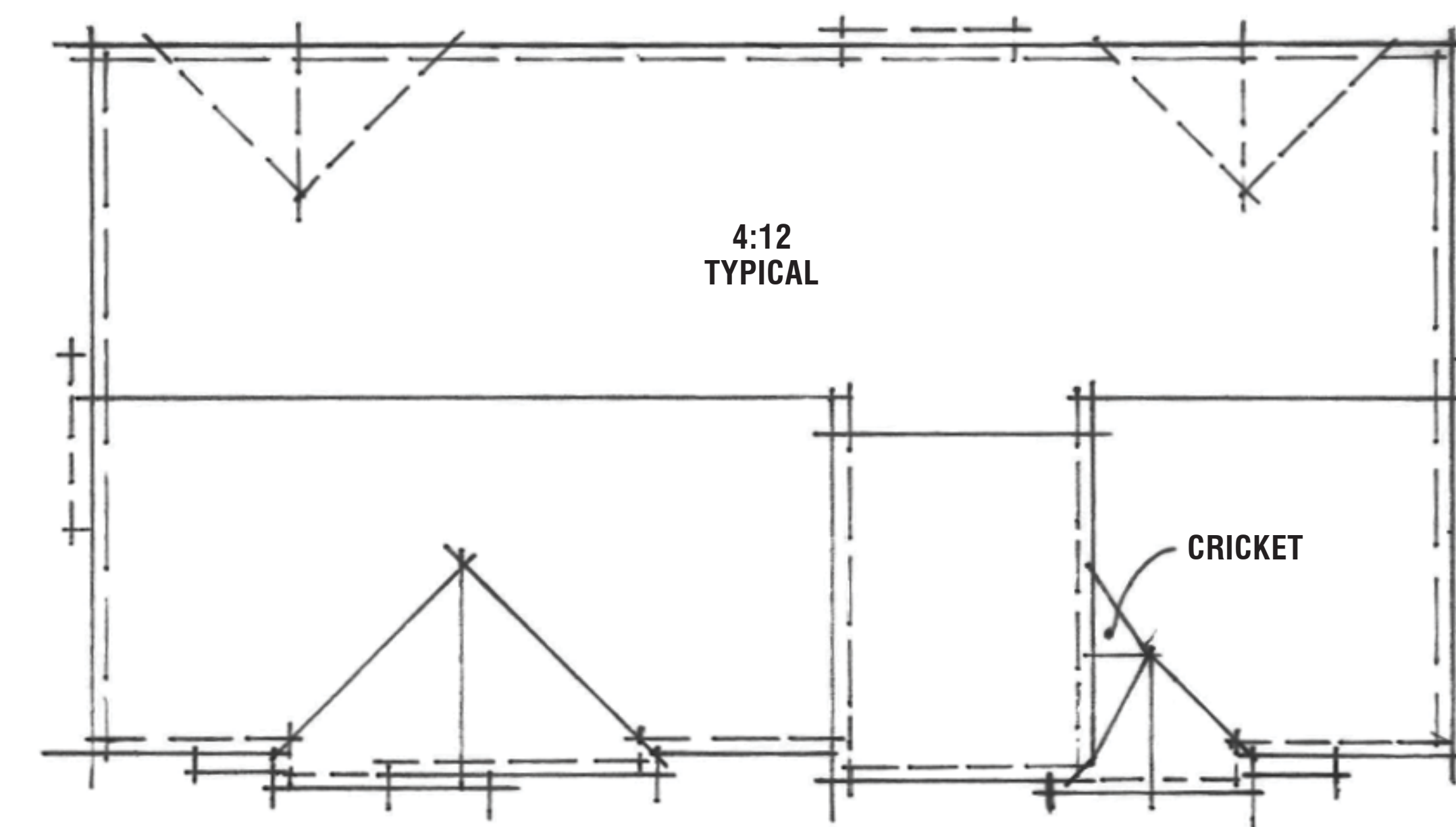
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Page 14 of 430



SPANISH

Eave 12" | Rake 12"
Concrete "S" Tile



CRAFTSMAN

Eave 18" | Rake 12"
Concrete Flat Tile

PASEO TOWNHOMES | BUILDING 200
Roof Plans

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

FOREMOST CENTER STREET, LLC.

ADMINISTRATIVE APPROVAL

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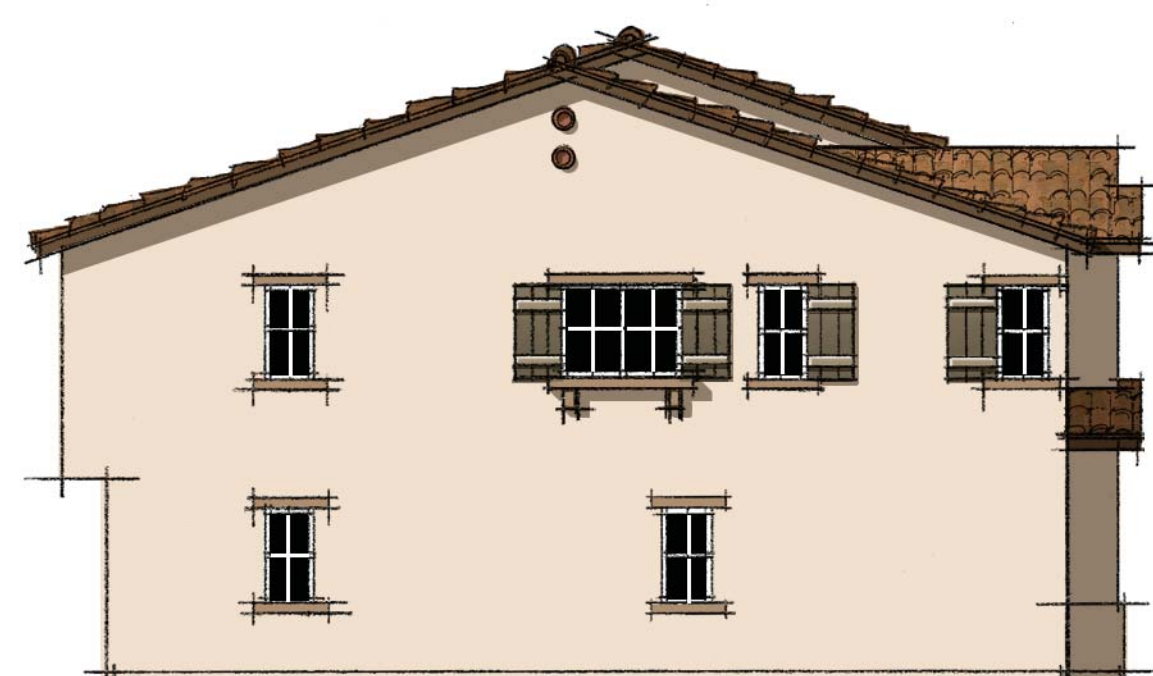
SPECIAL MULTI-FAMILY DESIGN REVIEW

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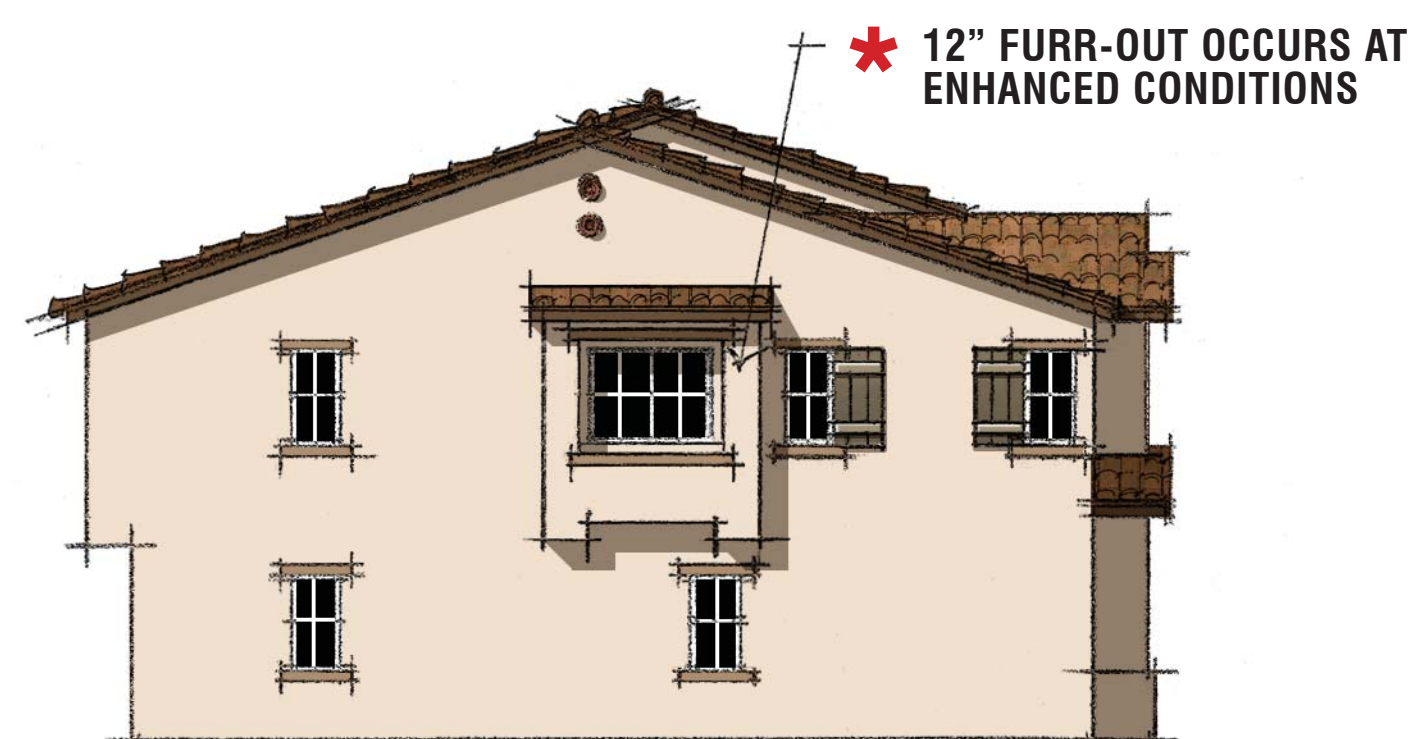
ARCHITECTS . PLANNERS . DESIGNERS



ORANGE COUNTY . LOS ANGELES . BAY AREA



Plan 3R STANDARD LEFT



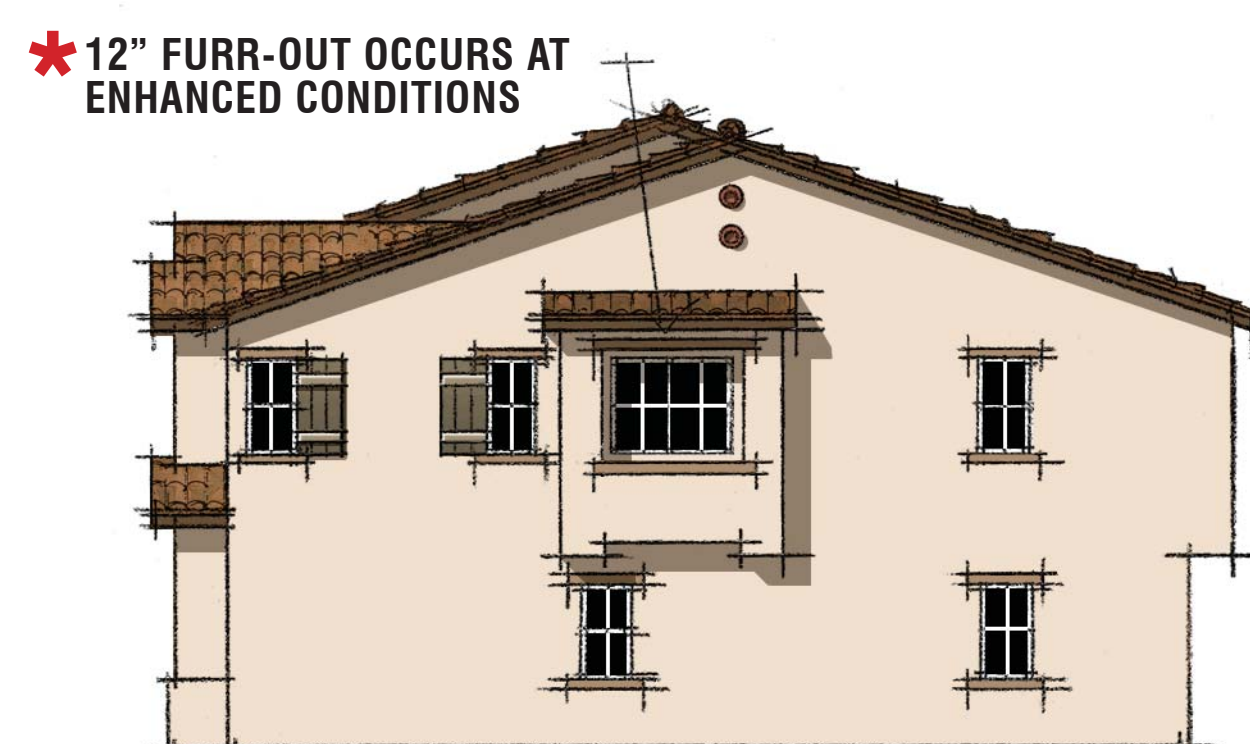
Plan 3R ENHANCED LEFT



Plan 3R Plan 2 Plan 1 Plan 3 FRONT



Plan 3 STANDARD RIGHT



Plan 3 ENHANCED RIGHT



Plan 3 Plan 1 Plan 2 Plan 3R REAR

STYLE ELEMENTS: SPANISH

- Concrete Medium 'S' Tile
- Stucco With 16/20 Finish
- Foam Shutters
- Stucco Wrapped Potsshelf With Brackets
- Stucco Wrapped Shaped Corbels
- Gable End Foam Pipe Detail
- Windows With Divided Lights
- Stucco Wrapped Trim
- Stucco Wrapped Column
- Solid Panel Entry Door

- * EXTENDED GABLE END ROOF TO BE STANDARD AT ENHANCED ELEVATIONS SEE SITE PLAN FOR REQUIRED LOCATIONS.
- * MINIMUM OF 25% GARAGE DOORS SHALL HAVE GLAZING SHOWN ON PLAN 3'S (257) PLAN 3 UNITS/846 TOTAL DU=30.4 OF UNITS

PASEO TOWNHOMES | BUILDING 200

Spanish Elevations

FOREMOST CENTER STREET, LLC.

ADMINISTRATIVE APPROVAL

Note: Artist's Conception; Colors, Materials And Application May Vary.

HIGHGROVE TOWN CENTER

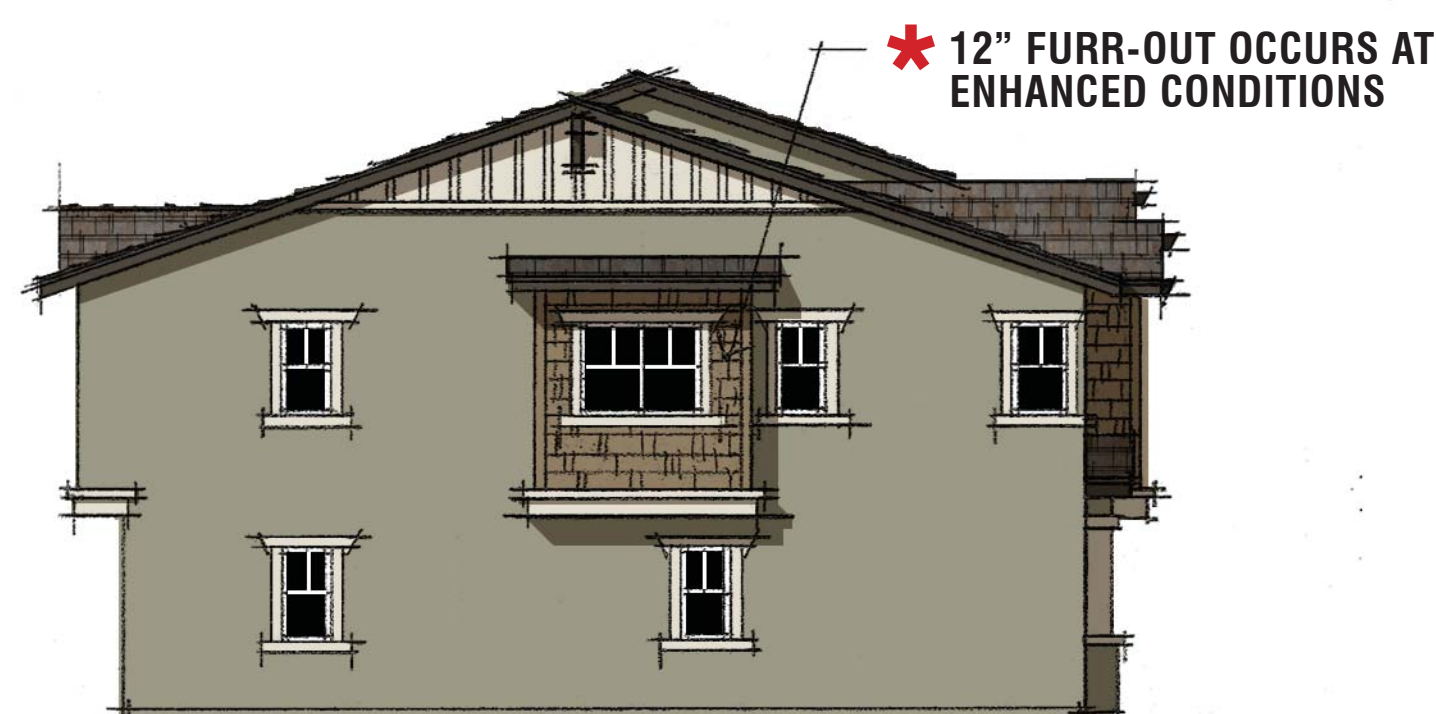
COUNTY OF RIVERSIDE, CA

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SPECIAL MULTI-FAMILY DESIGN REVIEW
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WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA
Page 16 of 430



Plan 3R STANDARD LEFT



Plan 3R ENHANCED LEFT



Plan 3R Plan 2 Plan 1 Plan 3 FRONT



Plan 3 STANDARD RIGHT



Plan 3 ENHANCED RIGHT



Plan 3 Plan 1 Plan 2 Plan 3R REAR

STYLE ELEMENTS: CRAFTSMAN

- Flat Concrete Tile
- Stucco With 16/20 Finish
- Cementitious Fiber Shake Siding
- Wood Outlookers
- Stucco Wrapped Shaped Corbels
- Stucco Wrapped Board And Batten Siding
- Windows With Divided Lights
- Stucco Wrapped Trim
- Stucco Wrapped Columns
- Solid Panel Entry Door

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PASEO TOWNHOMES | BUILDING 200

Craftsman Elevations

FOREMOST CENTER STREET, LLC.

ADMINISTRATIVE APPROVAL

Note: Artist's Conception; Colors, Materials And Application May Vary.

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

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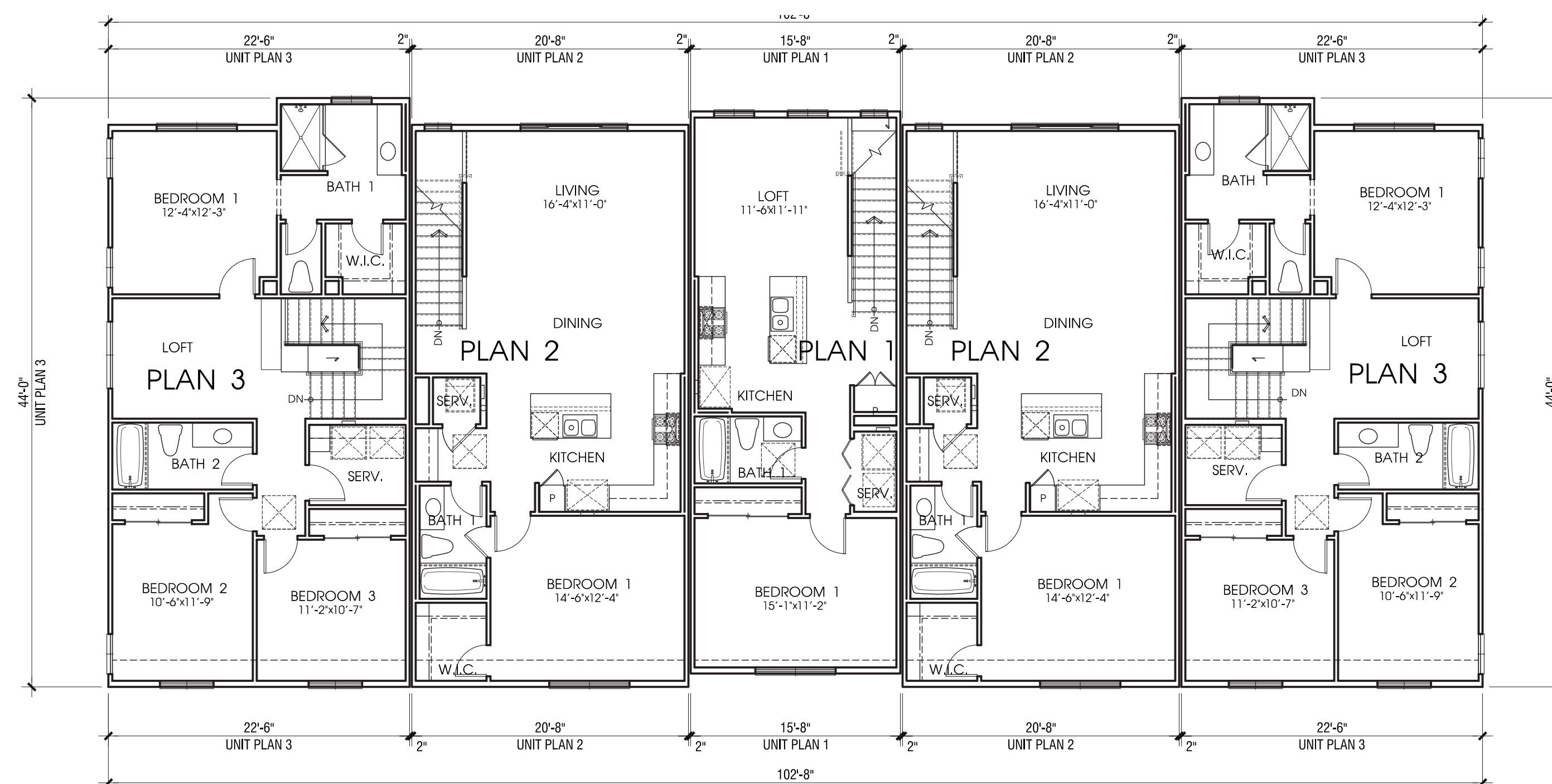
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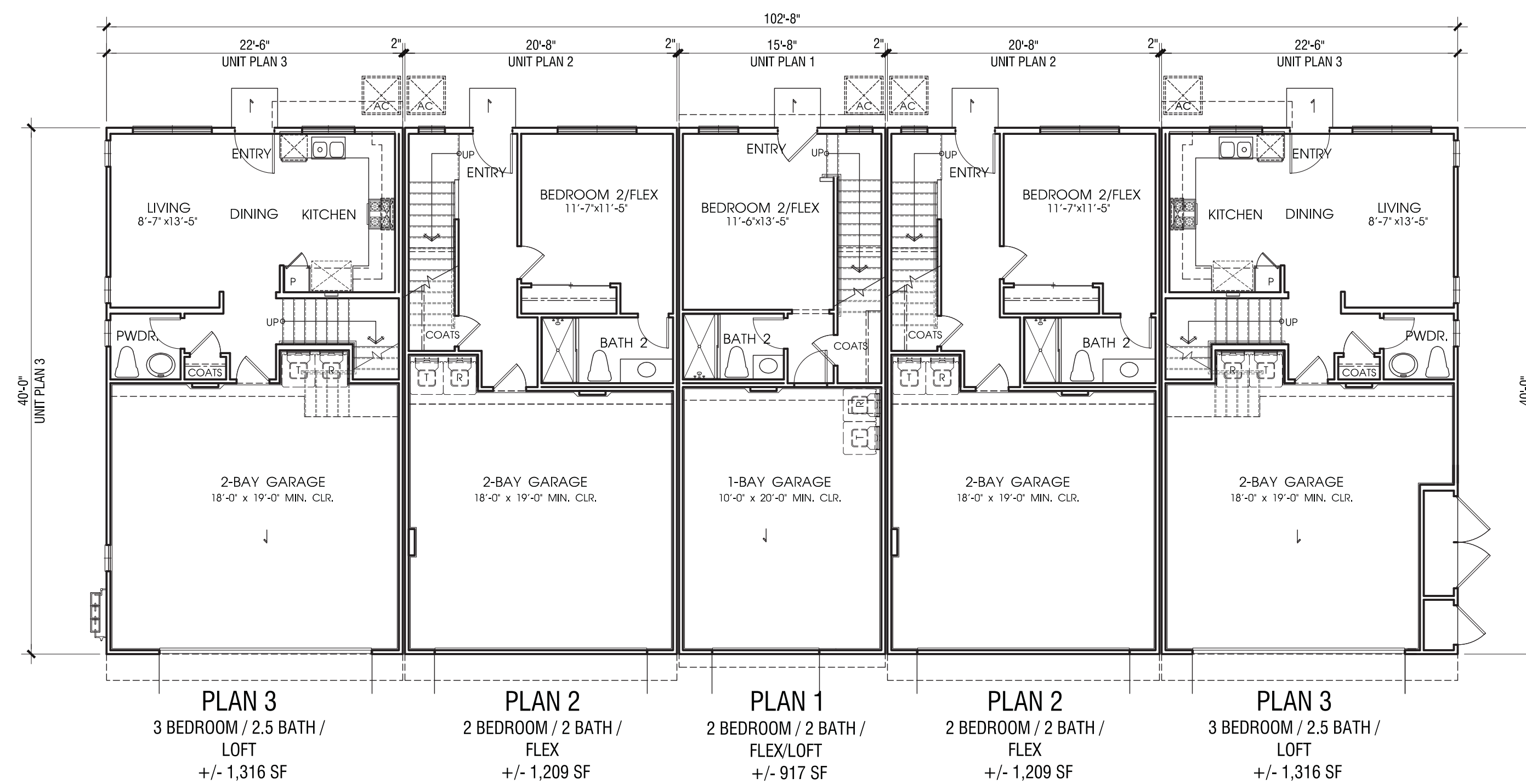
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ORANGE COUNTY . LOS ANGELES . BAY AREA



Second Floor



First Floor

Composite Floor Plans - 5 Plex Paseo Townhomes

HIGHGROVE TOWN CENTER
COUNTY OF RIVERSIDE, CA

NOTE: SQUARE FOOTAGE MAY VARY DUE TO METHOD OF CALCULATION.

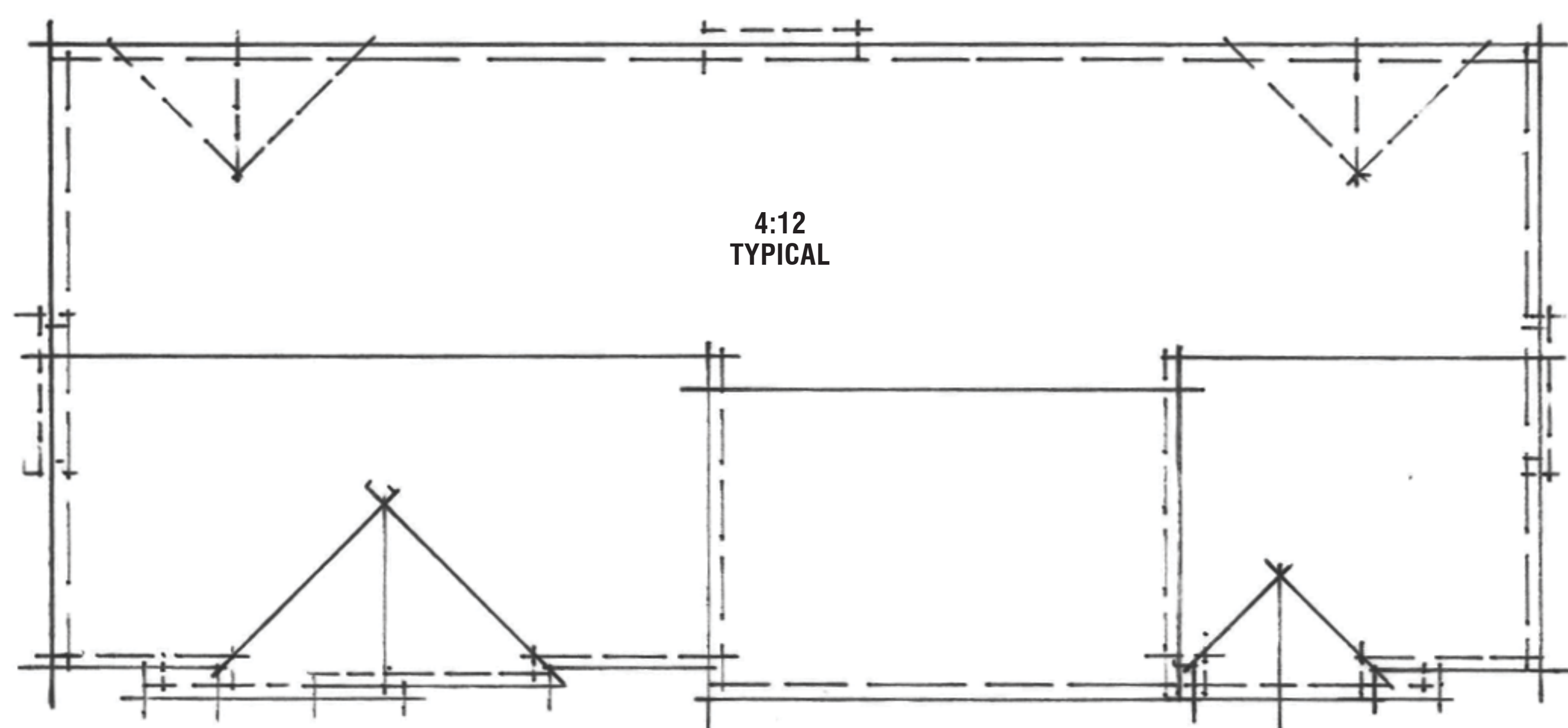
Occupancy: R3/U
Townhomes per CRC
Type of Const.: VB (non-rated)
Sprinkler System: NFPA-13D

**FOREMOST CENTER
STREET, LLC.**

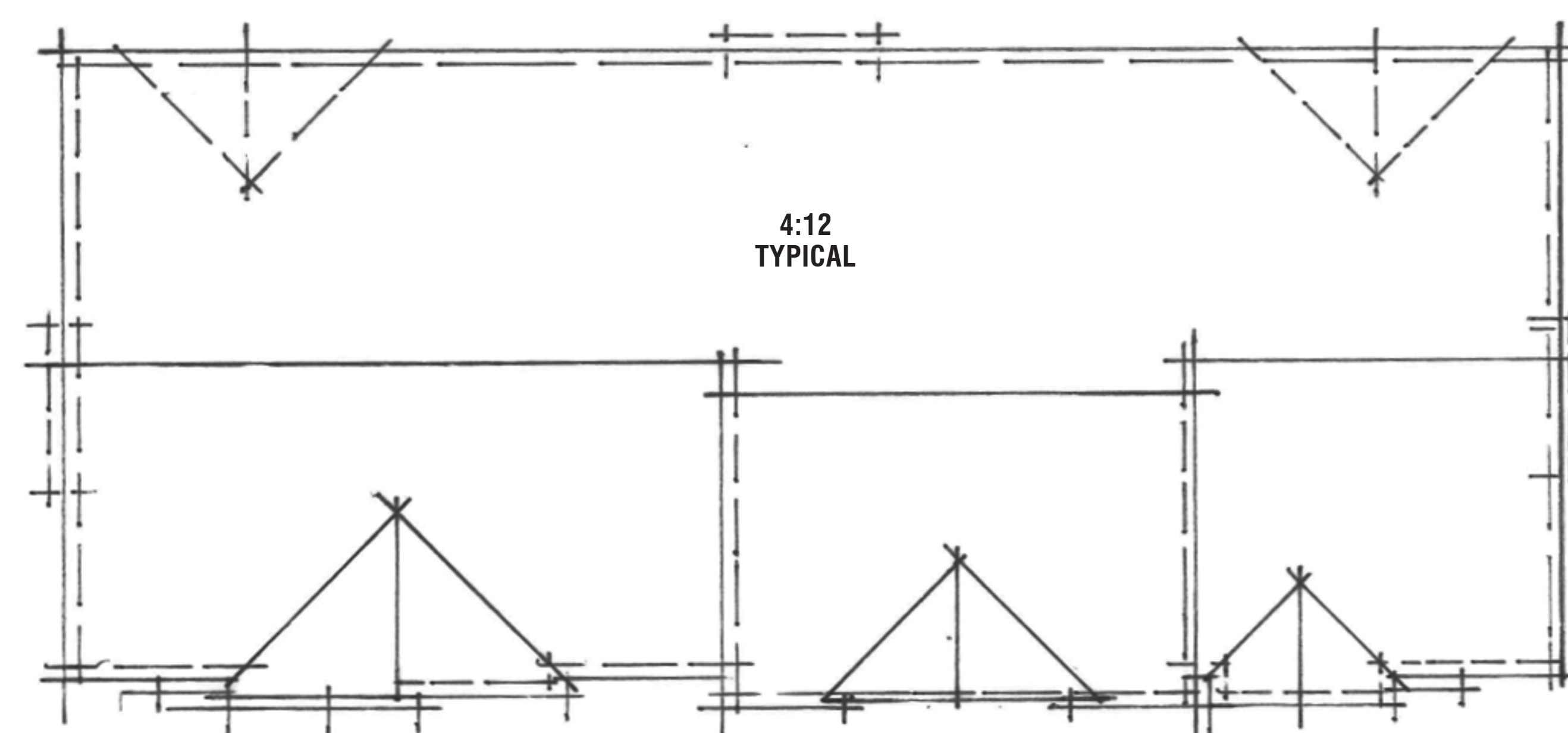
ADMINISTRATIVE APPROVAL

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WHA.
ORANGE COUNTY . LOS ANGELES . BAY AREA
Page 18 of 430

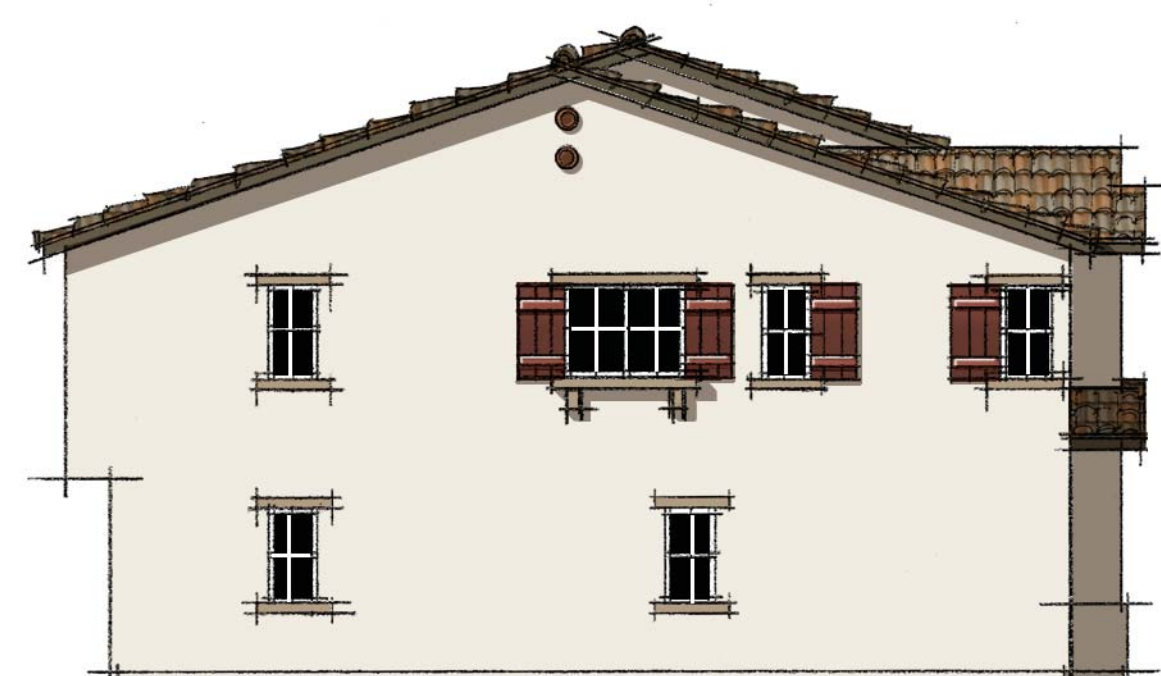


SPANISH
 Eave 12" | Rake 12"
 Concrete "S" Tile

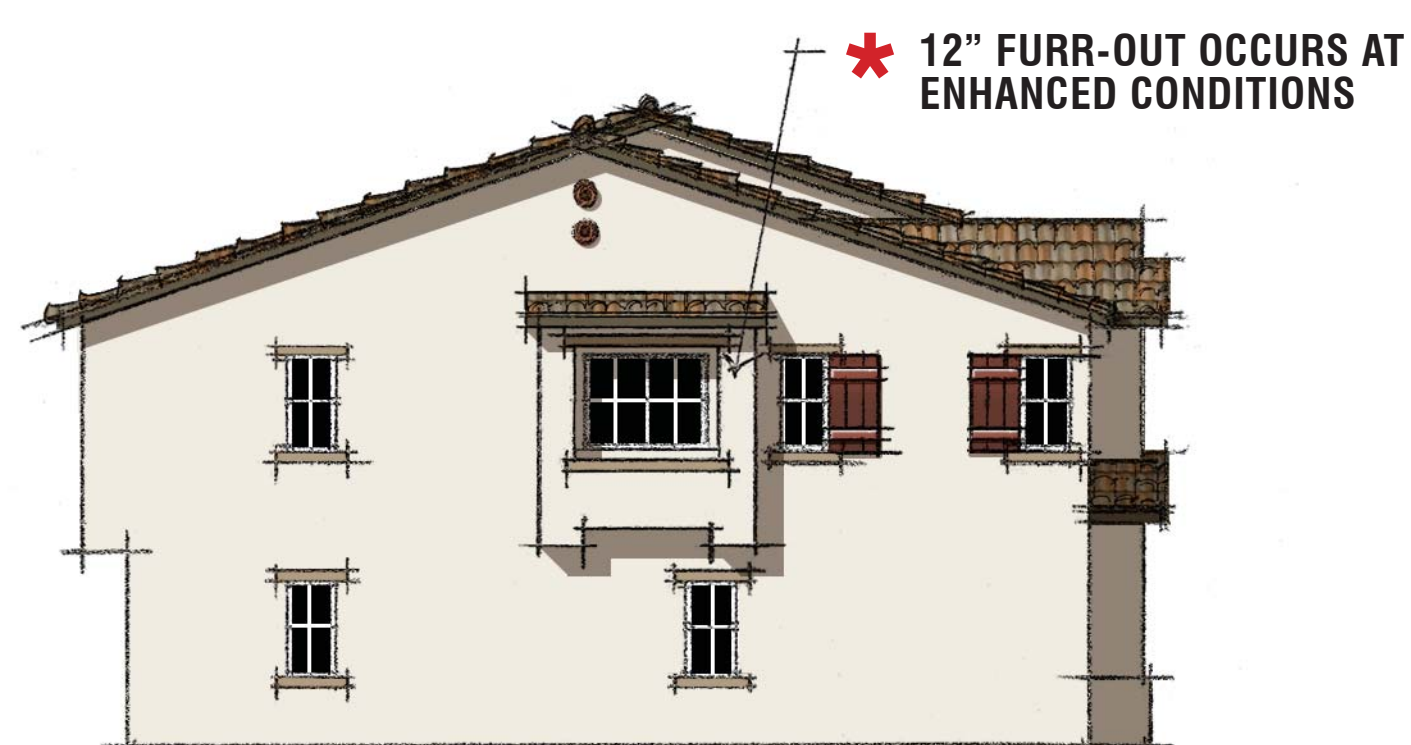


CRAFTSMAN
 Eave 18" | Rake 12"
 Concrete Flat Tile

PASEO TOWNHOUSES | BUILDING 300
Roof Plans



Plan 3R STANDARD LEFT



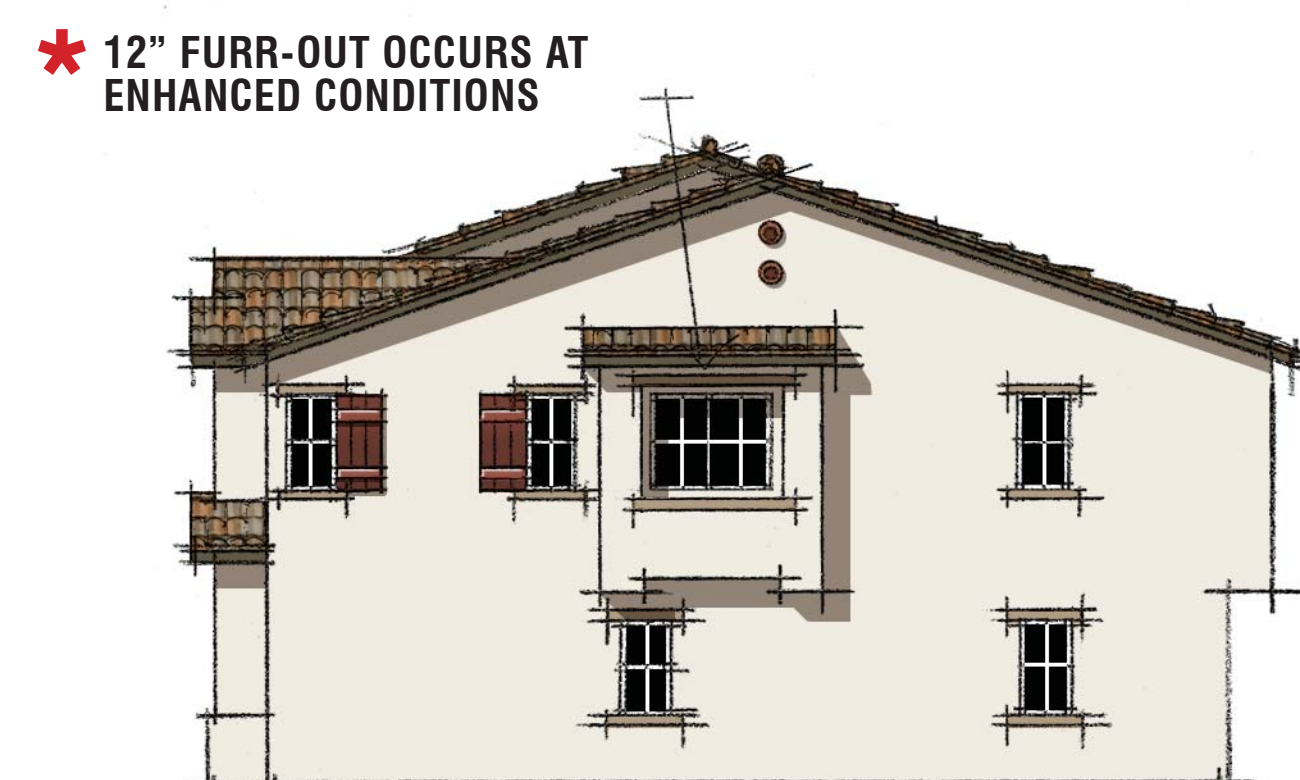
Plan 3R ENHANCED LEFT



Plan 3R Plan 2 Plan 1 Plan 2R Plan 3 FRONT



Plan 3 STANDARD RIGHT



Plan 3 ENHANCED RIGHT



Plan 3 Plan 2R Plan 1 Plan 2 Plan 3R REAR

STYLE ELEMENTS: SPANISH

- Concrete Medium 'S' Tile
- Stucco With 16/20 Finish
- Foam Shutters
- Stucco Wrapped Potsshelf With Brackets
- Stucco Wrapped Shaped Corbels
- Gable End Foam Pipe Detail
- Windows With Divided Lights
- Stucco Wrapped Trim
- Stucco Wrapped Column
- Solid Panel Entry Door

- * EXTENDED GABLE END ROOF TO BE STANDARD AT ENHANCED ELEVATIONS SEE SITE PLAN FOR REQUIRED LOCATIONS.
- * MINIMUM OF 25% GARAGE DOORS SHALL HAVE GLAZING SHOWN ON PLAN 3'S (257) PLAN 3 UNITS/846 TOTAL DU=30.4 OF UNITS

PASEO TOWNHOUSES | BUILDING 300

Spanish Elevations

FOREMOST CENTER STREET, LLC.

ADMINISTRATIVE APPROVAL

Note: Artist's Conception; Colors, Materials And Application May Vary.

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

1.14

0 4 8 16

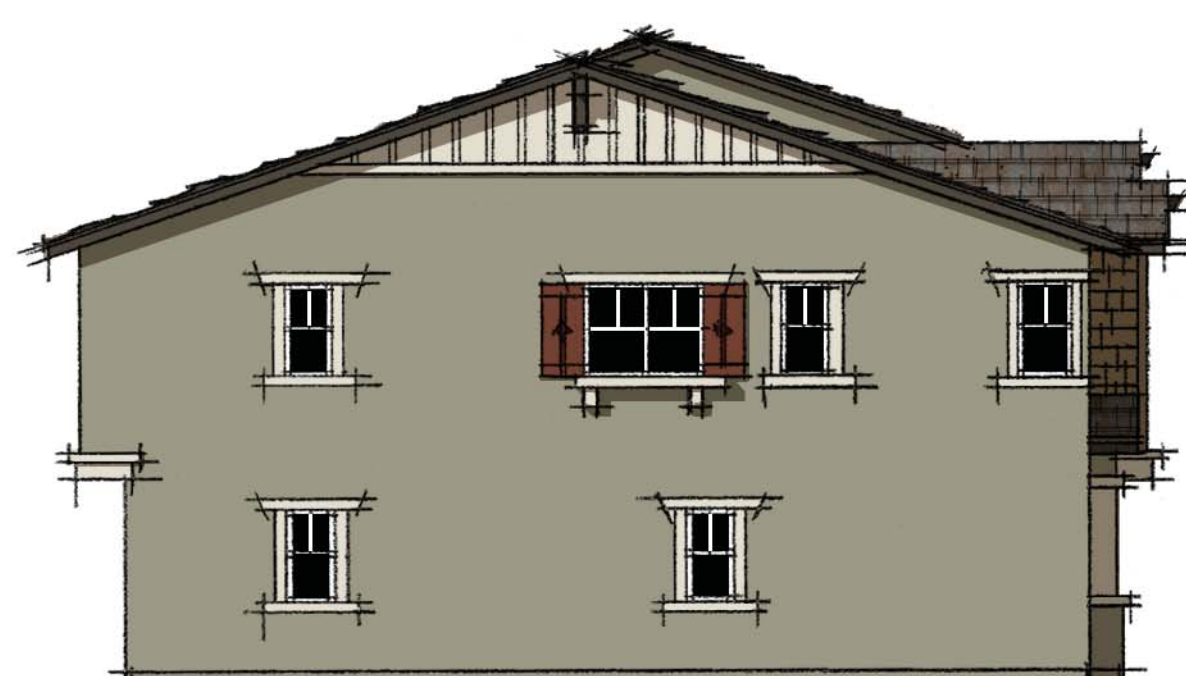
SPECIAL MULTI-FAMILY DESIGN REVIEW

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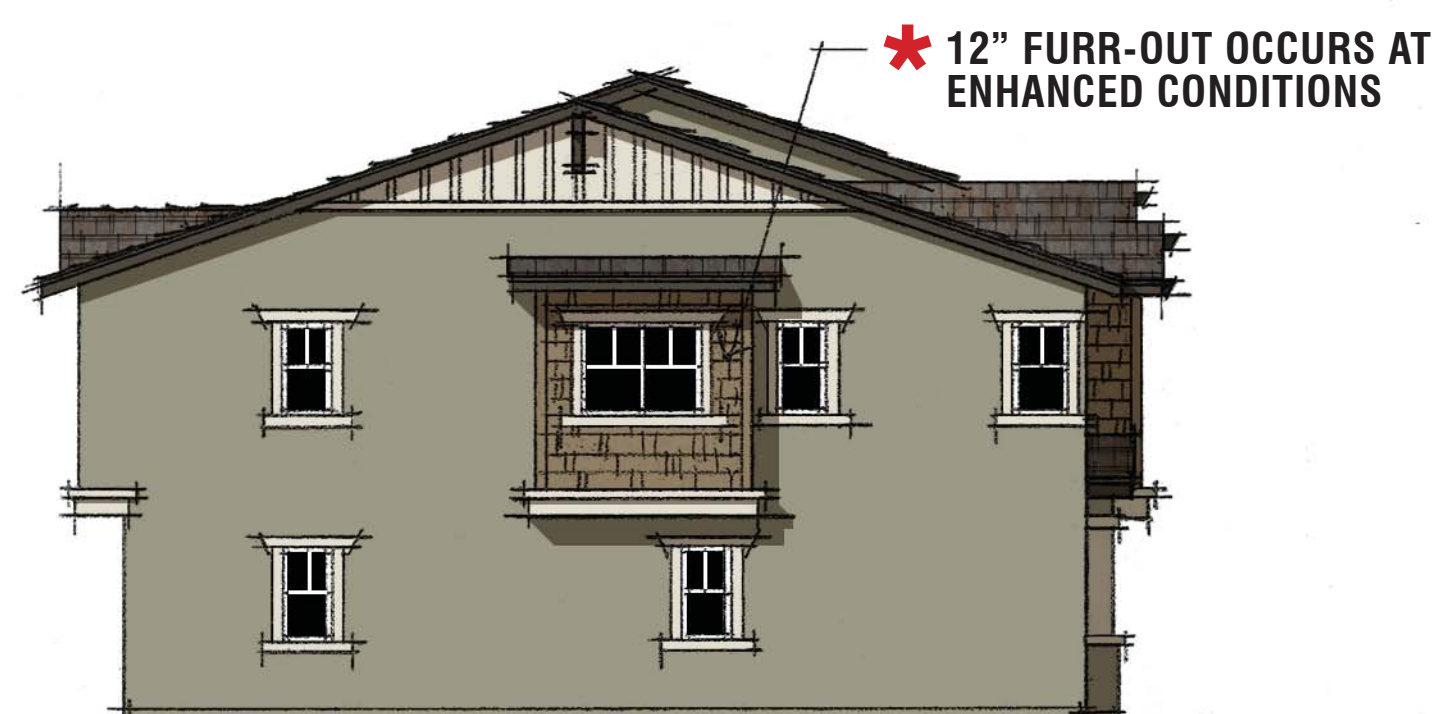
ARCHITECTS . PLANNERS . DESIGNERS



ORANGE COUNTY . LOS ANGELES . BAY AREA



Plan 3R STANDARD LEFT



Plan 3R ENHANCED LEFT



Plan 3R Plan 2 Plan 1 Plan 2R Plan 3 FRONT



Plan 3 STANDARD RIGHT



Plan 3 ENHANCED RIGHT



Plan 3 Plan 2R Plan 1 Plan 2 Plan 3R REAR

STYLE ELEMENTS: CRAFTSMAN

- Flat Concrete Tile
- Stucco With 16/20 Finish
- Cementitious Fiber Shake Siding
- Wood Outlookers
- Stucco Wrapped Shaped Corbels
- Stucco Wrapped Board And Batten Siding
- Windows With Divided Lights
- Stucco Wrapped Trim
- Stucco Wrapped Columns
- Solid Panel Entry Door

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PASEO TOWNHOMES | BUILDING 300

Craftsman Elevations

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

FOREMOST CENTER STREET, LLC.

Note: Artist's Conception; Colors, Materials And Application May Vary.

SPECIAL MULTI-FAMILY DESIGN REVIEW

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1.15

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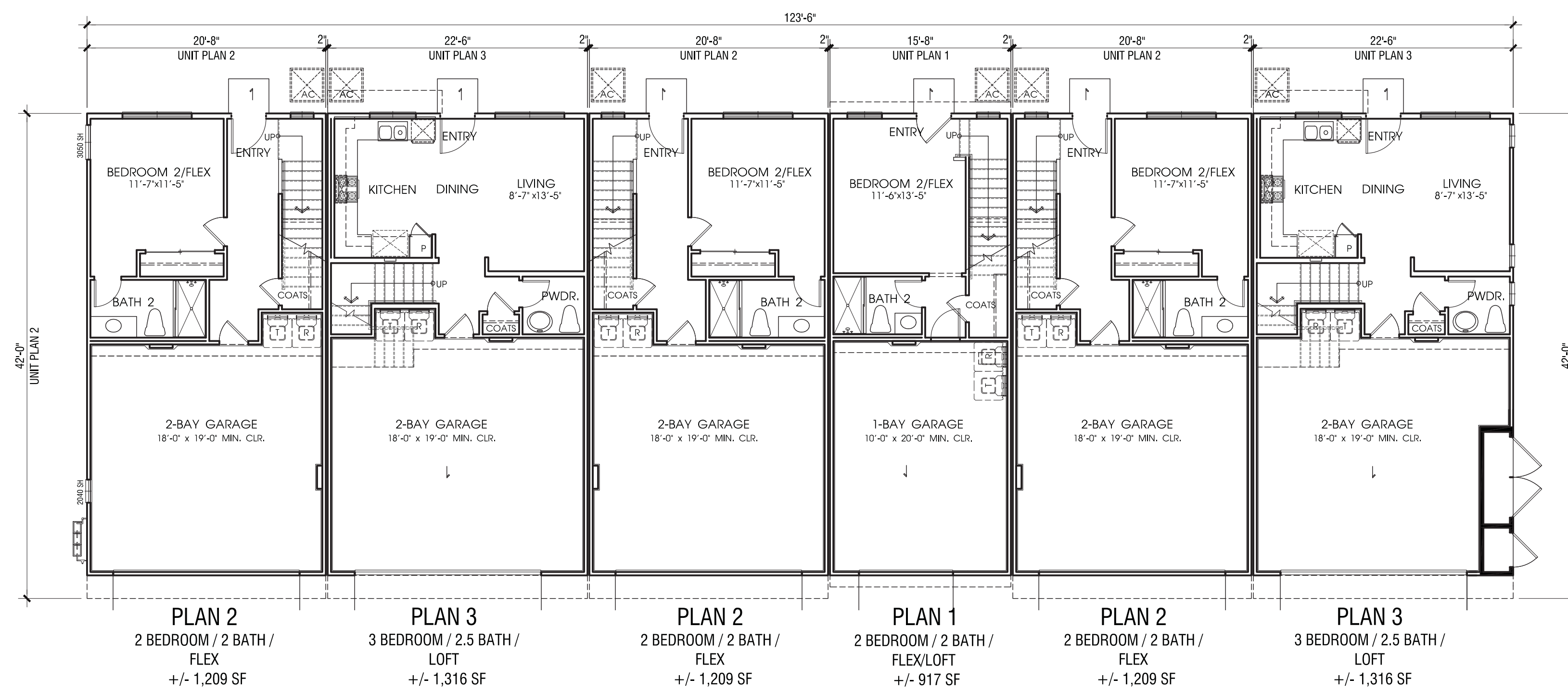
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ORANGE COUNTY . LOS ANGELES . BAY AREA



Second Floor



First Floor

Composite Floor Plans - 6 Plex

Paseo Townhomes

HIGHGROVE TOWN CENTER
COUNTY OF RIVERSIDE, CA

NOTE: SQUARE FOOTAGE MAY VARY DUE TO METHOD OF CALCULATION.

Occupancy: R3/U
Townhomes per CRC
Type of Const.: VB (non-rated)
Sprinkler System: NFPA-13D

FOREMOST CENTER STREET, LLC.

ADMINISTRATIVE APPROVAL

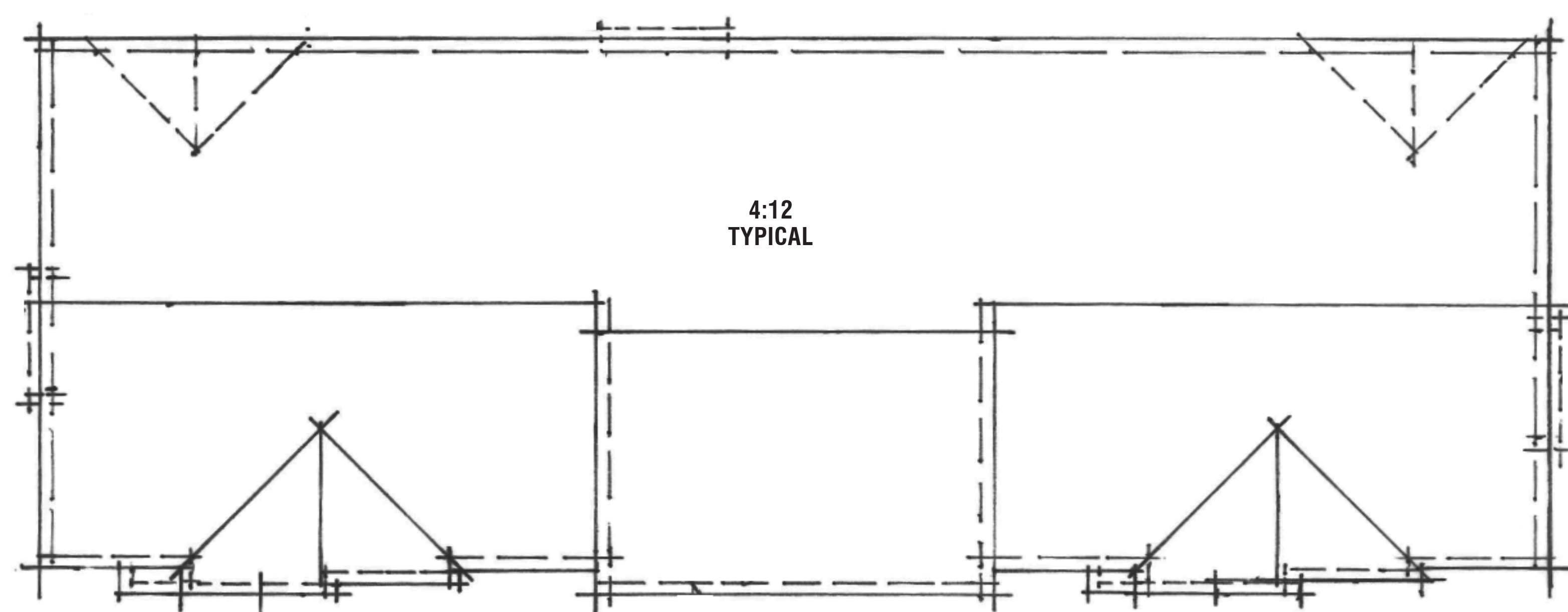
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SPECIAL MULTI-FAMILY DESIGN REVIEW

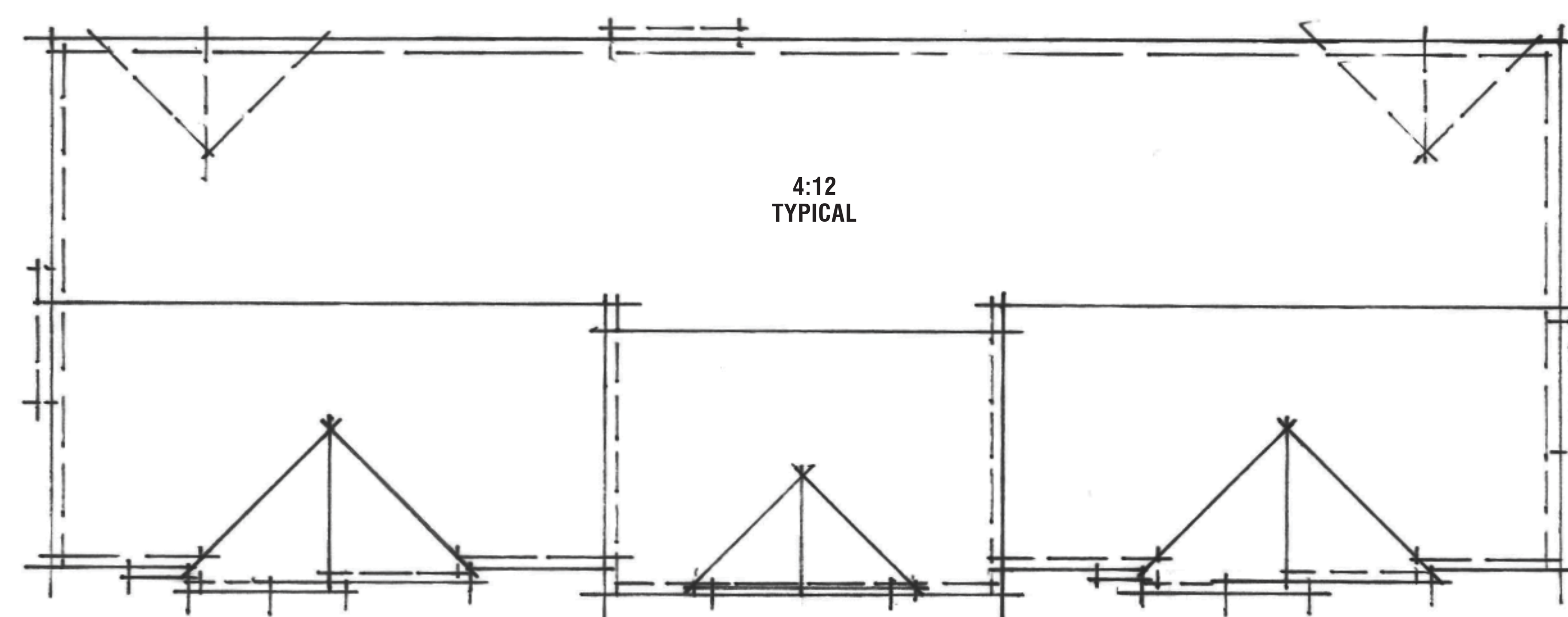
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ORANGE COUNTY . LOS ANGELES . BAY AREA
Page 22 of 430



SPANISH
Eave 12" | Rake 12"
Concrete "S" Tile



CRAFTSMAN
Eave 18" | Rake 12"
Concrete Flat Tile

PASEO TOWNS | BUILDING 400
Roof Plans

HIGHGROVE TOWN CENTER
COUNTY OF RIVERSIDE, CA

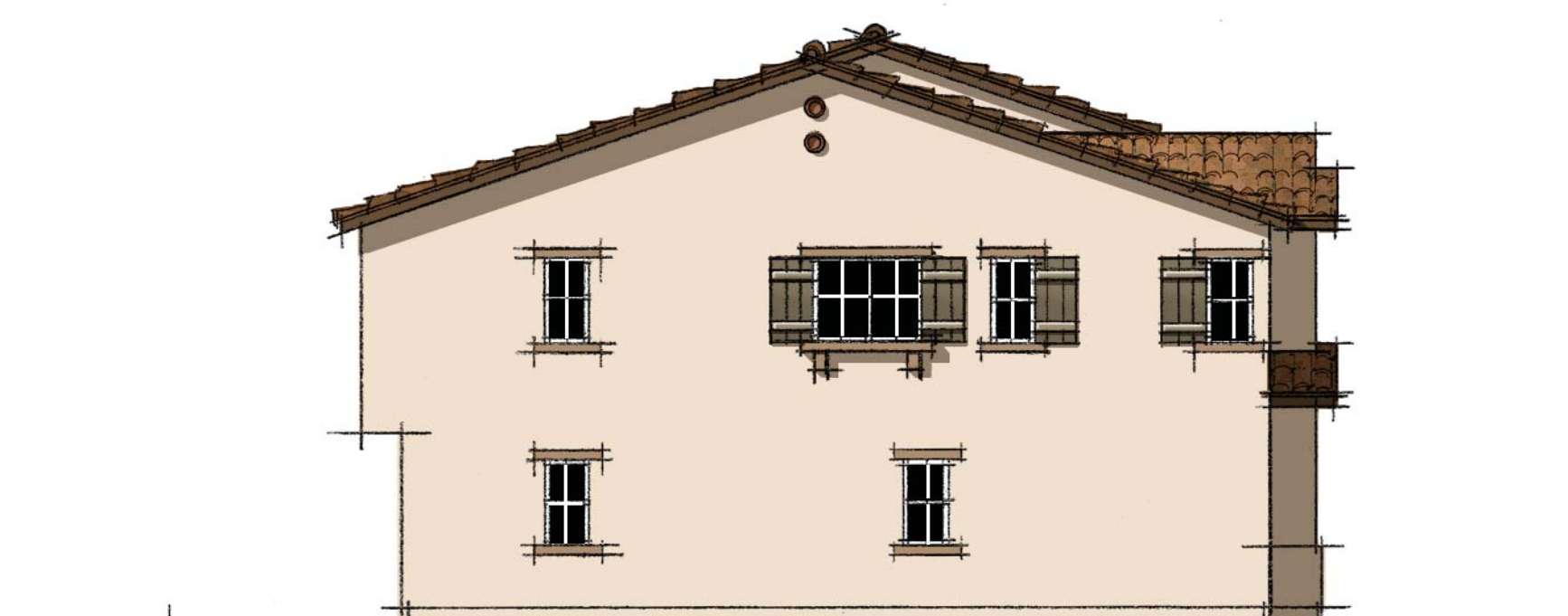
**FOREMOST CENTER
STREET, LLC.**

ADMINISTRATIVE APPROVAL

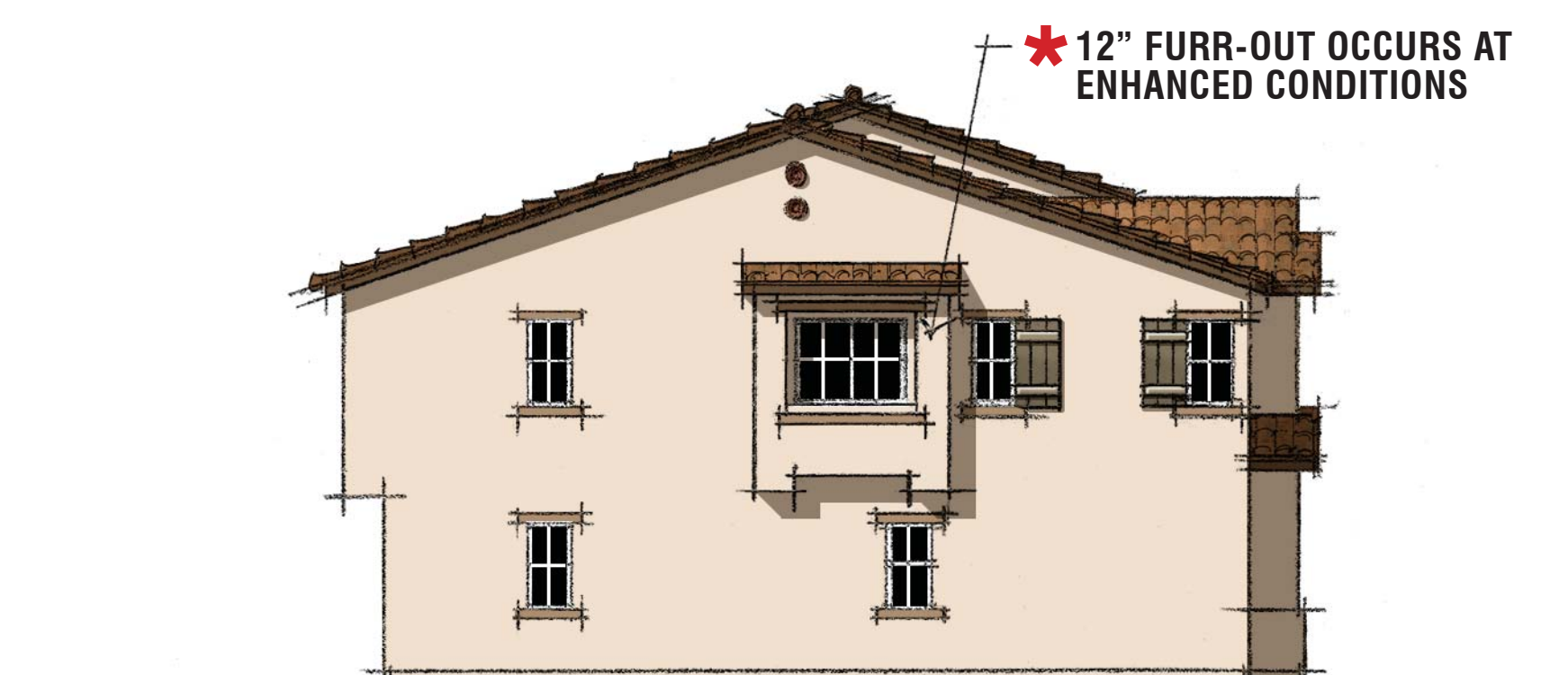
1.17
0 4 8 16

SPECIAL MULTI-FAMILY DESIGN REVIEW
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ARCHITECTS . PLANNERS . DESIGNERS
WHA
ORANGE COUNTY . LOS ANGELES . BAY AREA



Plan 3R STANDARD LEFT



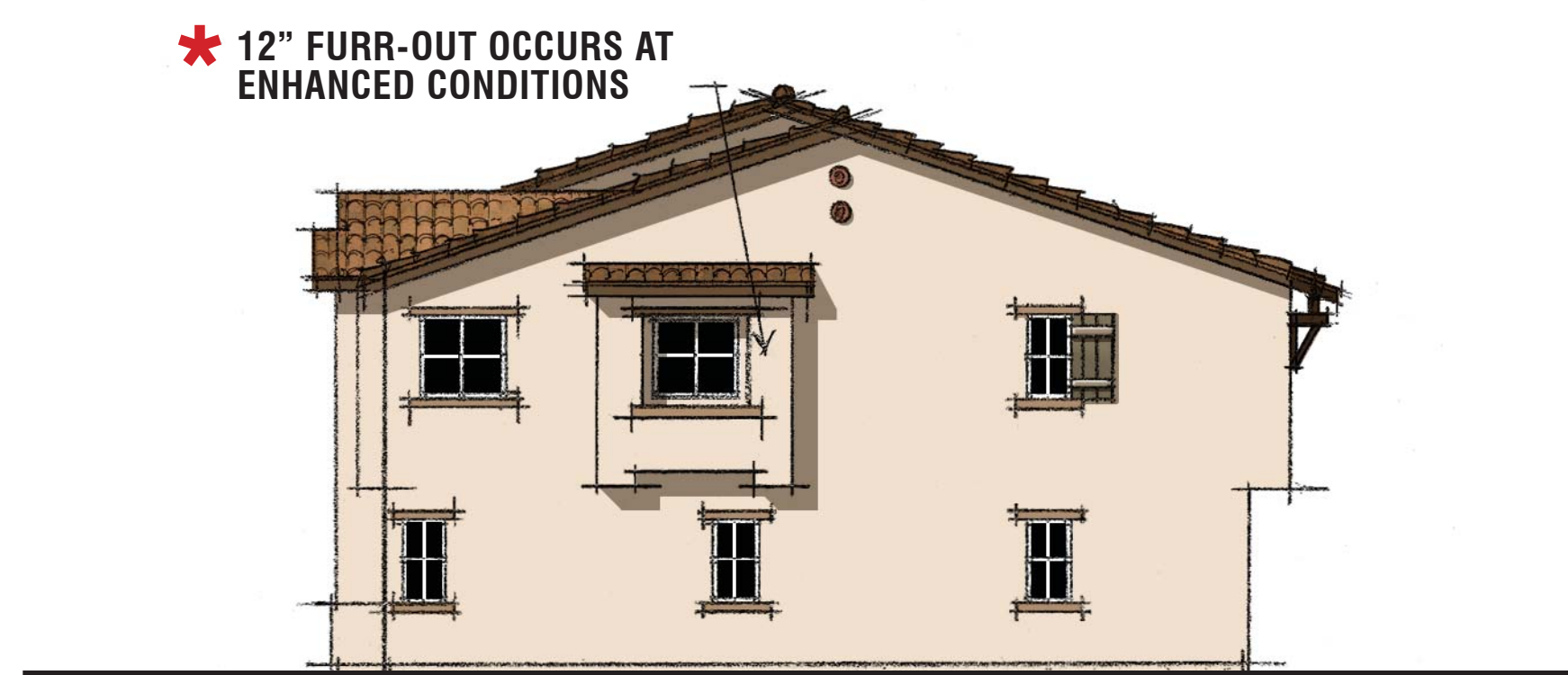
Plan 3R ENHANCED LEFT



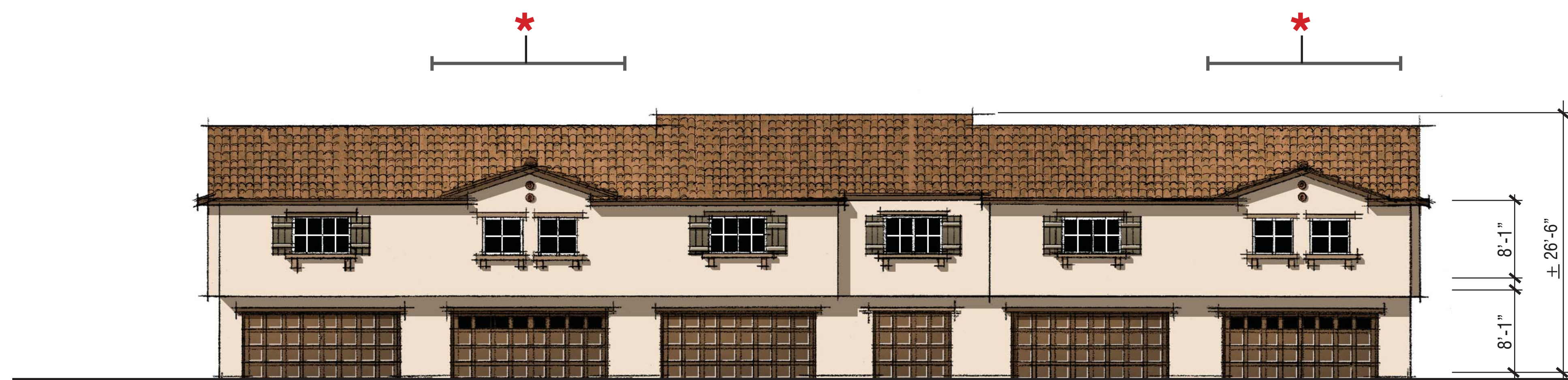
Plan 3R Plan 2 Plan 1 Plan 2R Plan 3R Plan 2 FRONT



Plan 2 STANDARD RIGHT



Plan 2 ENHANCED RIGHT



Plan 2 Plan 3R Plan 2R Plan 1 Plan 2 Plan 3R REAR

STYLE ELEMENTS: SPANISH

- Concrete Medium 'S' Tile
- Stucco With 16/20 Finish
- Foam Shutters
- Stucco Wrapped Potsshelf With Brackets
- Stucco Wrapped Shaped Corbels
- Gable End Foam Pipe Detail
- Windows With Divided Lights
- Stucco Wrapped Trim
- Stucco Wrapped Column
- Solid Panel Entry Door

- * EXTENDED GABLE END ROOF TO BE STANDARD AT ENHANCED ELEVATIONS SEE SITE PLAN FOR REQUIRED LOCATIONS.
- * MINIMUM OF 25% GARAGE DOORS SHALL HAVE GLAZING SHOWN ON PLAN 3'S (257) PLAN 3 UNITS/846 TOTAL DU=30.4 OF UNITS

PASEO TOWNHOMES | BUILDING 400

Spanish Elevations

HIGHGROVE TOWN CENTER

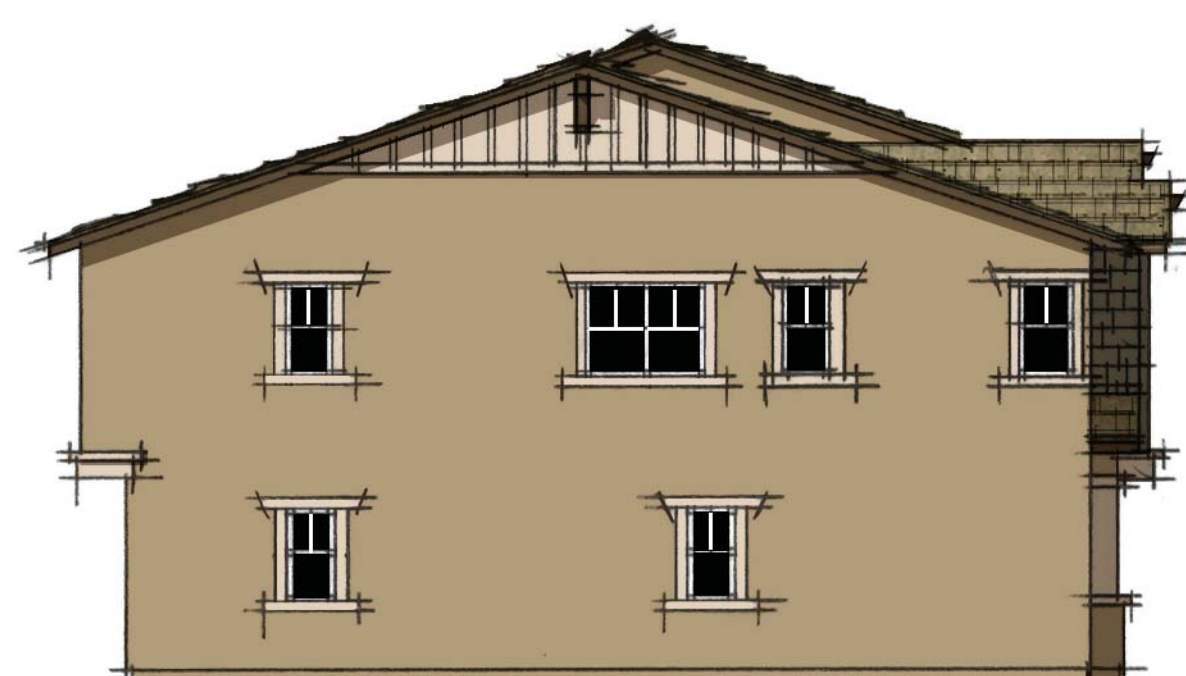
COUNTY OF RIVERSIDE, CA

FOREMOST CENTER STREET, LLC.

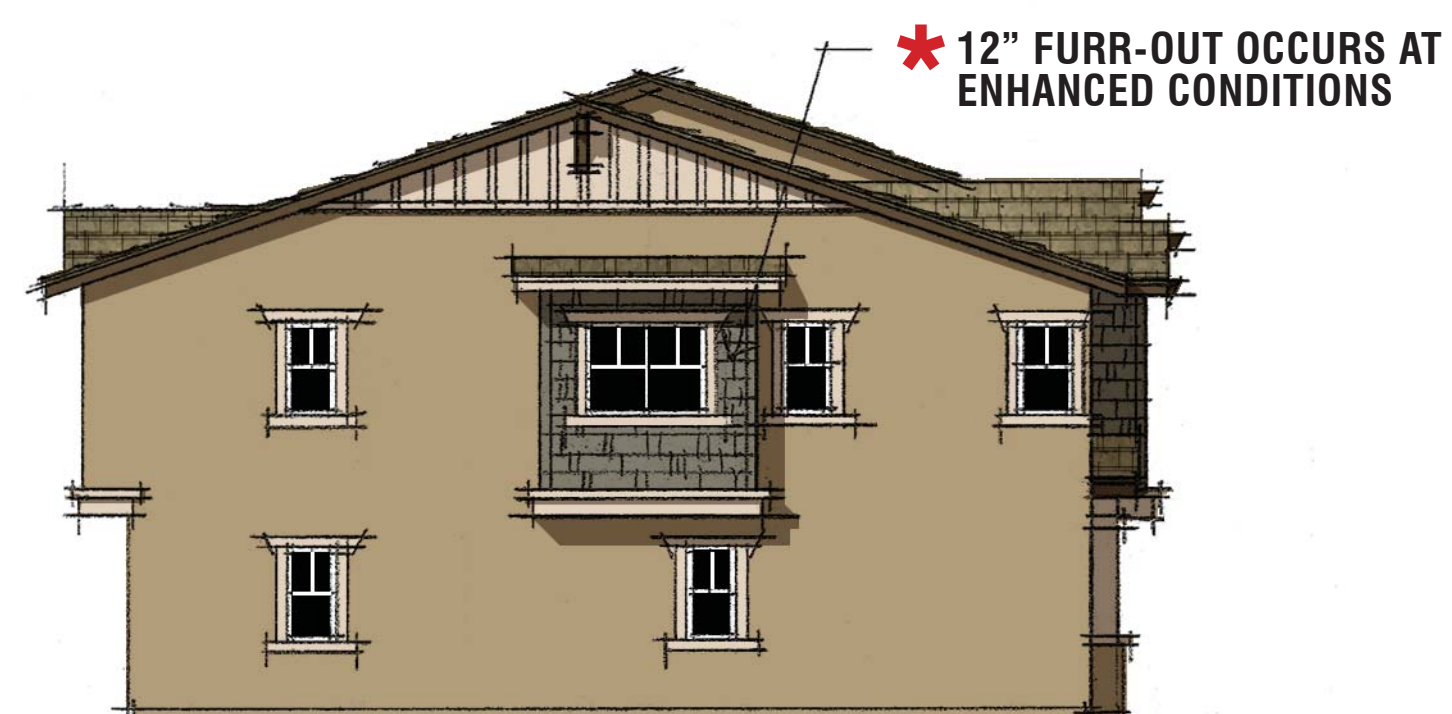
Note: Artist's Conception; Colors, Materials And Application May Vary.

1.18
0 4 8 16
SPECIAL MULTI-FAMILY DESIGN REVIEW
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WHA
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Page 24 of 430



Plan 3R STANDARD LEFT



Plan 3R ENHANCED LEFT



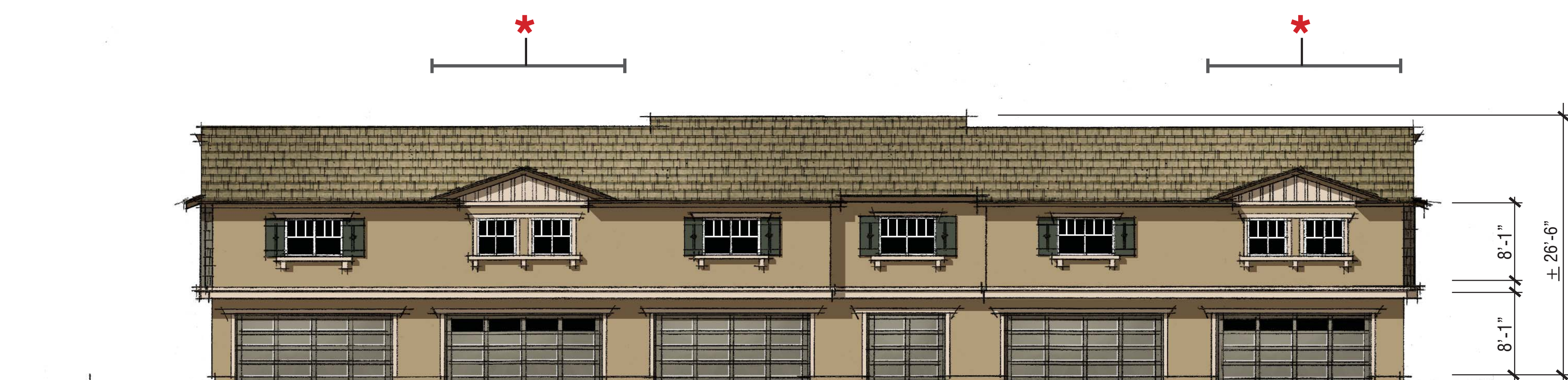
Plan 3R Plan 2 Plan 1 Plan 2R Plan 3R Plan 2 FRONT



Plan 2 STANDARD RIGHT



Plan 2 ENHANCED RIGHT



Plan 2 Plan 3R Plan 2R Plan 1 Plan 2 Plan 3R REAR

STYLE ELEMENTS: CRAFTSMAN

- Flat Concrete Tile
- Stucco With 16/20 Finish
- Cementitious Fiber Shake Siding
- Wood Outlookers
- Stucco Wrapped Shaped Corbels
- Stucco Wrapped Board And Batten Siding
- Windows With Divided Lights
- Stucco Wrapped Trim
- Stucco Wrapped Columns
- Solid Panel Entry Door

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PASEO TOWNHOMES | BUILDING 400

Craftsman Elevations

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

FOREMOST CENTER STREET, LLC.

Note: Artist's Conception; Colors, Materials And Application May Vary.

ADMINISTRATIVE APPROVAL

1.1

0 4 8 16

SPECIAL MULTI-FAMILY DESIGN REVIEW

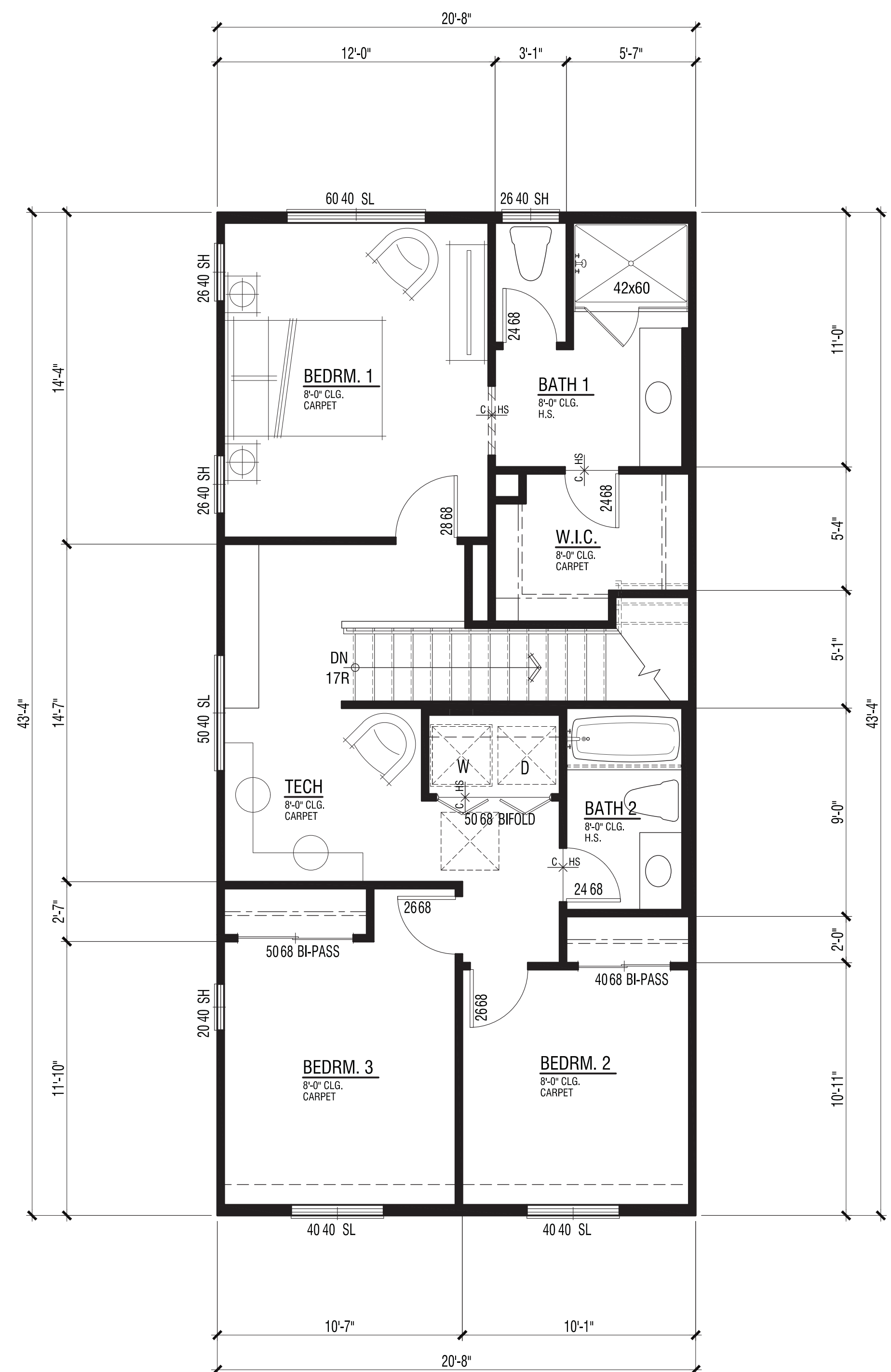
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ARCHITECTS . PLANNERS . DESIGNERS

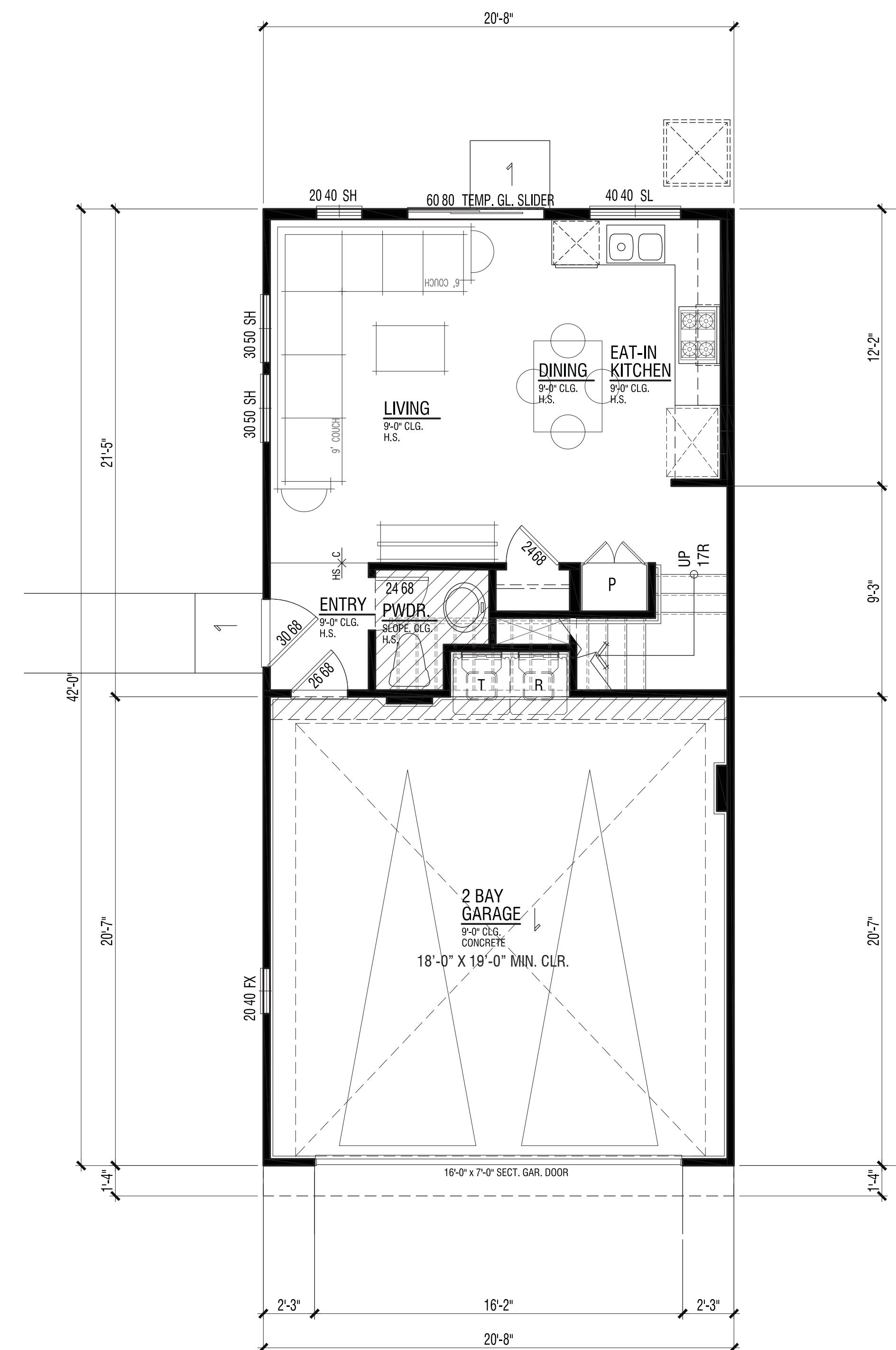
WHA

ORANGE COUNTY . LOS ANGELES . BAY AREA

Page 25 of 430



SECOND FLOOR - 844 S.F.



FIRST FLOOR - 443 S.F.

Plan 1

3 Bdrm | 2.5 Bath | Tech |
 2- BAY Garage |
 1,287 S.F.
 9' | 8' Plates

Yard Townhomes

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

ARCHITECTS . PLANNERS . DESIGNERS

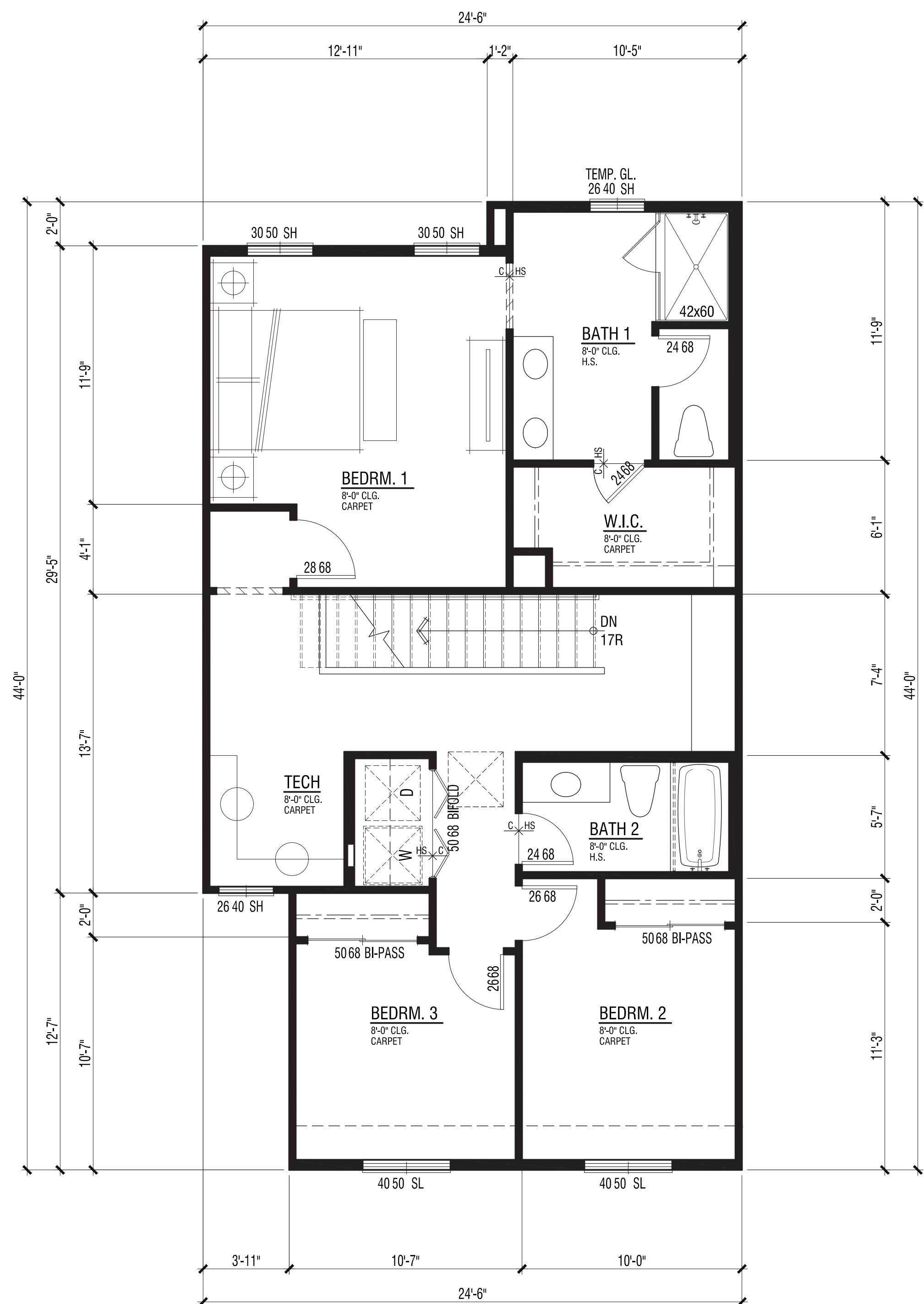


ORANGE COUNTY . LOS ANGELES . BAY AREA

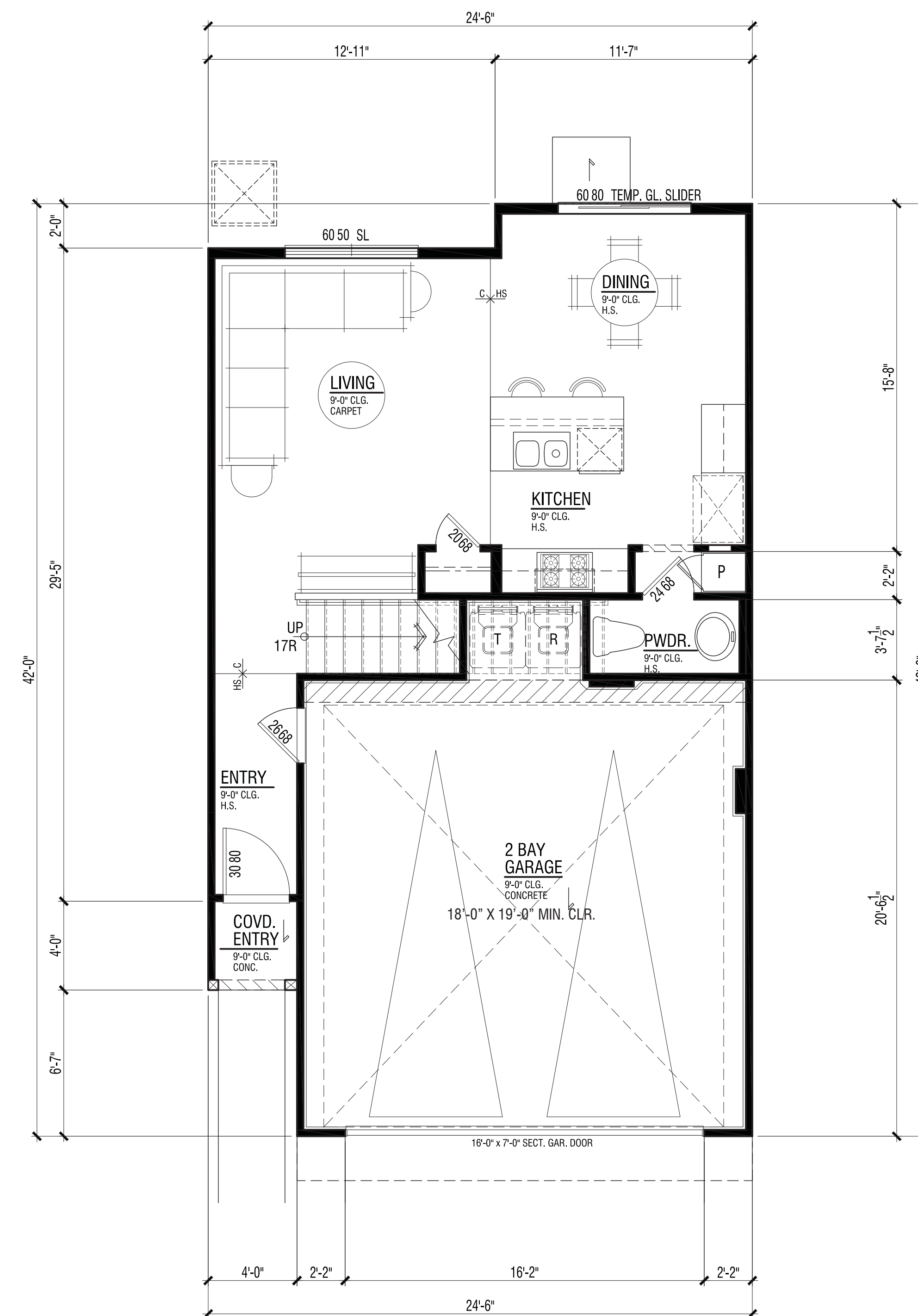


SPECIAL MULTI-FAMILY DESIGN REVIEW

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SECOND FLOOR - 960 S.F.



FIRST FLOOR - 524 S.F.

Plan 2

3 Bdrm | 2.5 Bath | Tech |
 2- BAY Garage |
 1,484 S.F.
 9' | 8' Plates

Yard Townhomes

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA



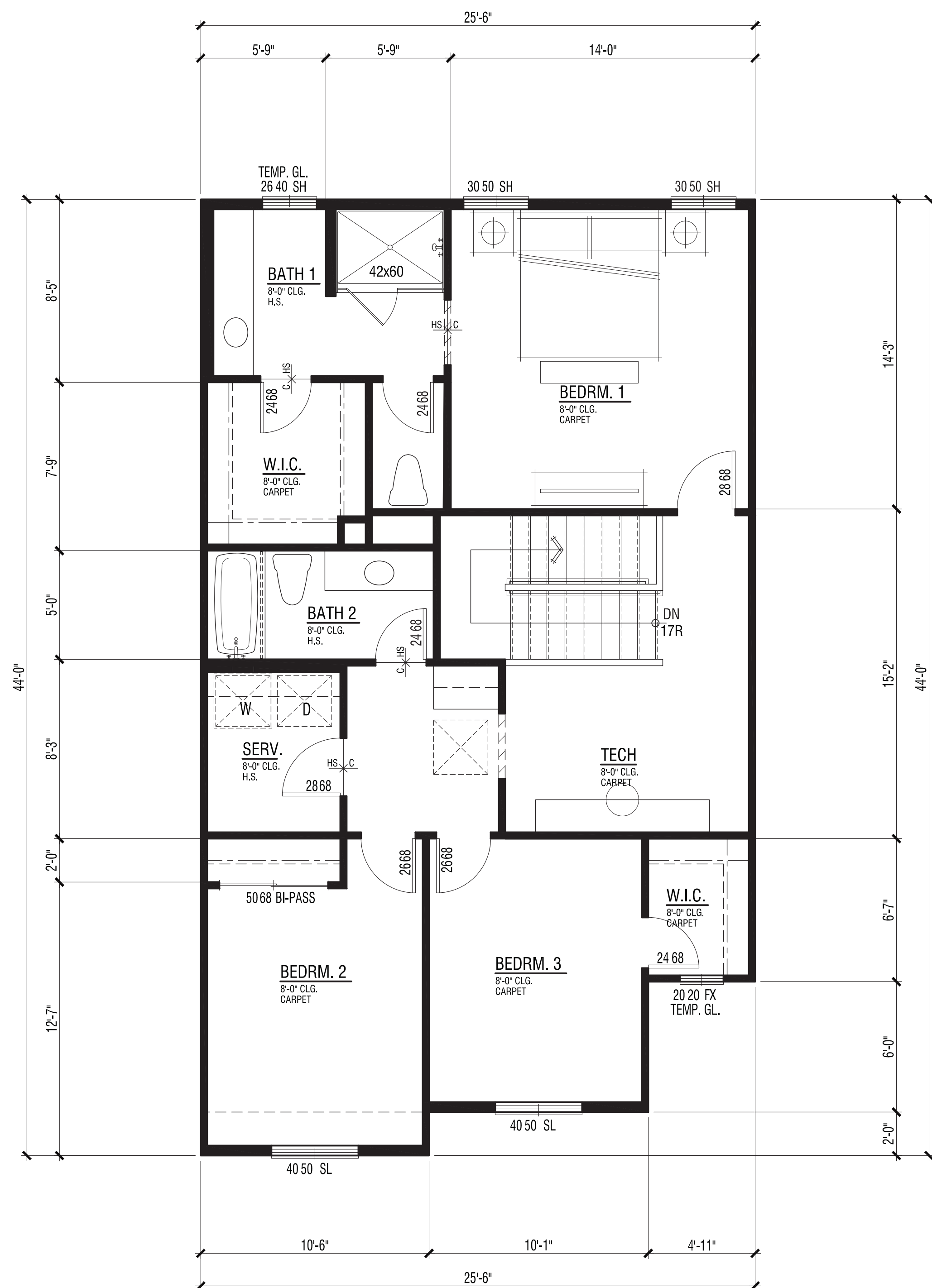
SPECIAL MULTI-FAMILY DESIGN REVIEW

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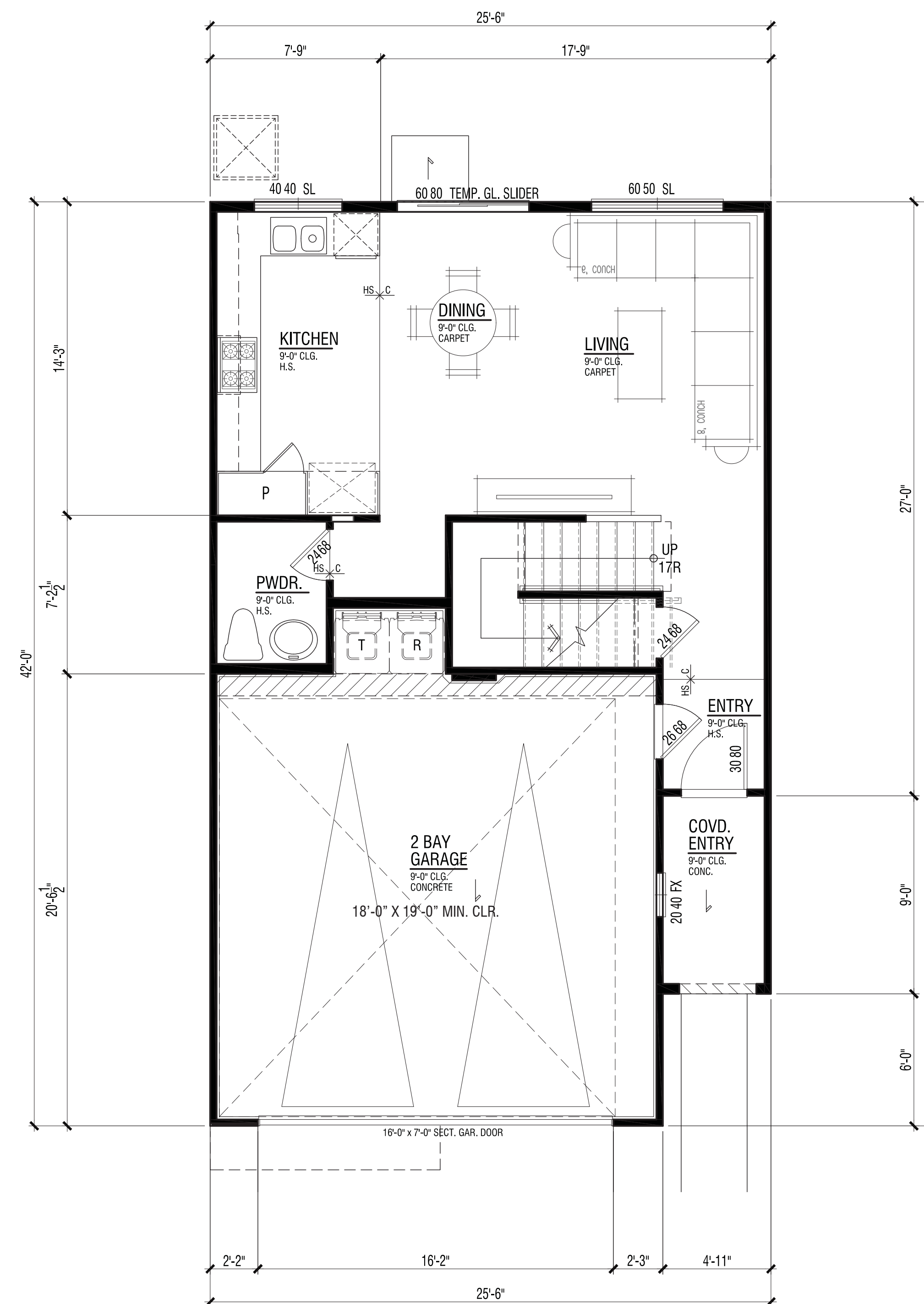
ARCHITECTS . PLANNERS . DESIGNERS



ORANGE COUNTY . LOS ANGELES . BAY AREA



SECOND FLOOR - 997 S.F.



FIRST FLOOR - 561 S.F.

Plan 3

3 Bdrm | 2.5 Bath | Tech |
 2- BAY Garage |
 1,557 S.F.
 9' | 8' Plates

Yard Townhomes

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA



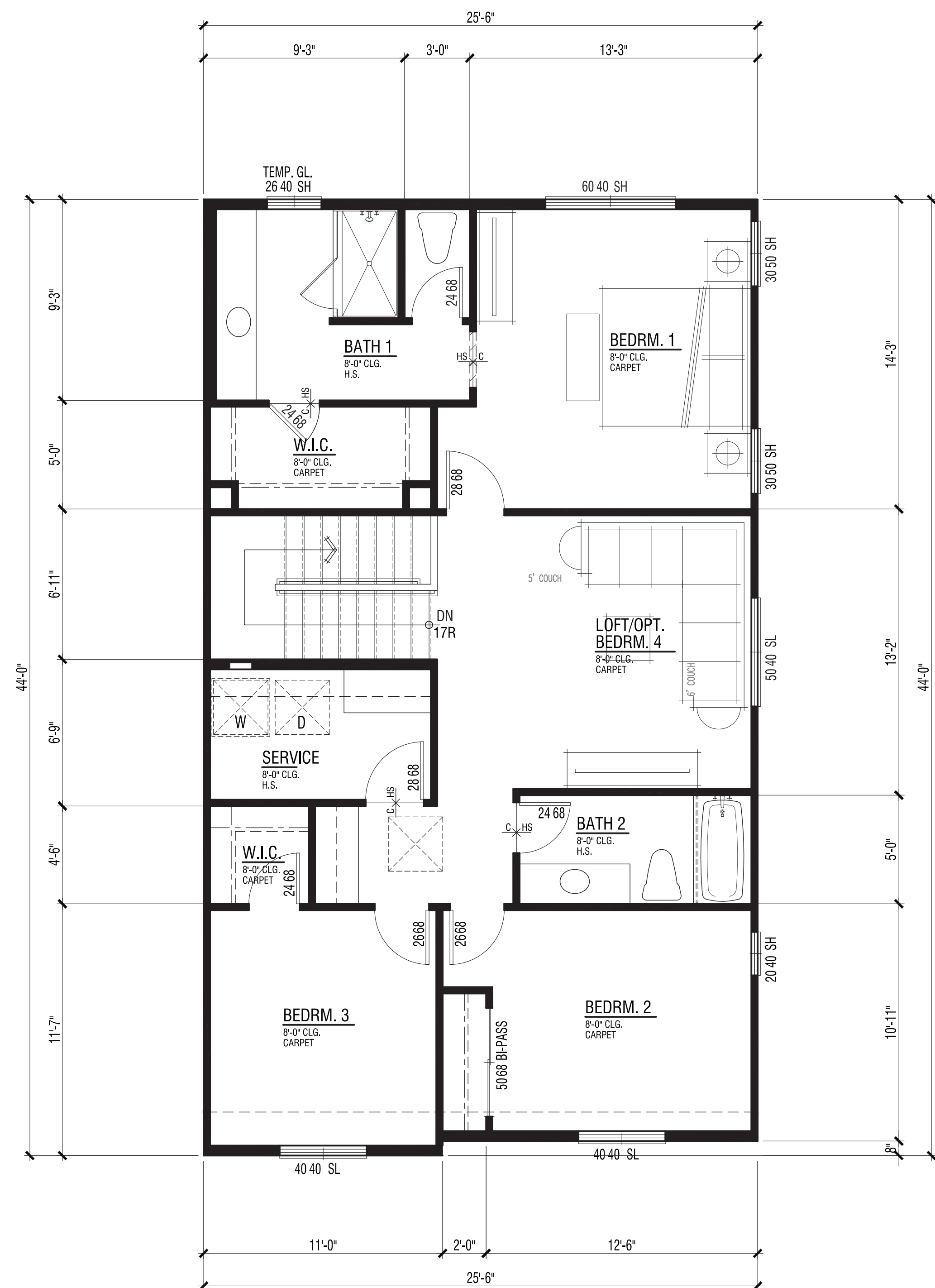
SPECIAL MULTI-FAMILY DESIGN REVIEW

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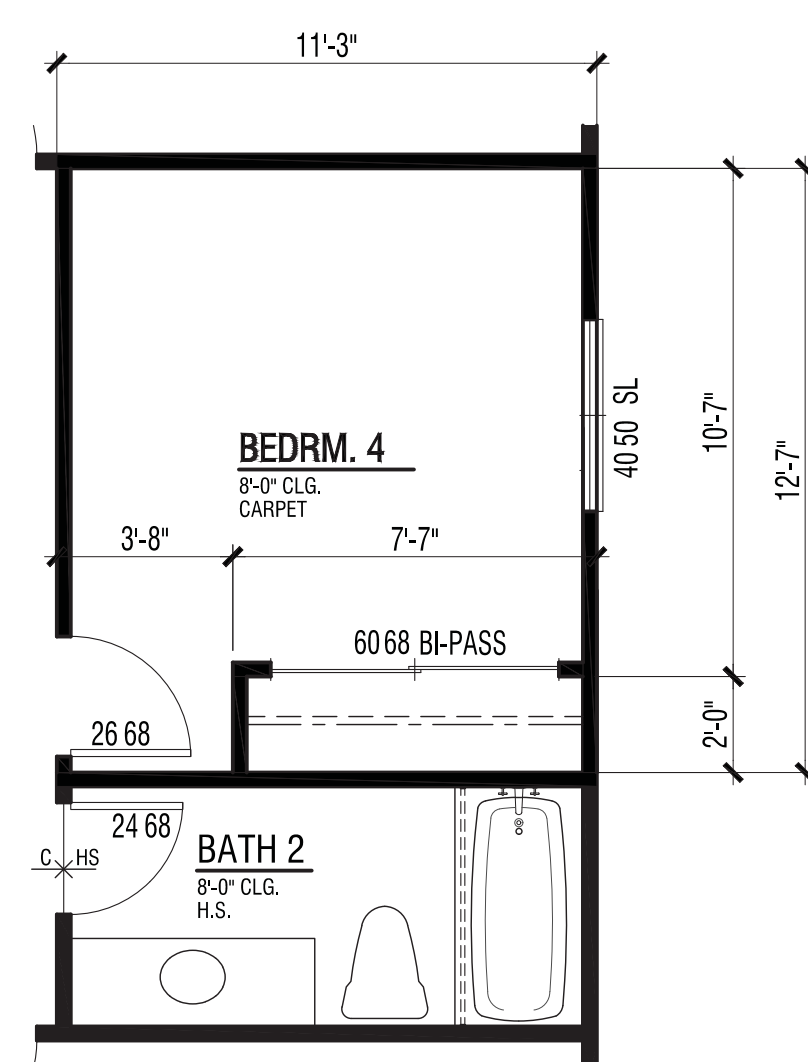
ARCHITECTS . PLANNERS . DESIGNERS



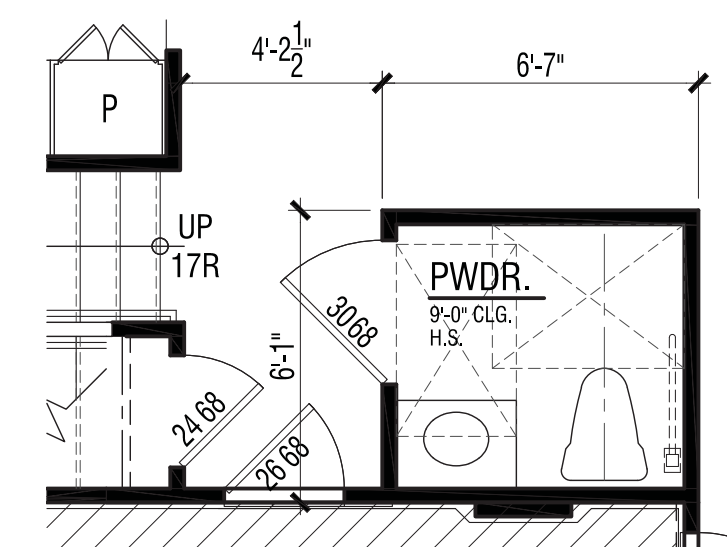
ORANGE COUNTY . LOS ANGELES . BAY AREA



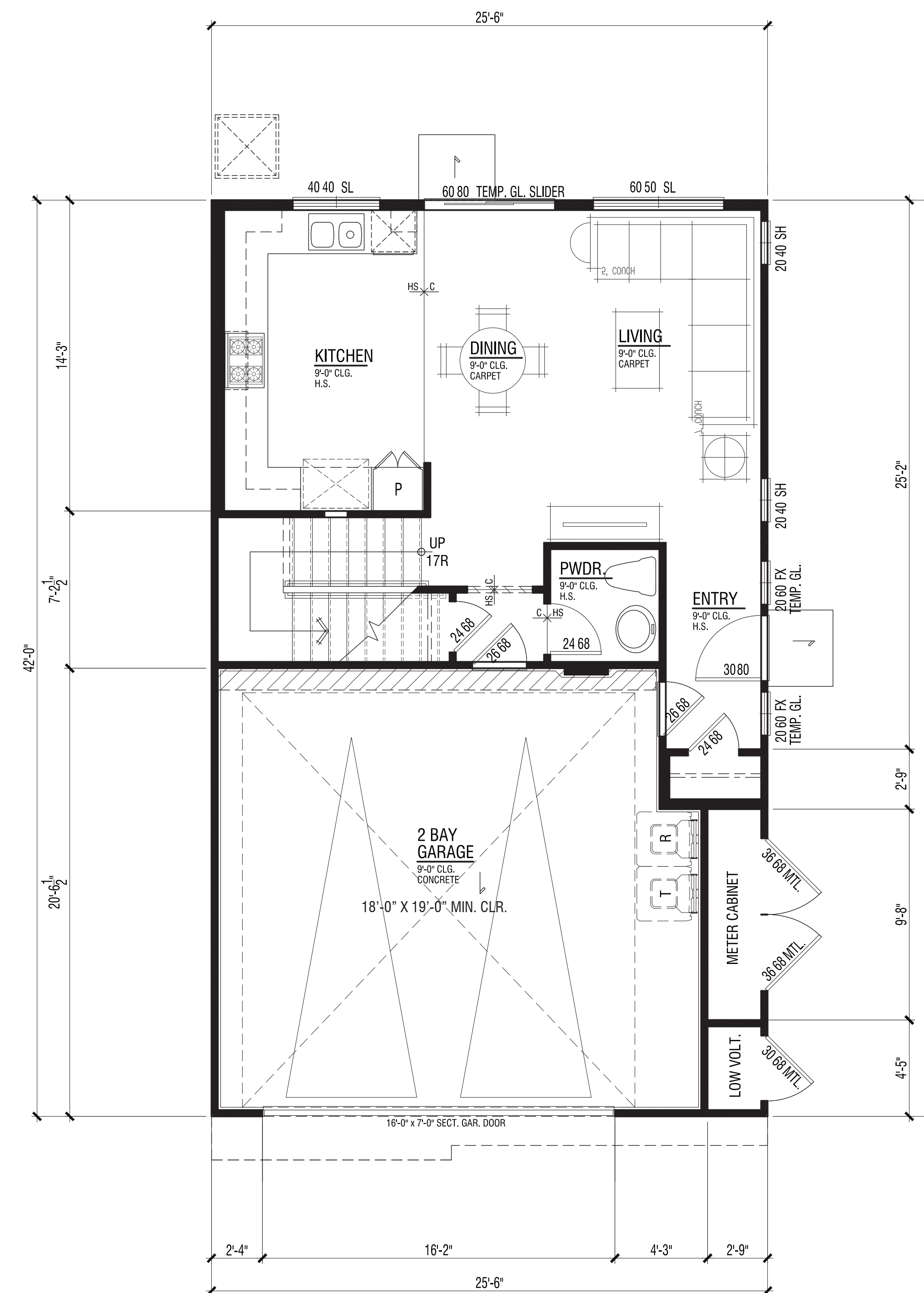
SECOND FLOOR - 1044 S.F.



OPT. BEDRM. 4 AT LOFT



ACCESSIBLE UNIT



FIRST FLOOR - 579 S.F.

Plan 4

3+1 Bdrm | 2 Bath | Loft |
 2- BAY Garage |
 1,623 S.F.
 9' | 8' Plates

Yard Townhomes

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA



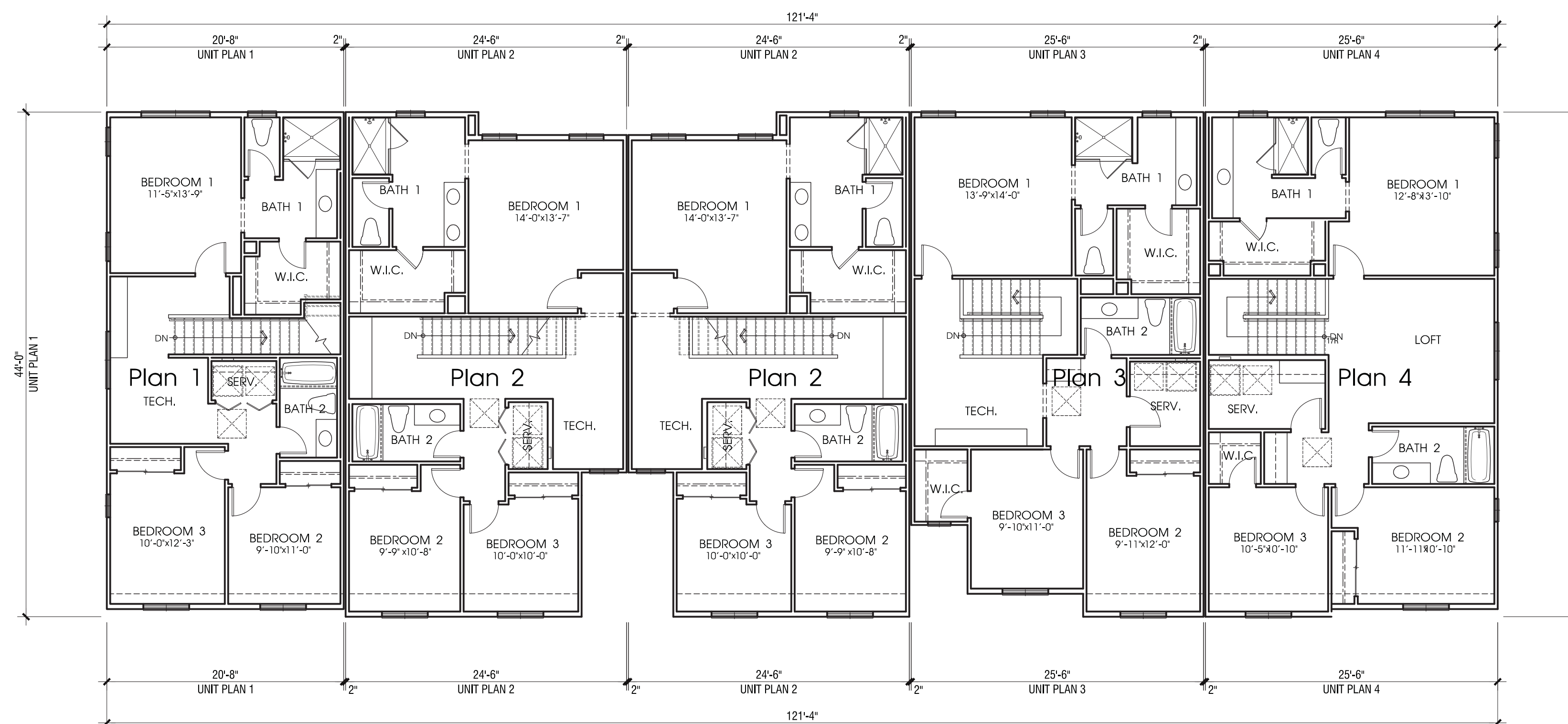
SPECIAL MULTI-FAMILY DESIGN REVIEW

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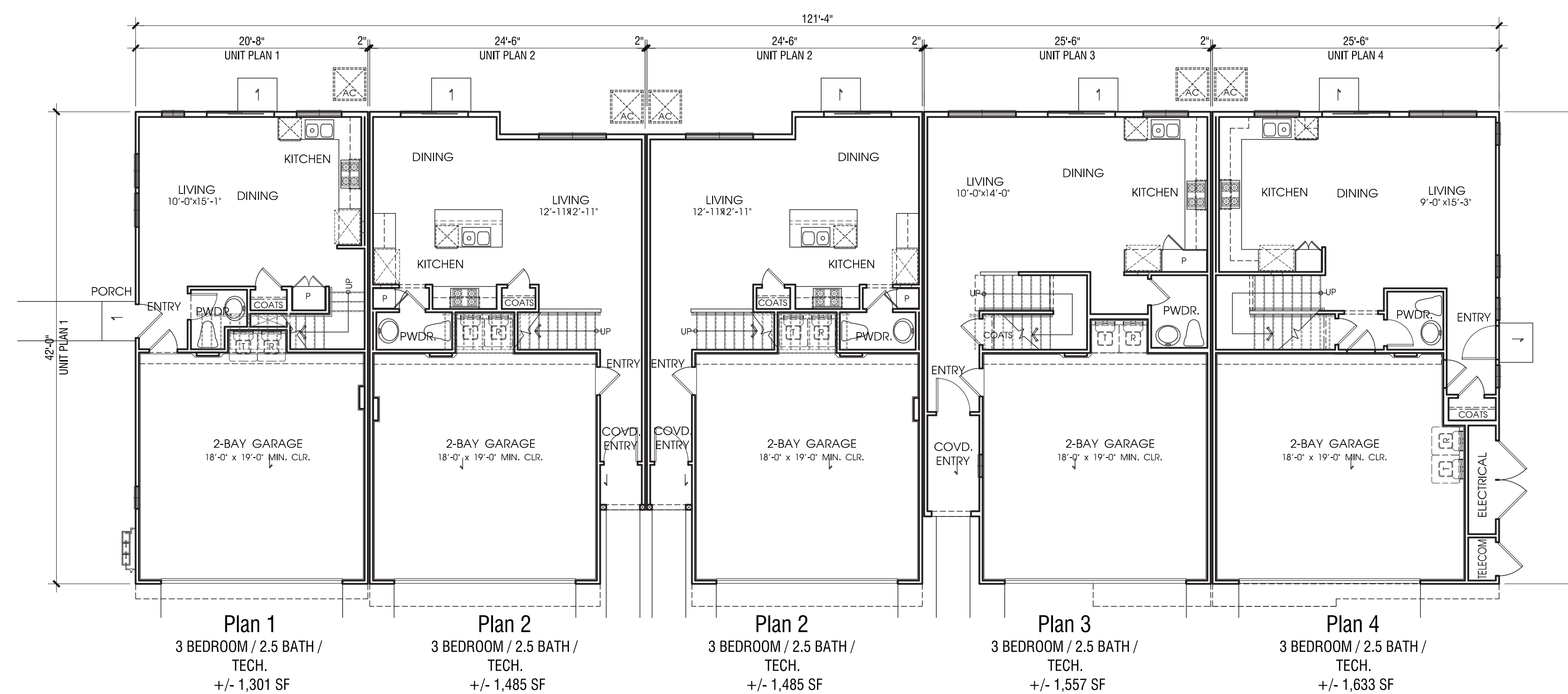
ARCHITECTS . PLANNERS . DESIGNERS



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Second Floor



First Floor

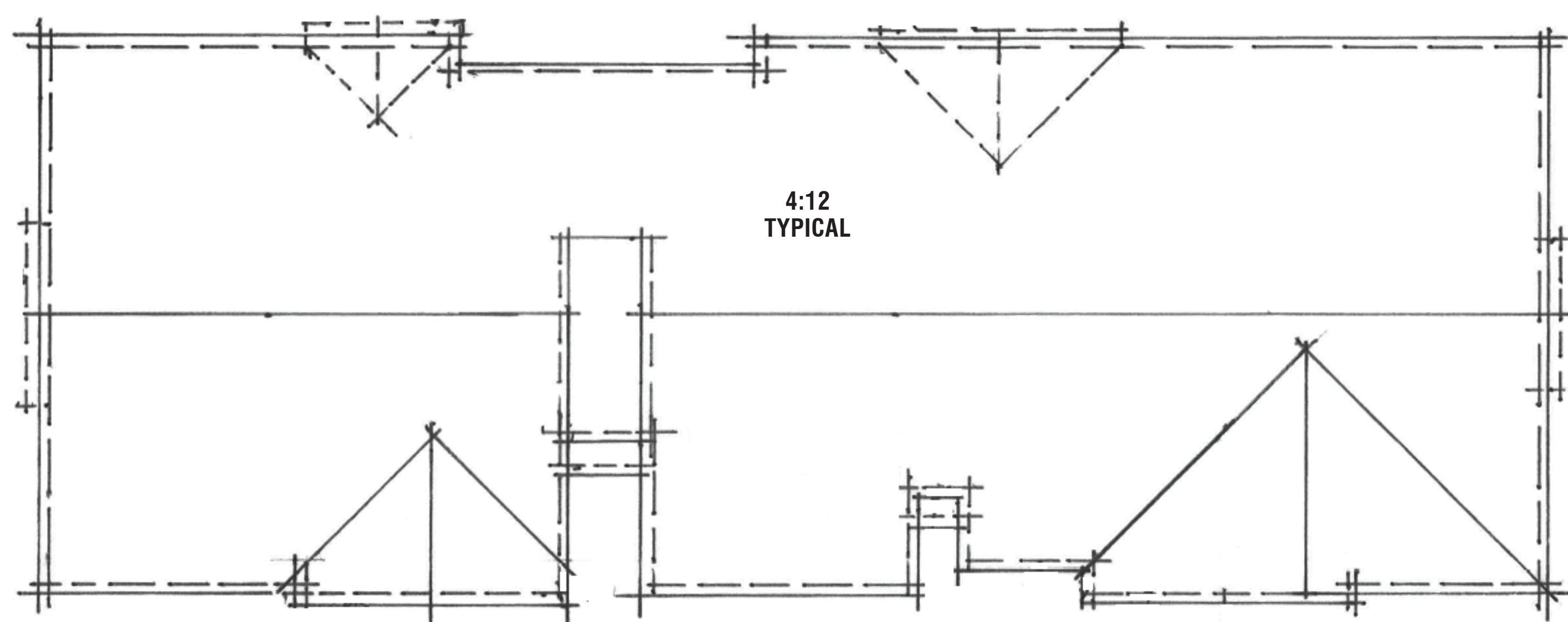
Composite Floor Plans - 5 Plex Yard Townhomes

HIGHGROVE TOWN CENTER

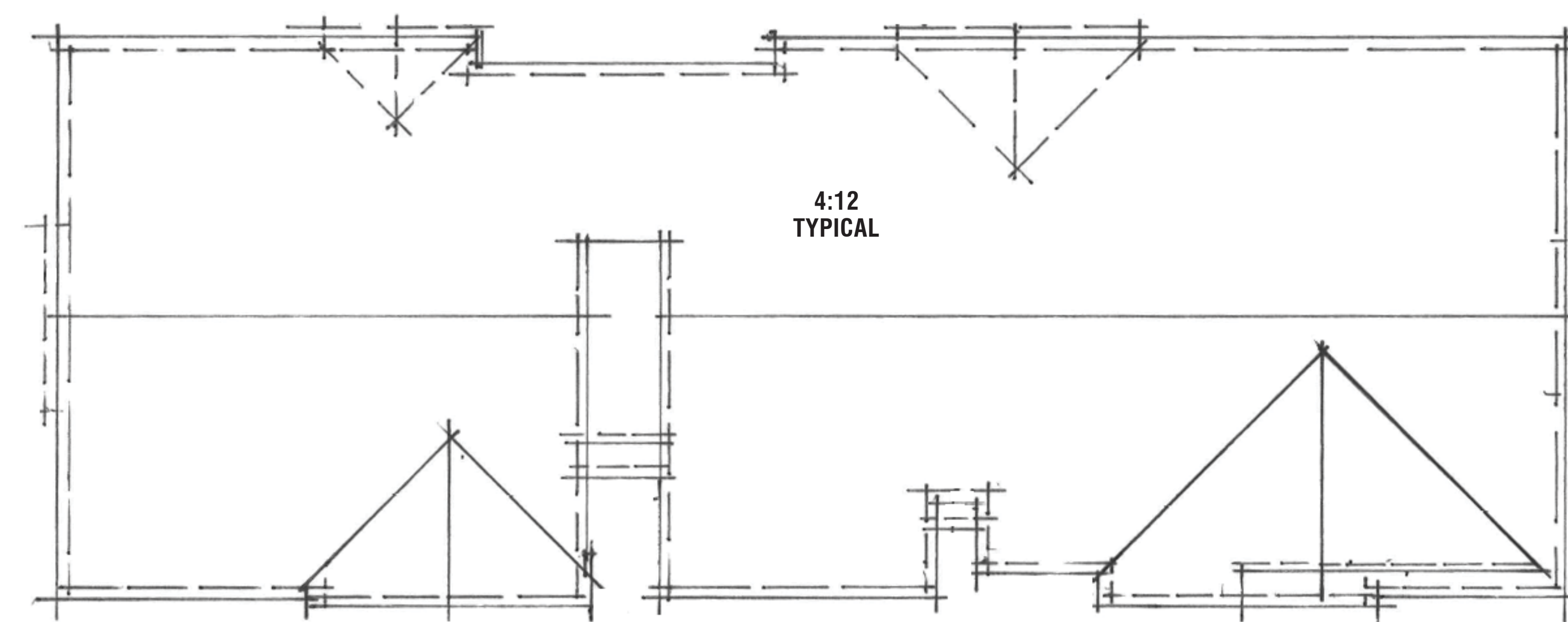
COUNTY OF RIVERSIDE, CA

NOTE: SQUARE FOOTAGE MAY VARY DUE TO METHOD OF CALCULATION.

Occupancy: R3/U
Townhomes per CRC
Type of Const.: VB (non-rated)
Sprinkler System: NFPA-13D



SPANISH
 Eave 12" | Rake 12"
 Concrete "S" Tile



CRAFTSMAN
 Eave 18" | Rake 12"
 Concrete Flat Tile

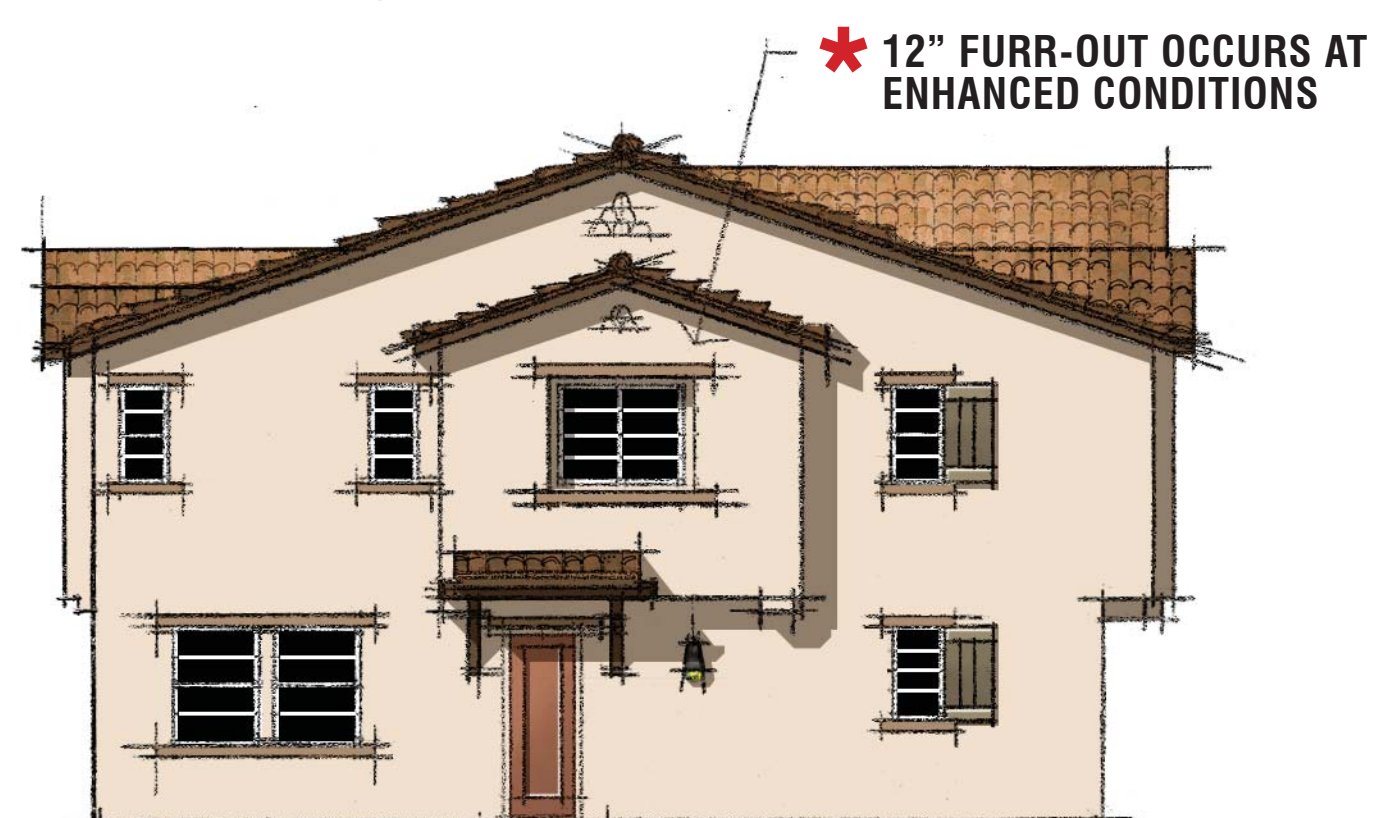
YARD TOWNHOMES | BUILDING 100
Roof Plans

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA



Plan 1 STANDARD LEFT



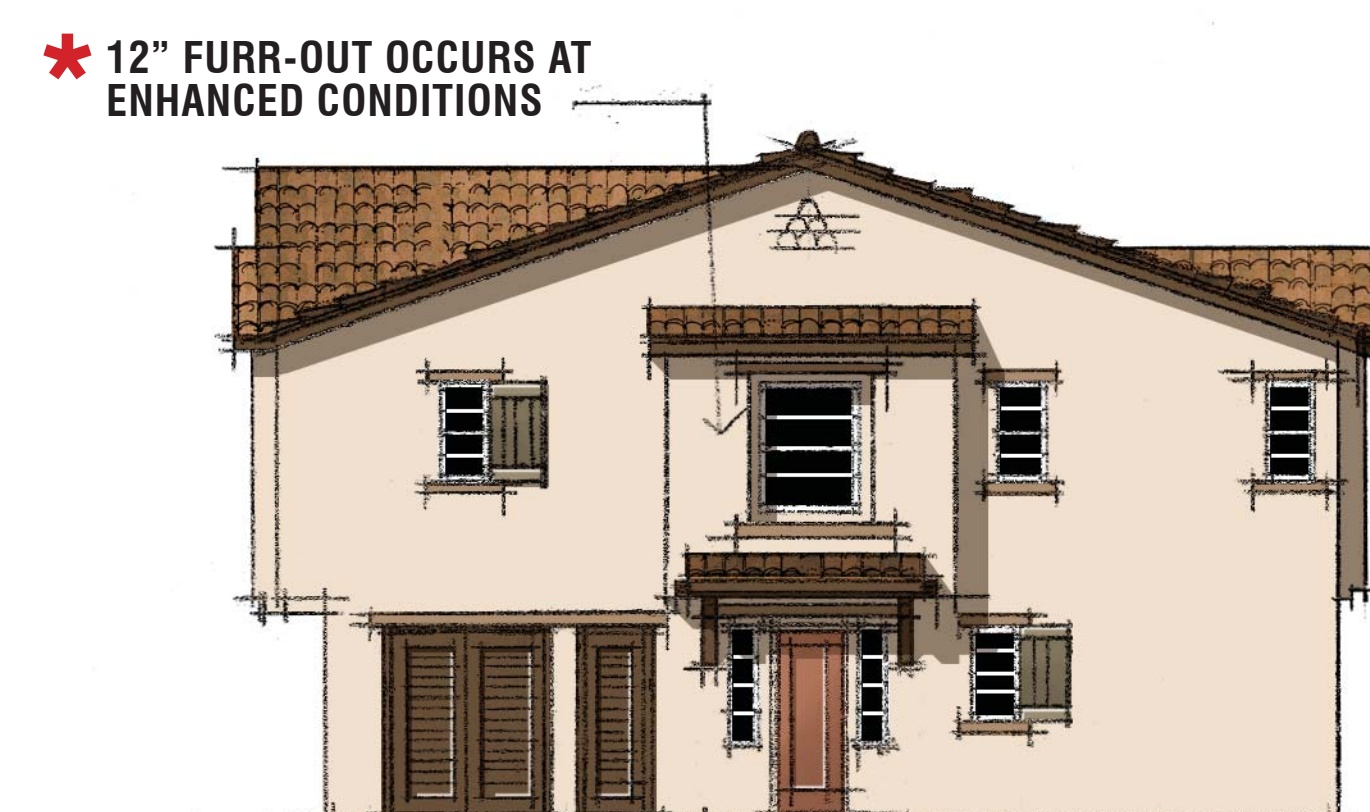
Plan 1 ENHANCED LEFT



Plan 1 Plan 2R Plan 2 Plan 3R Plan 4 FRONT



Plan 4 STANDARD RIGHT



Plan 4 ENHANCED RIGHT



Plan 4 Plan 3R Plan 2 Plan 2R Plan 1 REAR

STYLE ELEMENTS: SPANISH

- Concrete Medium 'S' Tile
- Stucco With 16/20 Finish
- Foam Shutters
- Stucco Wrapped Potsshelf With Brackets
- Stucco Wrapped Shaped Corbels
- Gable End Foam Pipe Detail
- Windows With Divided Lights
- Stucco Wrapped Trim
- Stucco Wrapped Column
- Solid Panel Entry Door

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YARD TOWNHOMES | BUILDING 100

Spanish Elevations

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

FOREMOST CENTER STREET, LLC.

Note: Artist's Conception; Colors, Materials And Application May Vary.

SPECIAL MULTI-FAMILY DESIGN REVIEW

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0 4 8 16 2.7

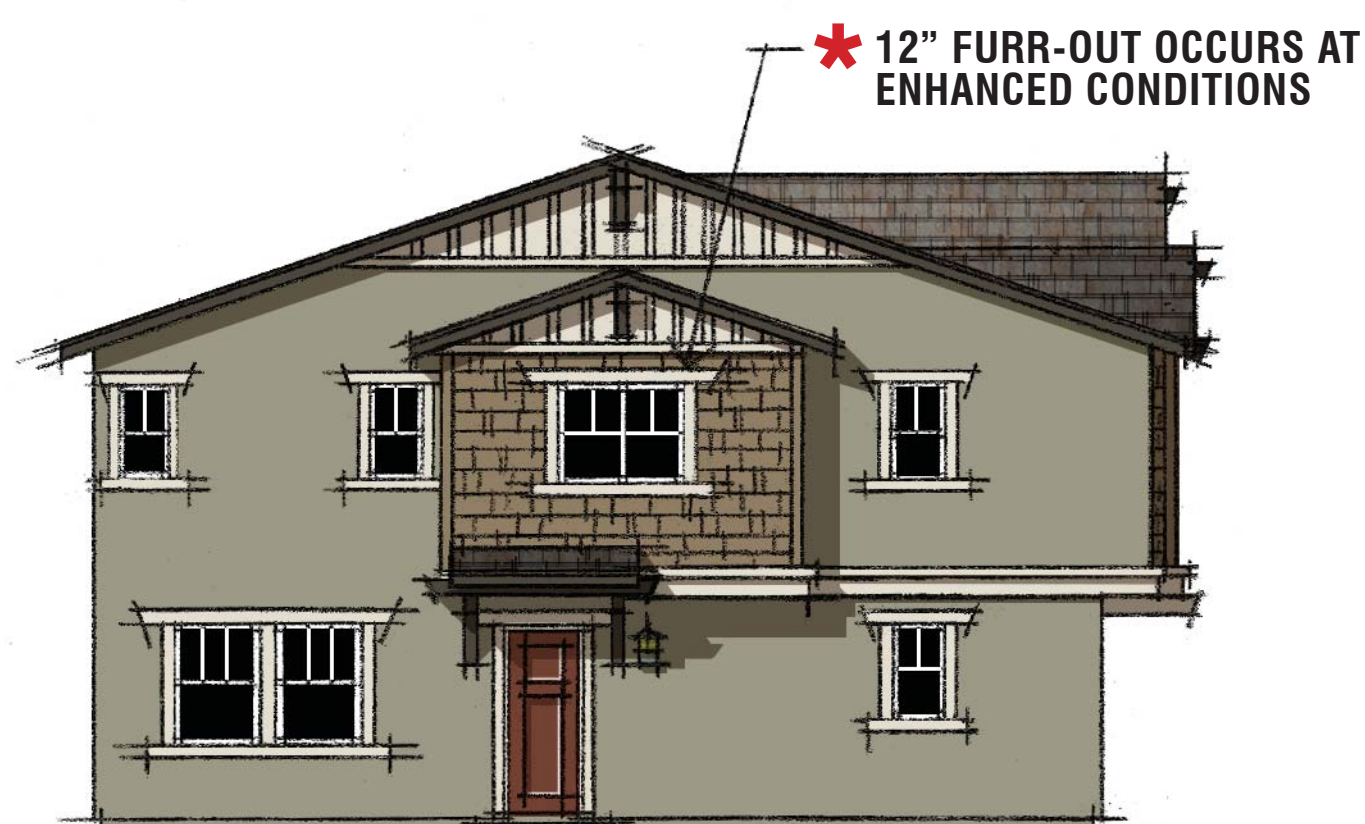
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ORANGE COUNTY . LOS ANGELES . BAY AREA



Plan 1 STANDARD LEFT



Plan 1 ENHANCED LEFT



Plan 1 Plan 2R Plan 2 Plan 3R Plan 4 FRONT



Plan 4 STANDARD RIGHT



Plan 4 ENHANCED RIGHT



Plan 4 Plan 3R Plan 2 Plan 2R Plan 1 REAR

STYLE ELEMENTS: CRAFTSMAN

- Flat Concrete Tile
- Stucco With 16/20 Finish
- Cementitious Fiber Shake Siding
- Wood Outlookers
- Stucco Wrapped Shaped Corbels
- Stucco Wrapped Board And Batten Siding
- Windows With Divided Lights
- Stucco Wrapped Trim
- Stucco Wrapped Columns
- Solid Panel Entry Door

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YARD TOWNHOUSES | BUILDING 100

Craftsman Elevations

HIGHGROVE TOWN CENTER

COUNTY OF RIVERSIDE, CA

FOREMOST CENTER STREET, LLC.

Note: Artist's Conception; Colors, Materials And Application May Vary.

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2.8
0 4 8 16



HIGHGROVE TH 1 & 2
Riverside County, California
FOREMOST
January 22, 2021 | 2020158

SCHEME 1
'A' Elevations Only
Spanish

For exact color refer to manufacturer actual samples.
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HIGHGROVE TH 1 & 2
Riverside County, California
FOREMOST
January 22, 2021 | 2020158

SCHEME 2
'A' Elevations Only
Spanish

For exact color refer to manufacturer actual samples.
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HIGHGROVE TH 1 & 2
Riverside County, California
FOREMOST
January 22, 2021 | 2020158

SCHEME 3
'B' Elevations Only
Craftsman

For exact color refer to manufacturer actual samples.
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HIGHGROVE TH 1 & 2
Riverside County, California
FOREMOST
January 22, 2021 | 2020158

SCHEME 4
'B' Elevations Only
Craftsman

For exact color refer to manufacturer actual samples.
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HIGHGROVE TH 1 & 2
Riverside County, California
FOREMOST
December 11, 2020 | 2020158
PAGE 1 OF 4

Exterior Color & Materials
SCHEME 1 OF 4 'A' ELEVATIONS ONLY, SPANISH

Material	Color	Manufacturer
Roofing: Concrete 'S' Tile	2690 Los Padres Blend Ref: 24 Emi. 91 A.SRI: 25 CRRC: 0918-0013	Eagle
Metal Bird Stop @ 'S' Tile (factory finish)	Terracotta	Eagle
Vinyl Windows (factory finish)	TBD	TBD
Gutters & Downspouts	Match Adjacent Color	TBD
Stucco Color (16/20 sand finish)	TBD (Match to Sherwin Williams 'SW 7551' Greek Villa)	Omega
Trim Color #1 (applied to): Barge Boards Braces Corbels Eaves Fascia Garage Doors Trim Utility Doors	'SW 7054 Suitable Brown	Sherwin Williams
Trim Color #2 (applied to): Garage Doors Stucco Trim	SW 7549 Studio Taupe	Sherwin Williams
Accent Color #1 (applied to): Shutters	SW 2837 Aurora Brown	Sherwin Williams
Accent Color #2 (applied to): Unit Doors	'SW 7624 Slate Tile	Sherwin Williams
Prefab Pipes	SW 7705 Wheat Penny	Sherwin Williams
Garage Door Weatherstrip (factory finish)	Match Garage Door Color	TBD

NOTE: Notify WHA if any variation occurs between these schemes and the construction documents prior to purchase.
Contact Donna Allich (949) 250-0607.

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REVISIONS:

Number	Date	Description
1	1/14/21	Various revisions per client comments.
2	1/22/21	Various revisions per client comments.

HIGHGROVE TH 1 & 2
Riverside County, California
FOREMOST
December 11, 2020 | 2020158
PAGE 2 OF 4

Exterior Color & Materials
SCHEME 2 OF 4 'A' ELEVATIONS ONLY, SPANISH

Material	Color	Manufacturer
Roofing: Concrete 'S' Tile	2605 San Benito Blend Ref: 20 Emi. 92 A.SRI: 21 CRRC: 0918-0031	Eagle
Metal Bird Stop @ 'S' Tile (factory finish)	Black	Eagle
Vinyl Windows (factory finish)	TBD	TBD
Gutters & Downspouts	Match Adjacent Color	TBD
Stucco Color (16/20 sand finish)	TBD (Match to Sherwin Williams 'SW 7571' Casa Blanca)	Omega
Trim Color #1 (applied to): Barge Boards Braces Corbels Eaves Fascia Garage Doors Trim Utility Doors	SW 6104 Kaftee	Sherwin Williams
Trim Color #2 (applied to): Garage Doors Stucco Trim	'SW 9108 Double Latte	Sherwin Williams
Accent Color #1 (applied to): Shutters	SW 7740 Messenger Bag	Sherwin Williams
Accent Color #2 (applied to): Unit Doors	SW 7705 Wheat Penny	Sherwin Williams
Prefab Pipes	SW 7705 Wheat Penny	Sherwin Williams
Garage Door Weatherstrip (factory finish)	Match Garage Door Color	TBD

NOTE: Notify WHA if any variation occurs between these schemes and the construction documents prior to purchase.
Contact Donna Allich (949) 250-0607.

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2	1/22/21	Various revisions per client comments.

HIGHGROVE TH 1 & 2
Riverside County, California
FOREMOST
December 11, 2020 | 2020158
PAGE 3 OF 4

Exterior Color & Materials
SCHEME 3 OF 4 'B' ELEVATIONS ONLY, CRAFTSMAN

Material	Color	Manufacturer
Roofing: Concrete Shake Tile	'S504 New Cedar Ref: 15 Emi. 92 A.SRI: 16 CRRC: 0918-0110	Eagle
Vinyl Windows (factory finish)	TBD	TBD
Gutters & Downspouts	Match Adjacent Color	TBD
Stucco Color (16/20 sand finish)	TBD (Match to Sherwin Williams 'SW 7540 Artisan Tan)	Omega
Siding Color (applied to): Corner Boards @ Shingle Siding Garage Doors Shingle Siding	SW 7046 Anonymous	Sherwin Williams
Trim Color #1 (applied to): Columns Corbels Gable Board & Battens Garage Doors Trim	SW 7526 Maison Blanche	Sherwin Williams
Trim Color #2 (applied to): Barge Boards Eaves Fascia Outlookers Unit Doors Utility Doors	'SW 7034 Status Bronze	Sherwin Williams
Accent Color #1 (applied to): Shutters Unit Doors	'SW 6188 Shade-Grown	Sherwin Williams
Garage Door Weatherstrip (factory finish)	Match Garage Door Color	TBD

NOTE: Notify WHA if any variation occurs between these schemes and the construction documents prior to purchase.
Contact Donna Allich (949) 250-0607.

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2	1/22/21	Various revisions per client comments.

HIGHGROVE TH 1 & 2
Riverside County, California
FOREMOST
December 11, 2020 | 2020158
PAGE 4 OF 4

Exterior Color & Materials
SCHEME 4 OF 4 'B' ELEVATIONS ONLY, CRAFTSMAN

Material	Color	Manufacturer
Roofing: Concrete Shake Tile	'S580 Shasta Blend Ref: 2 Emi. 94 A.SRI: 23 CRRC: 0918-0088	Eagle
Vinyl Windows (factory finish)	TBD	TBD
Gutters & Downspouts	Match Adjacent Color	TBD
Stucco Color (16/20 sand finish)	TBD (Match to Sherwin Williams 'SW 9126 Honed Soapstone)	Omega
Siding Color (applied to): Corner Boards @ Shingle Siding Garage Doors Shingle Siding	'SW 7550 Resort Tan	Sherwin Williams
Trim Color #1 (applied to): Columns Corbels Gable Board & Battens Garage Doors Trim	'SW 7011 Natural Choice	Sherwin Williams
Trim Color #2 (applied to): Barge Boards Eaves Fascia Outlookers Unit Doors Utility Doors	'SW 7020 Black Fox	Sherwin Williams
Accent Color #1 (applied to): Shutters Unit Doors	'SW 6062 Rugged Brown	Sherwin Williams
Garage Door Weatherstrip (factory finish)	Match Garage Door Color	TBD

NOTE: Notify WHA if any variation occurs between these schemes and the construction documents prior to purchase.
Contact Donna Allich (949) 250-0607.

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REVISIONS:

Number	Date	Description
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COLOR SCHEMES | EXTERIOR COLOR & MATERIALS

Riverside County Ordinance 859 Landscape Water Use Calculations
Project Type Commercial
Highgrove Town Center
 0.45 ETo allowance

Applicant to use drop down menus in cells that indicate a selection to describe each hydrozone. Where "INPUT" is shown, applicant to enter project specific information. Please note that embedded formulas will reflect as 'false' or as an error until selections are completed.

1 Maximum Annual Water Allowance (MAWA)
 INPUT the total square footage of landscape = 518,700 S.F.
 INPUT the Hist. ETo for the area = 56.37
 MAWA = 1,090,604 cu ft / yr

2 Estimated Annual Water Use (EAWU)

Hydrozone #	INPUT square footage of hydrozone	Plant Factor	Plant Type	Water Use
Hydrozone # 1	9,425	0.5	Shrubs / Groundcover	Moderate
Hydrozone # 2	120,361	0.2	Basin - Slopes	Low
Hydrozone # 3	295,704	0.2	Shrubs / Groundcover	Low
Hydrozone # 4	93,210	0.5	Turf - other functional	Moderate
Hydrozone # 5	0	0	n/a	n/a
Hydrozone # 6	0	0	n/a	n/a

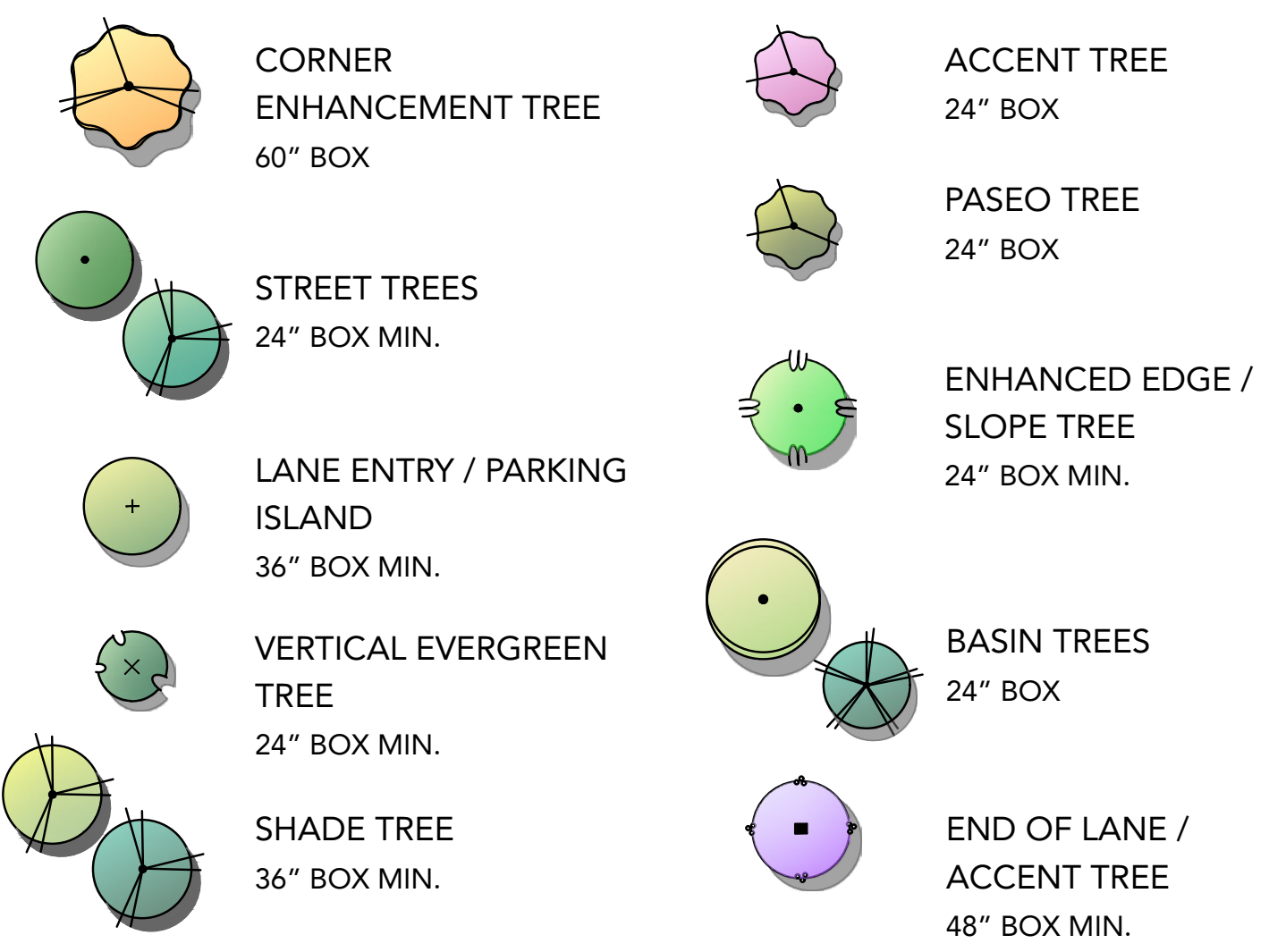
SubTotal EAWU = 791,304 cu ft / yr
 Input Irrigation System Operation Factor = 0.85
Total EAWU = 930,946
 MAWA - EAWU = 159,658 cu ft / yr
 (this number must be positive)

PERCENTAGE OF WATER SAVED RELATIVE TO MAX. ALLOWED = 15%

* Trees are not required to be listed as a separate hydrozone if understory is planted with plants of an equal or higher plant factor, and foot area is already included in calculations.

Tree Legend WUCOLS IV

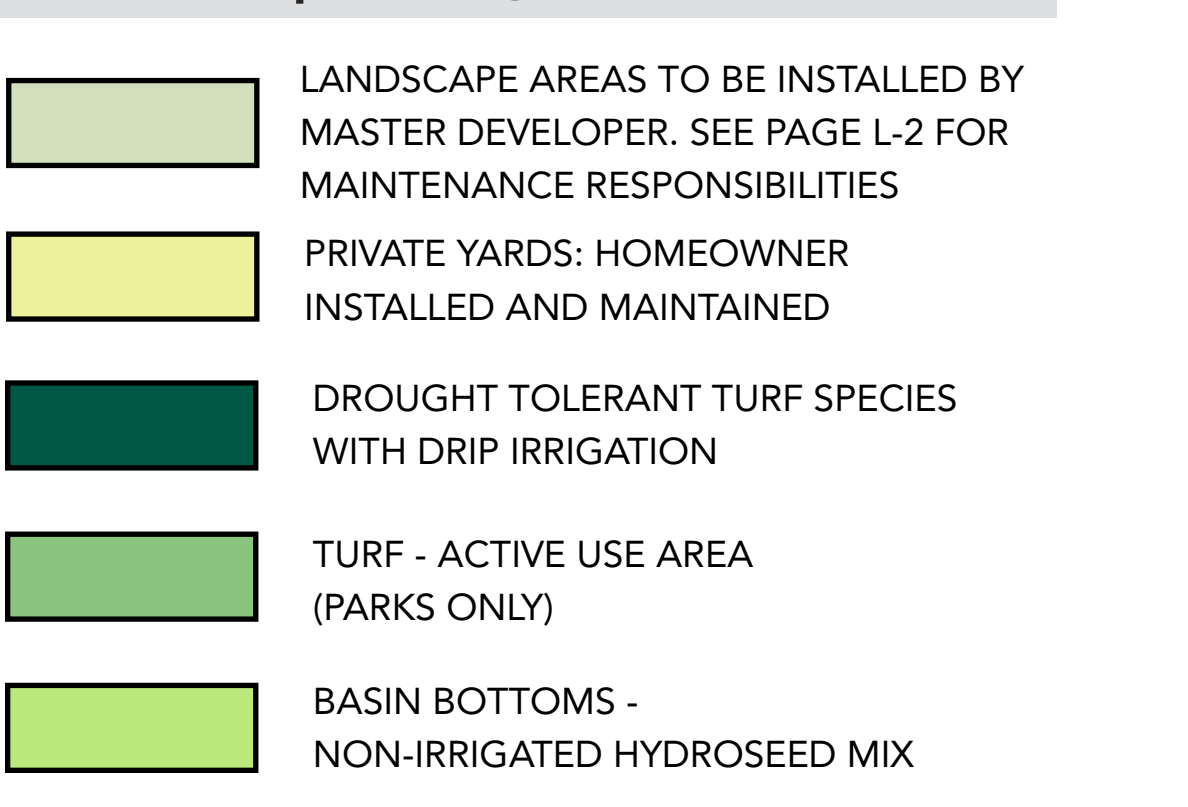
Please refer to L-15 Conceptual planting palette for full description.



SHEET INDEX

- L-1 Conceptual Landscape Plan
- L-2 Maintenance Exhibit
- L-3 Key Map
- L-4 Yard Townhomes
- L-5 Paseo Townhomes
- L-6 Enhanced Parkways
- L-7 Street Enlargements / Sections
- L-8 Concept Photos
- L-9 Highgrove Towncenter Park (Public)
- L-10 North Recreation Center Concept (Private)
- L-11 South Recreation Center Concept (Private)
- L-12 Springbrook Park Concept (Public)
- L-13 Water Quality Basin Conceptual Plans
- L-14 Typical Water Quality Basin Sections
- L-15 Conceptual Planting Palette
- L-16 Conceptual Fence and Wall Plan
- L-17 Conceptual Fence and Wall Details
- L-18 Paseo Townhome Fence and Wall Plan
- L-19 Typical Yard Townhome Fence and Wall Plan
- L-20 Highgrove Towncenter Conceptual Entry Monument

Landscape Legend



CONNECT TO INACTIVE RAIL SPUR, FORMERLY KNOWN AS CALIFORNIA AVENUE

100-YEAR FLOODPLAIN / SPRINGBROOK PARK L.O.W.



- HIGHGROVE TOWNCENTER PARK (PUBLIC)
- ELEMENTARY SCHOOL
- MEDIUM DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- SOUTH RECREATION CENTER (PRIVATE)
- COUNTY REGIONAL TRAIL
- LOW DENSITY RESIDENTIAL
- SPRINGBROOK COMMUNITY PARK (PUBLIC)
- SPRINGBROOK WASH
- FUEL MODIFICATION BOUNDARY

Landscape Notes

STREET TREES:
 The interior streets shall be planted with a variety of equally spaced 24-inch box trees of at least two different species per street. Trees shall provide screening, shade, and help to soften the paved areas. All of the plant material proposed shall have room enough to grow to full maturity without having to be pruned. The use of wood mulch shall be used to inhibit weed growth, help retain soil moisture, and improve the growing conditions while lowering water use.

The developer shall install automatic irrigation to all street trees (separated) from adjacent residences by a fence / wall prior to issuance of a certificate of occupancy.

ROOT BARRIER NOTE:
 Root barrier noted for trees within 6' (min.) of hardscape. Root barrier shall not encircle the tree rootball but shall be located at edge of hardscape and extend beyond center of tree a minimum of 5' in each direction.

DESCRIPTION OF LANDSCAPE IRRIGATION SYSTEM
 The project will comply with the County of Riverside Model Water Efficient Ordinance MWELO. The landscape irrigation design contains several elements that will be incorporated into the construction of the irrigation system to promote the conservation and preservation or water resources.

- Irrigation zones will be separated based upon slope, sun exposure, and plant material water use factors
- Plant factors are based on the water use classification of landscape species (WUCOLS IV)
- Turf areas will incorporate 6" pop up sprinklers with check valves and pressure regulation using high efficiency, matched precipitation rate nozzles
- Turf areas with overhead irrigation adjacent to non-permeable surfaces are designed for drainage into the landscape, subsurface drip will be installed along sidewalks adjacent to impermeable paving
- Turf areas will be designed for active use only
- Irregularly shaped areas less than 10 feet will be irrigated with subsurface or inline drip
- Shrub area irrigation will be irrigated with inline, pressure compensating drip
- Trees will have deep watering micro bubbler irrigation systems with separate valves
- Retention basin slopes will be irrigated with overhead rotation nozzle type systems
- The controller will be a 'Smart Water Application Technology' (SWAT) irrigation controller that utilizes a cloud based water management programing with local ET data
- The irrigation water type will be potable provided by the Riverside Highland Mutual Water Company
- Maximum applied water allowance calculations will be performed to estimate irrigation demand using a reference ET of 56.37 inches (UC Riverside CIMIS Station #44)

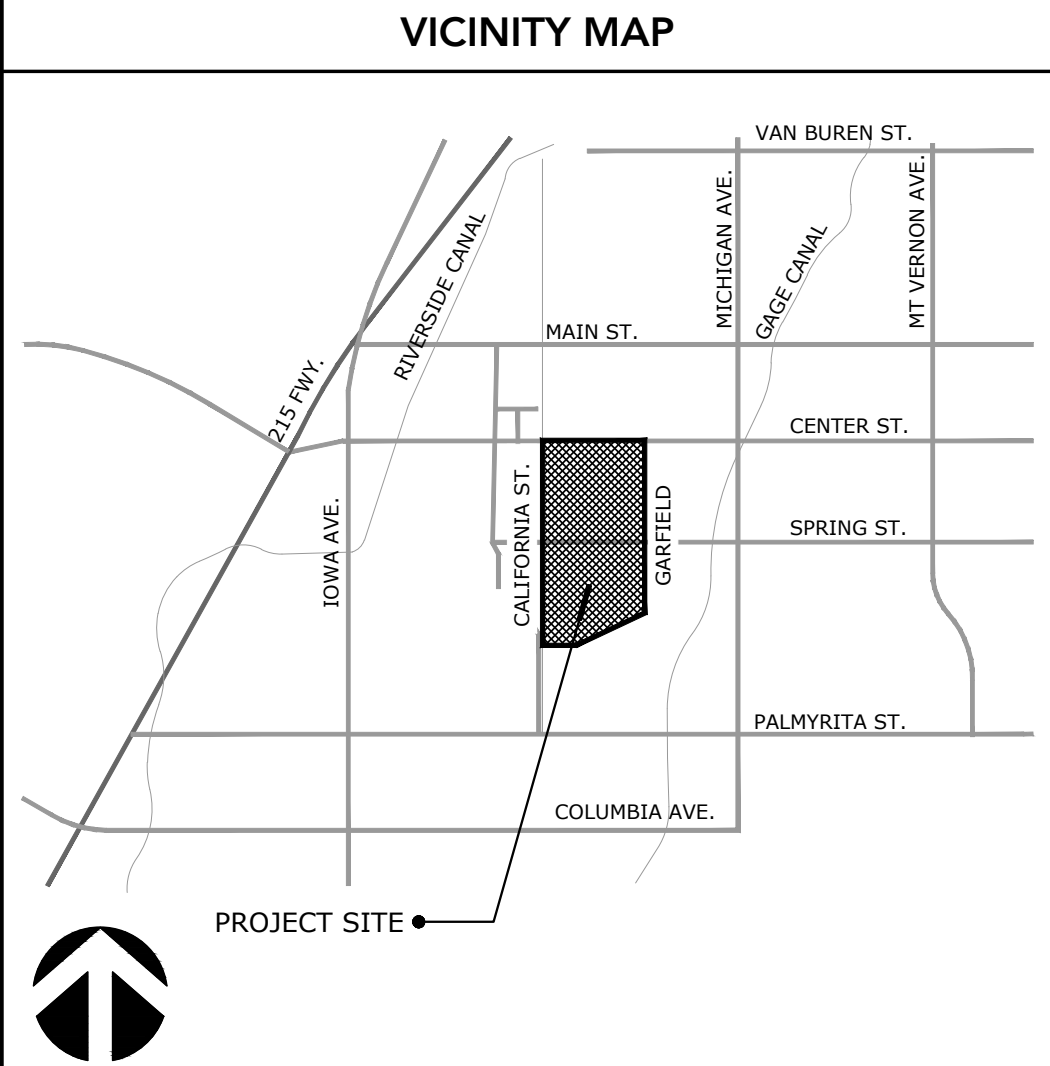
Existing Natural Landscape

OPEN SPACE NATURAL AND OPEN SPACE NATURAL CONSERVATION:
 Southern Willow Scrub: This vegetation community is dominated by arroyo willow (Salix lasiolepis) with mule fat as a non-dominant species. Southern willow scrub occurs located approximately 24 to 60 feet south of the project footprint.

Mule Fat Scrub: Mule fat scrub is a riparian scrub community dominated by mule fat (Baccharis salicifolia) and interspersed with shrubby willows. This vegetation community occurs in patches within the drainage located approximately 12 to 50 feet south of the project footprint.

Eucalyptus woodland: is a non-native habitat that is dominated by eucalyptus trees (Eucalyptus spp.). This habitat occurs in scattered patches on the southern end of the site and has an understory consisting of bare ground and non-native grasses.

EXISTING NATURAL LANDSCAPE



Foremost Center Street, LLC

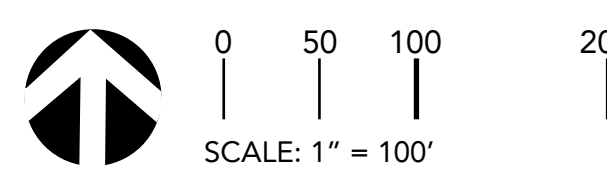
LAND CONCERN
 LANDSCAPE ARCHITECTURE
 1750 DEERE AVE, SANTA ANA, CA 92705
 O 949.250.4822 www.landconcern.com
ADMINISTRATIVE APPROVAL

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Highgrove Town Center
 Center Street, Spring Street and Garfield Avenue
 County of Riverside, CA



Note:

Prior to project construction, I agree to submit a complete Landscape Construction Document Package that complies with the requirements of applicable ordinances, including but not necessarily limited to Ordinance No. 859.2; Ordinance 348, Ordinance 461; project Conditions of Approval; and in substantial conformance with the approved Landscape Concept Plan. Should the ordinances be revised, plans may be subject to change."

Maintenance Legend

- PARK DISTRICT: COUNTY OF RIVERSIDE
- LANDSCAPE MAINTENANCE DISTRICT: COUNTY OF RIVERSIDE
- WATER DISTRICT: RIVERSIDE HIGHLAND WATER COMPANY
- H.O.A. MAINTAINED
- HOME OWNER

100-YEAR FLOODPLAIN / SPRINGBROOK PARK L.O.W.



Foremost Center Street, LLC

Maintenance Exhibit
Special Multi-Family Design Review

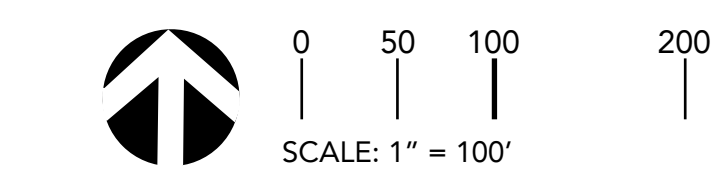


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Highgrove Town Center
Center Street, Spring Street and Garfield Avenue
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Key Map - Sheet Index

- A** YARD TOWNHOMES: SEE SHEET L-4
- B** PASEO TOWNHOMES: SEE SHEET L-5
- C** ENHANCED PARKWAY: SEE SHEET L-6
- D** 2.1 ACRE PARK SITE: SEE SHEET L-9
- E** NORTH RECREATION CENTER: SEE SHEET L-10
- F** SOUTH RECREATION CENTER: SEE SHEET L-11
- G** SPRINGBROOK COMMUNITY PARK: SEE SHEET L-12
- H** BASIN A: SEE SHEET L-13
- I** BASIN B: SEE SHEET L-13
- J** BASIN C: SEE SHEET L-13
- K** BASIN D: SEE SHEET L-13

Trail Legend

- INTERNAL TRAIL CONNECTION TO RECREATION / PARK SITE
- PUBLIC PARK TRAIL CONNECTION
- REGIONAL TRAIL

Architecture Legend

- 'PASEO' TOWNHOMES'
- 'YARD' TOWNHOMES

NORTHWEST ENTRY (SHEET L-9) MONUMENT

BASIN A (SHEET L-13)

- D.G. access path
- Slopes - trees, shrubs and ground cover
- Basin bottom - non-irrigated hydroseed
- 6' tubular steel fence
- Access gates

BASIN B (SHEET L-13)

- D.G. access path
- Slopes - trees, shrubs and ground cover
- Basin bottom - non-irrigated hydroseed
- 6' tubular steel fence
- Access gates

ENHANCED PARKWAY (SHEET L-6)

Internal trail connection to Recreation / Park Sites

BASIN C (SHEET L-13)

- D.G. access path
- Slopes - trees, shrubs and ground cover
- Basin bottom - non-irrigated hydroseed
- 6' tubular steel fence
- Access gates

ENHANCED PASEO

Internal trail connection to Recreation / Park Site

BASIN D (SHEET L-13)

- D.G. access path
- Slopes - trees, shrubs and ground cover
- Basin bottom - non-irrigated hydroseed
- 6' tubular steel fence
- Access gates



NORTHEAST ENTRY

MONUMENT (SHEET L-9)

HIGHGROVE TOWNCENTER PARK

(PUBLIC) 2.1 Acres (SHEET L-9)

- Accent paving
- Tot lot
- 1 picnic shelters with tables
- Open turf
- Shrub planting along borders

Possible Additions

- Bench seating
- BBQ's
- Trash receptacles
- Pet waste stations
- Lighting

YARD TOWNHOMES (SHEET L-4)

ENHANCED PASEO TOWNHOMES (SHEET L-5)

NORTH RECREATION CENTER

(PRIVATE) (SHEET L-10)

0.44 Acres

Proposed program:

- Restroom
- Outdoor eating with BBQ's
- Reserve-able space
- Shade structures
- Lap Pool
- Spa
- Unique lighting
- Wadding pool

SPRING STREET ENTRY MONUMENTS

NORTH AND SOUTH (SHEET L-20)

COUNTY REGIONAL TRAIL (SHEET L-7)

South side of Spring Street

REC CENTER SOUTH

MONUMENT (SHEET L-20)

SOUTH RECREATION CENTER

(PRIVATE) (SHEET L-11)

0.43 Acres

Proposed program:

- Restroom
- Outdoor eating with BBQ's
- Reserve-able space
- Shade structures
- Informal Pool
- Wadding pool
- Unique lighting

SPRINGBROOK PARK

MONUMENT (SHEET L-20)

SPRINGBROOK COMMUNITY PARK

(PUBLIC) (SHEET L-12)

3.3 Acres

- Accent paving
- 2 picnic shelters with tables
- D.G. Regional Trail
- 6' D.G. loop path
- Overlook area with seating

Possible Additions

- Bench seating
- BBQ's
- Trash receptacles
- Pet waste stations
- Lighting

Foremost Center Street, LLC

Key Map Special Multi-Family Design Review



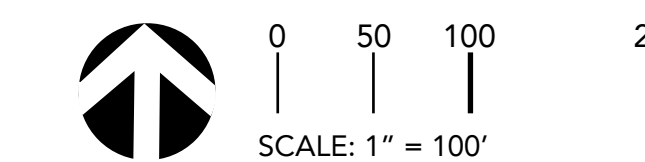
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Highgrove Town Center

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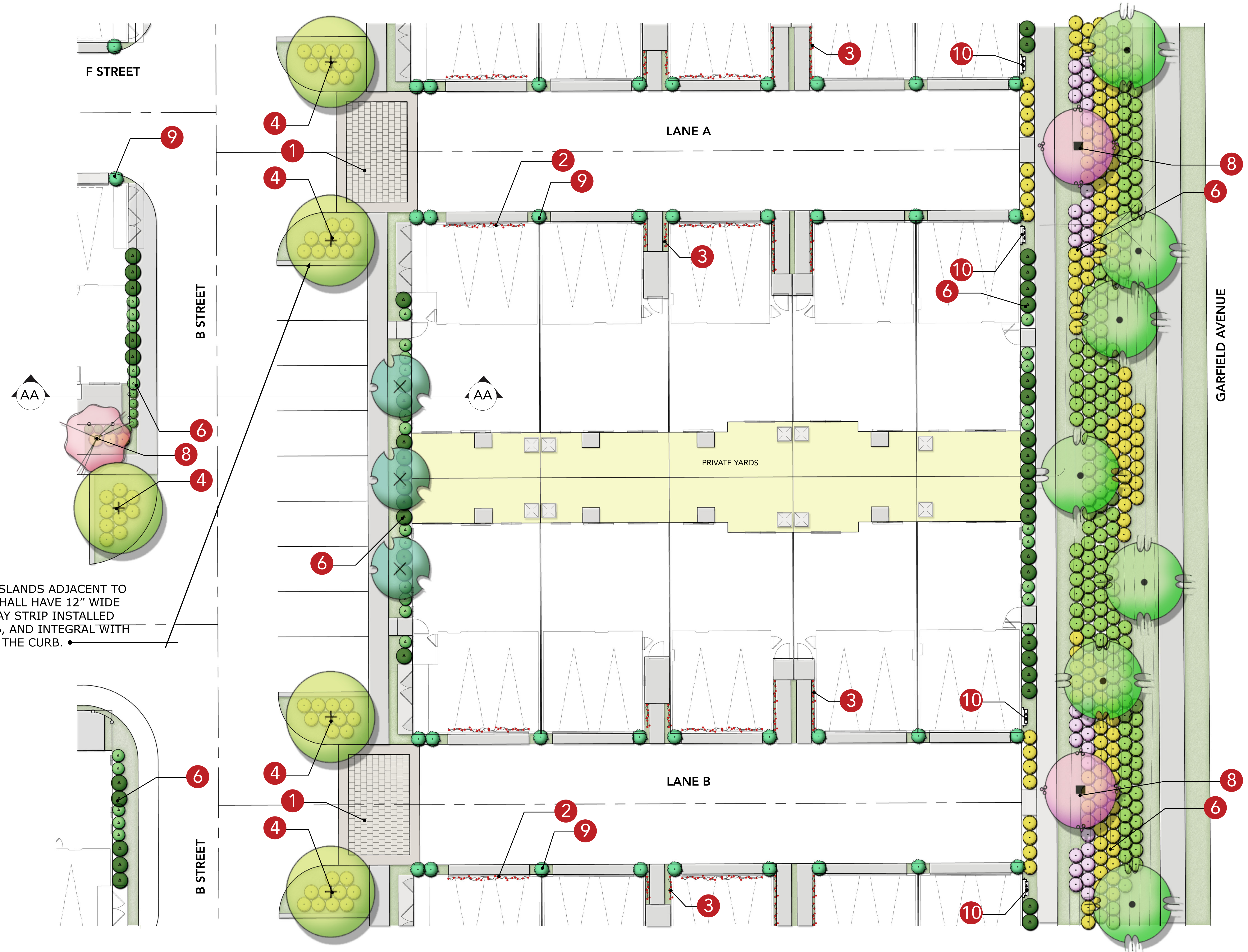
Landscape Key

- 1 Enhanced Paving at Lane Entries
- 2 Vine Wire System
- 3 Decorative Metal Vine Trellis
- 4 Lane Entry Trees
- 5 Enhanced Internal Paseo Planting (not applicable)
- 6 Common Area and Foundation Planting
- 7 Enhanced Parkway / Street Tree Planting (Not applicable)
- 8 Accent Tree
- 9 Accent Shrubs
- 10 Utilities in Landscape Areas (T.B.D.)

Tree Legend

- LANE ENTRY / PARKING ISLAND 36" BOX MIN.
- VERTICAL EVERGREEN TREE 24" BOX MIN.
- ACCENT TREE 24" BOX
- ENHANCED EDGE / SLOPE TREE 24" BOX MIN.
- END OF LANE / ACCENT TREE 48" BOX MIN.

TYPICAL PARKING ISLANDS ADJACENT TO PARKING SPACES SHALL HAVE 12" WIDE CONCRETE WALKWAY STRIP INSTALLED ADJACENT TO CURB, AND INTEGRAL WITH OR DOWELED INTO THE CURB.



Foremost Center Street, LLC

Yard Townhomes Special Multi-Family Design Review



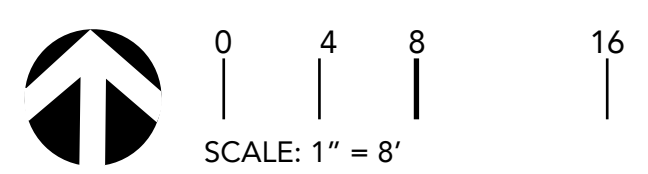
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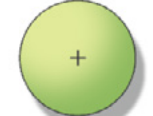


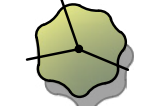
Center Street, Spring Street and Garfield Avenue
County of Riverside, CA



Landscape Key

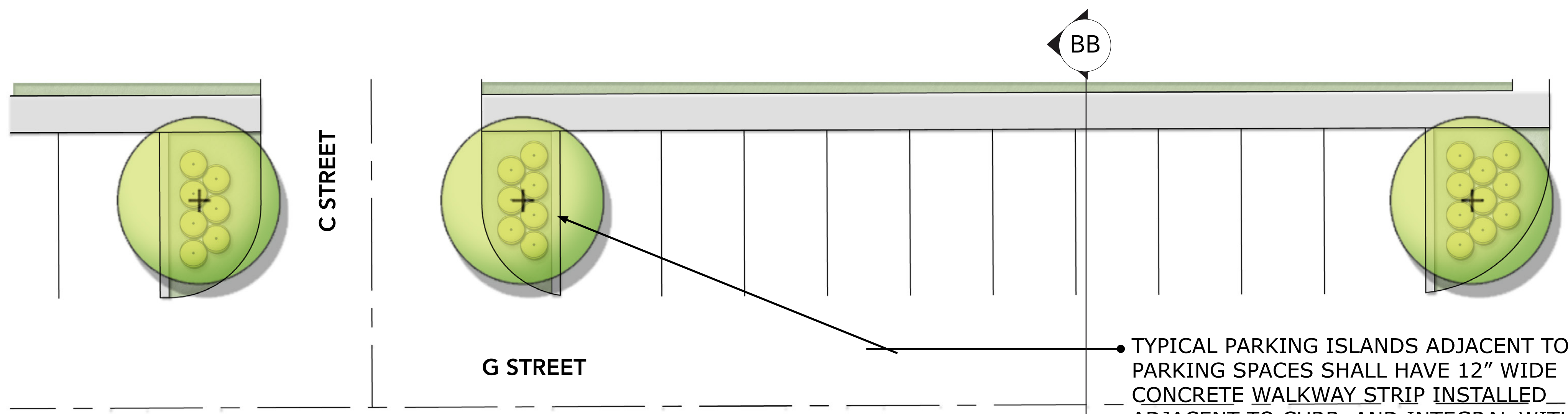
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- 8 Accent Tree
- 9 Accent Shrubs
- 10 Utilities in Landscape Areas

Tree Legend

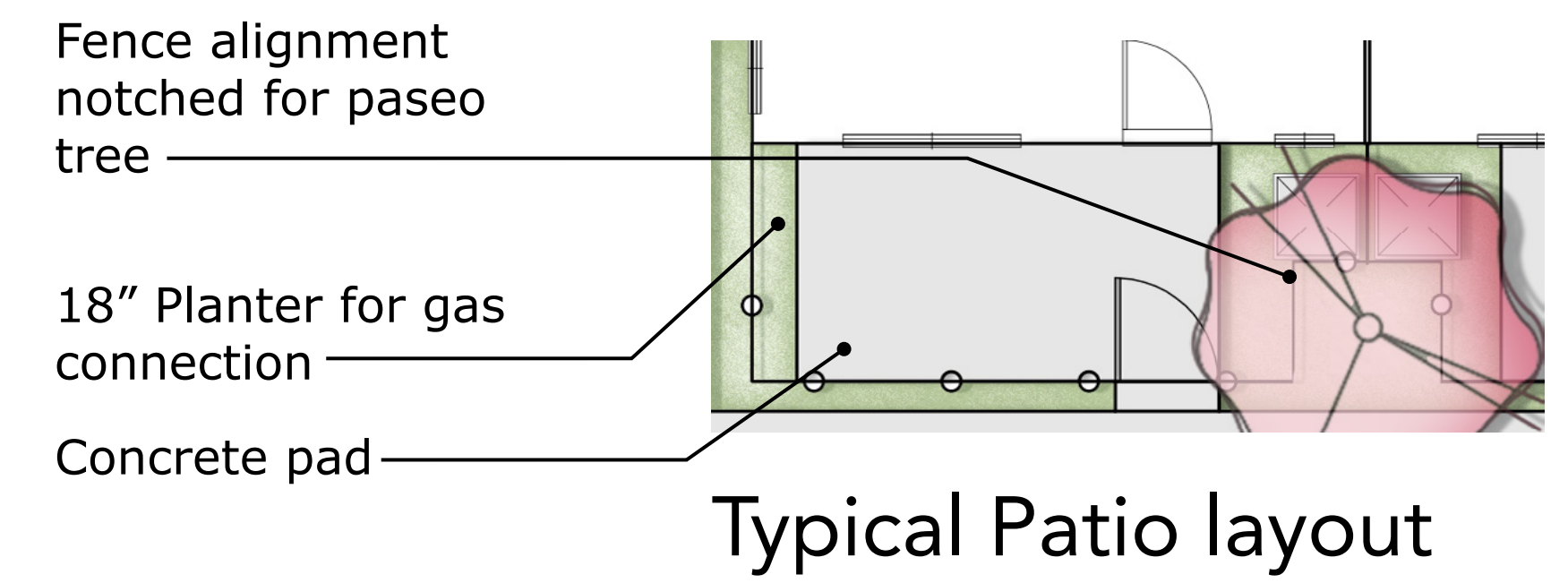
-  LANE ENTRY / PARKING ISLAND 36" BOX MIN.
-  VERTICAL EVERGREEN TREE 24" BOX MIN.
-  ACCENT TREE 24" BOX
-  PASEO TREE 24" BOX



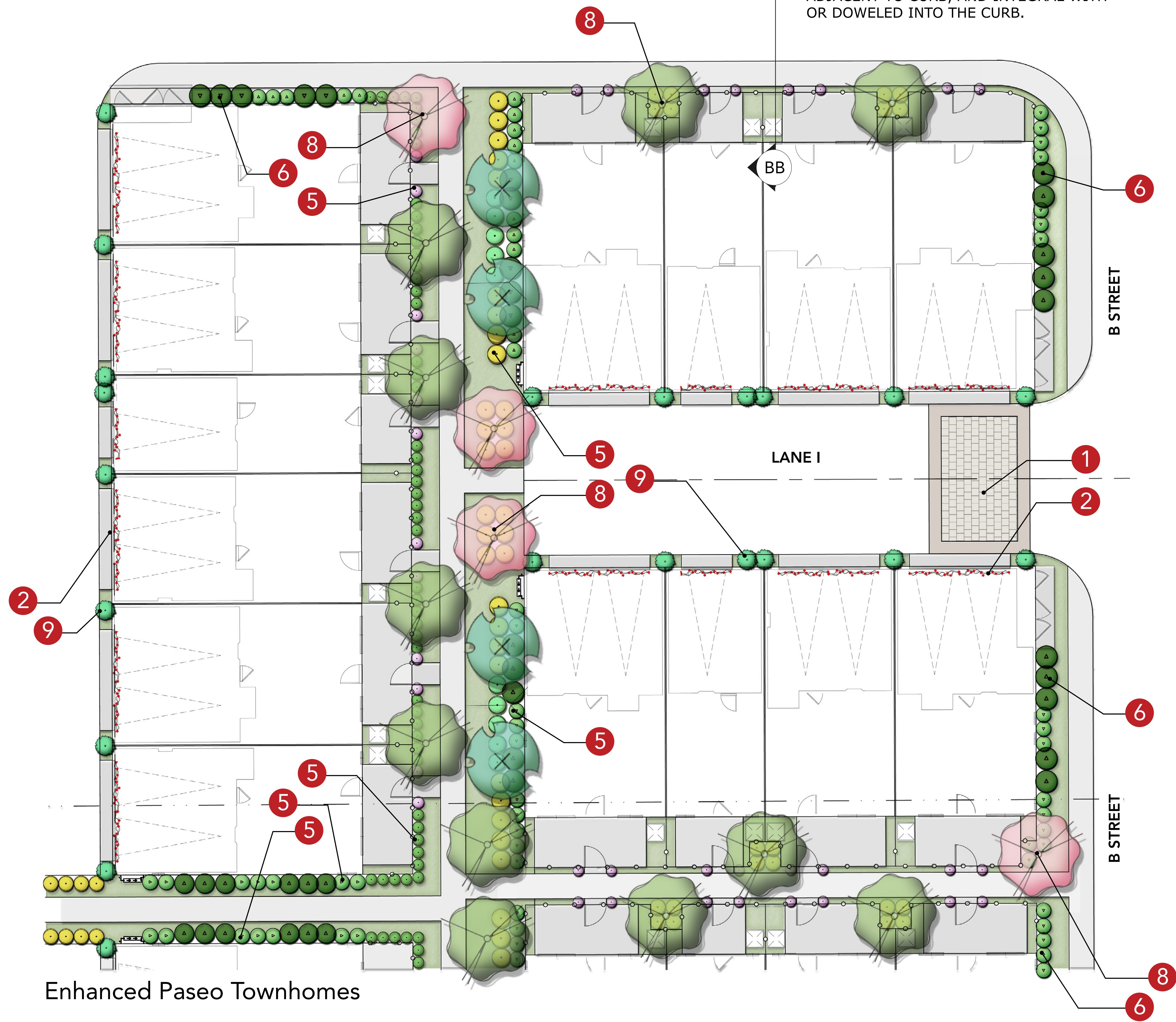
KEY MAP



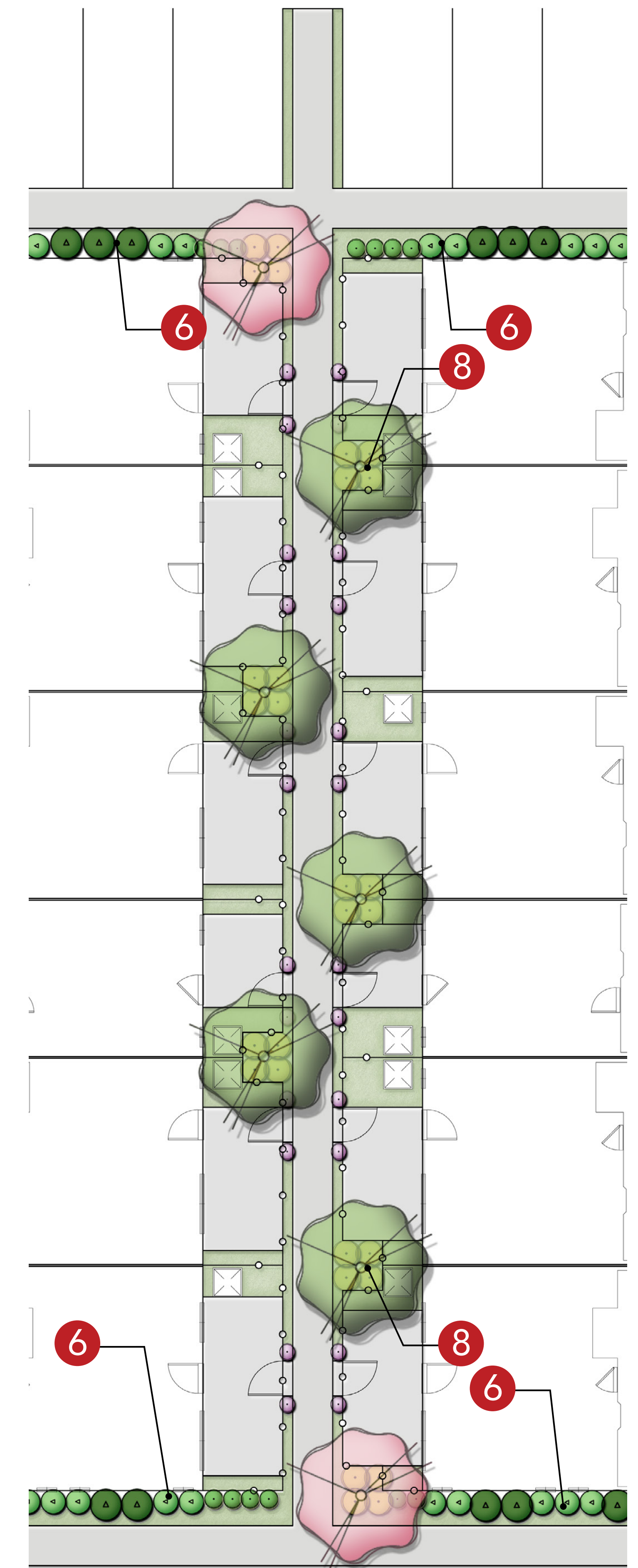
TYPICAL PARKING ISLANDS ADJACENT TO PARKING SPACES SHALL HAVE 12" WIDE CONCRETE WALKWAY STRIP INSTALLED ADJACENT TO CURB, AND INTEGRAL WITH OR DOWELED INTO THE CURB.



Typical Patio layout



Enhanced Paseo Townhomes



Typical Paseo Townhomes

Foremost Center Street, LLC

Paseo Townhomes Special Multi-Family Design Review



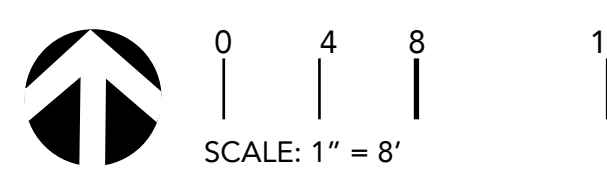
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Highgrove Town Center

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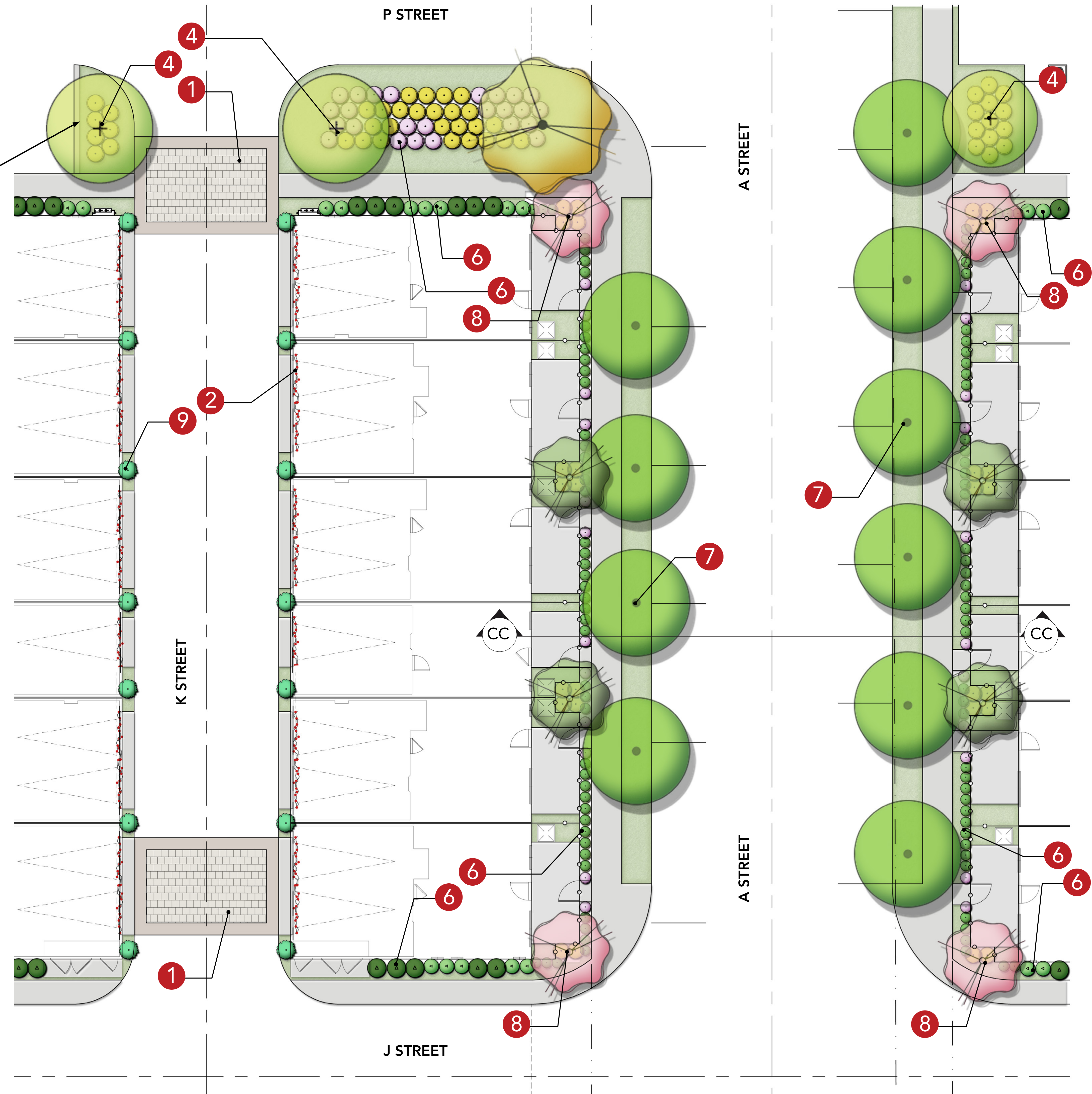
Landscape Key

- 1 Enhanced Paving at Lane Entries
- 2 Vine Wire System
- 3 Decorative Metal Vine Trellis (not applicable)
- 4 Lane Entry Trees
- 5 Enhanced Internal Paseo Planting (not applicable)
- 6 Common Area and Foundation Planting
- 7 Enhanced Parkway / Street Tree Planting
- 8 Accent Tree
- 9 Accent Shrubs
- 10 Utilities in Landscape Areas

Tree Legend

- CORNER ENHANCEMENT TREE
60" BOX
- ACCENT TREE
24" BOX
- STREET TREES
24" BOX MIN.
- PASEO TREE
24" BOX
- LANE ENTRY / PARKING ISLAND
36" BOX MIN.

TYPICAL PARKING ISLANDS ADJACENT TO PARKING SPACES SHALL HAVE 12" WIDE CONCRETE WALKWAY STRIP INSTALLED ADJACENT TO CURB, AND INTEGRAL WITH OR DOWELED INTO THE CURB.



Foremost Center Street, LLC

Enhanced Parkways Special Multi-Family Design Review



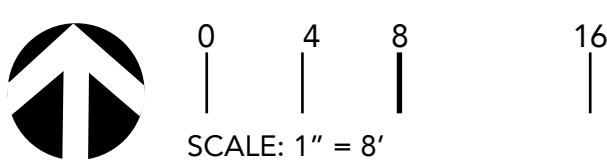
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12671 High Bluff Drive, Suite 150
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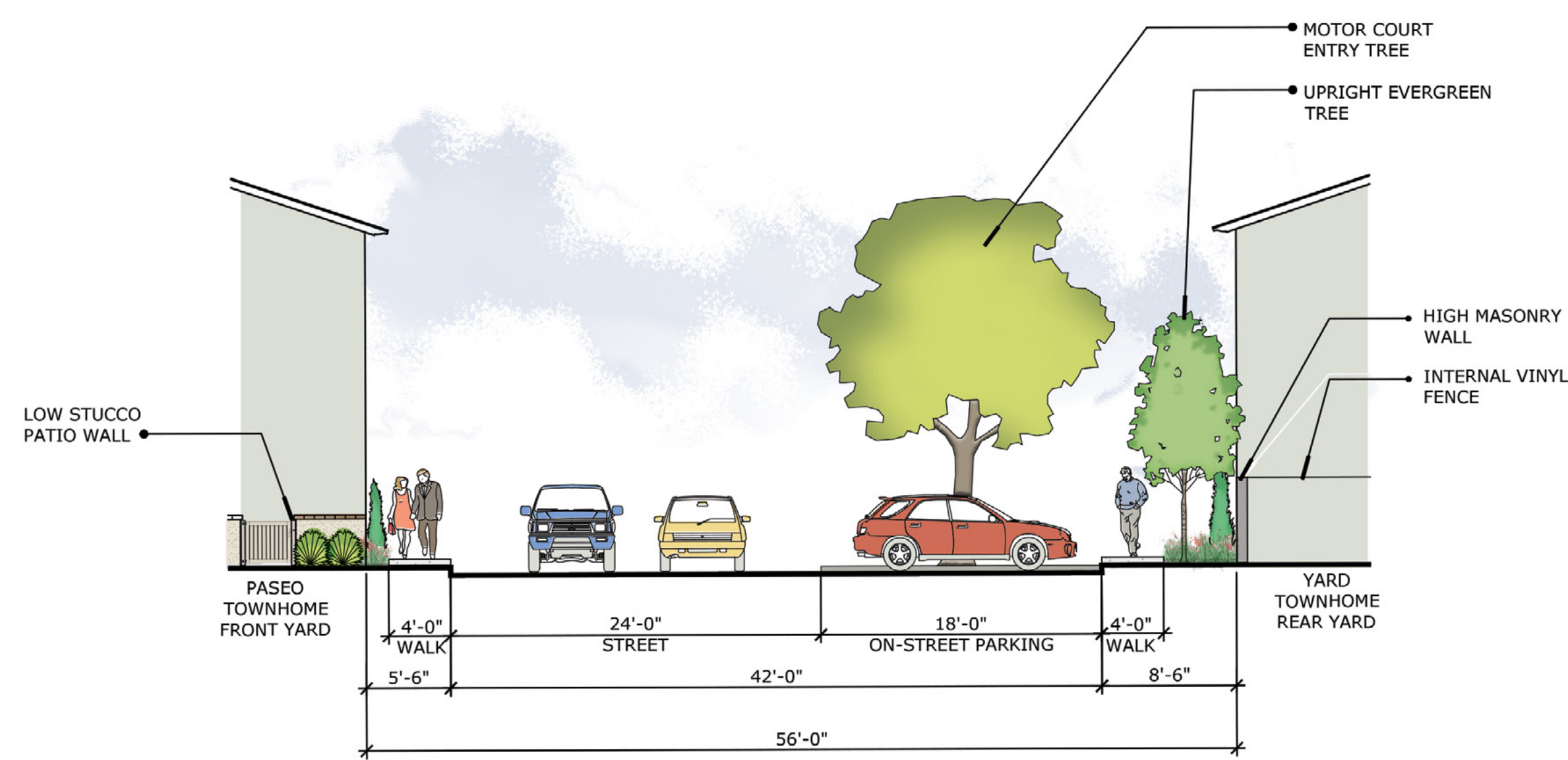
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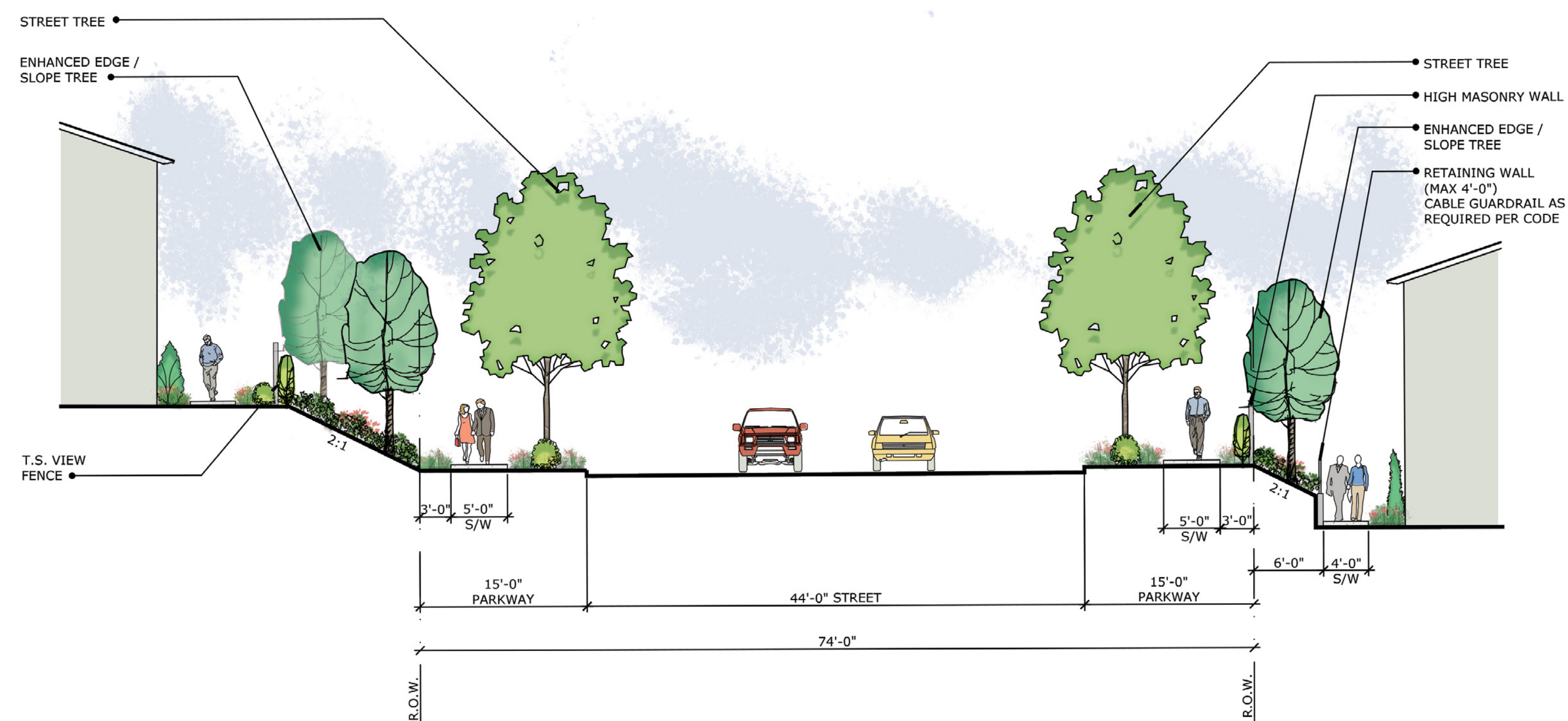
Highgrove Town Center

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County of Riverside, CA

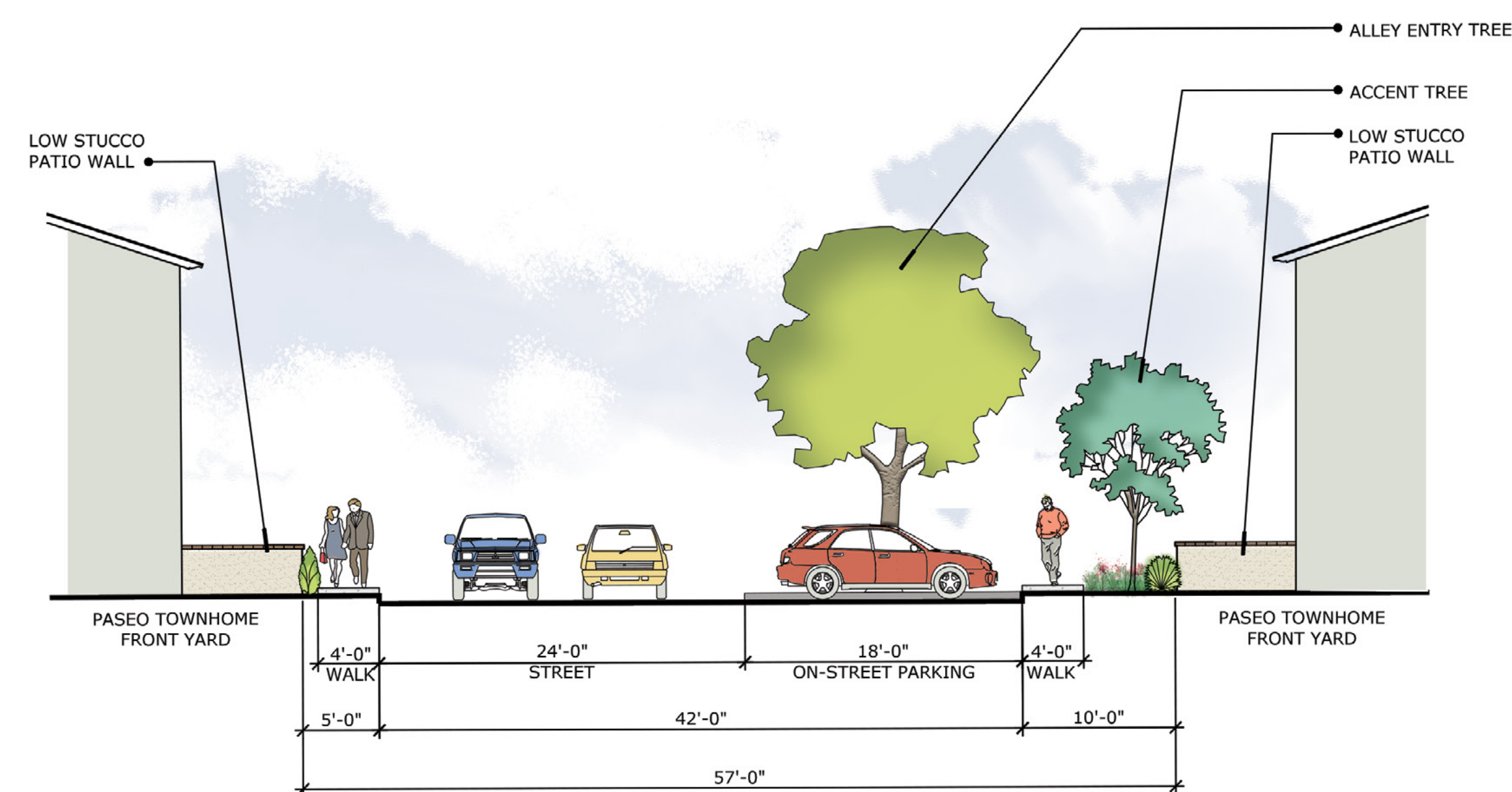




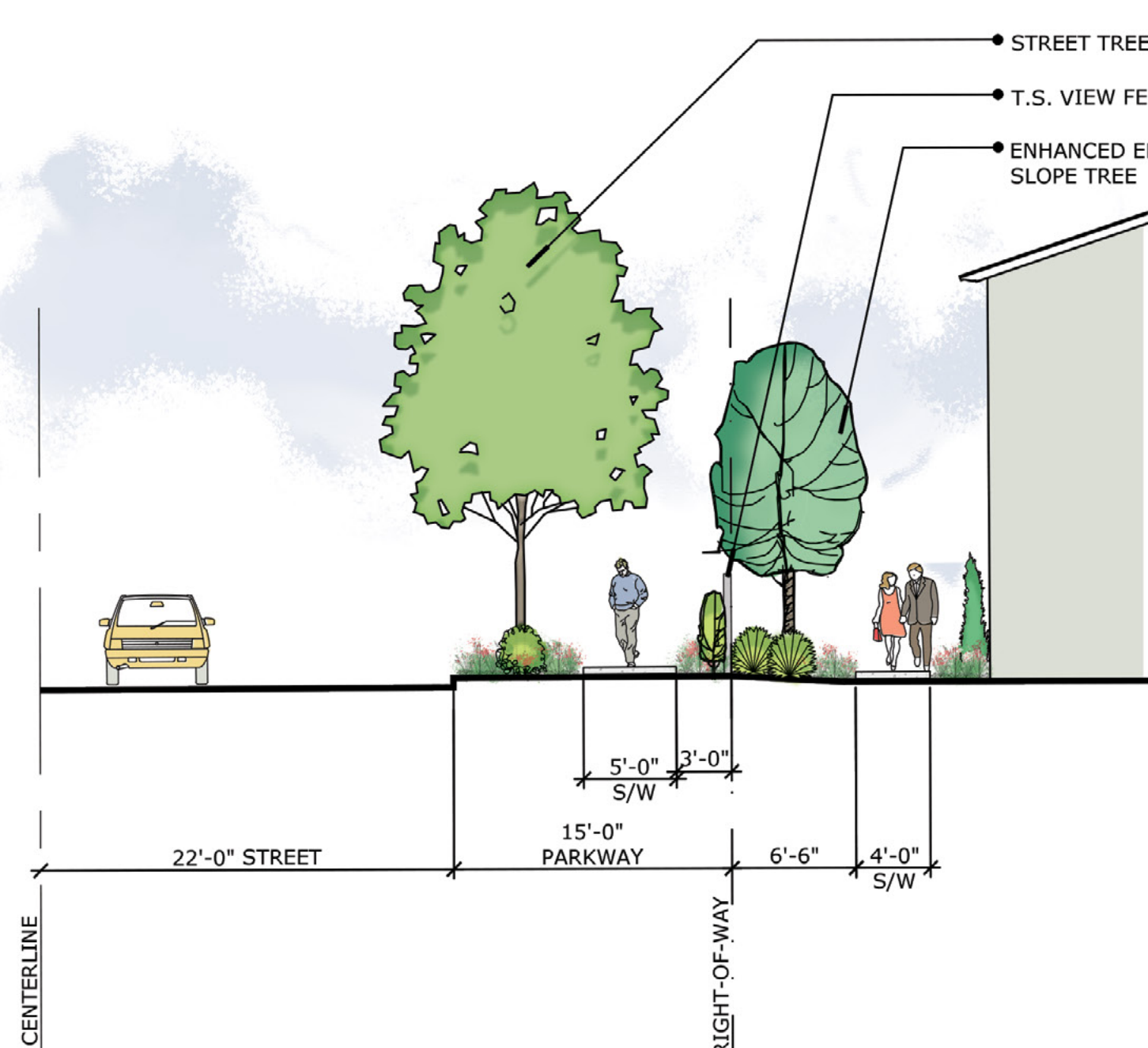
SECTION AA (B STREET)



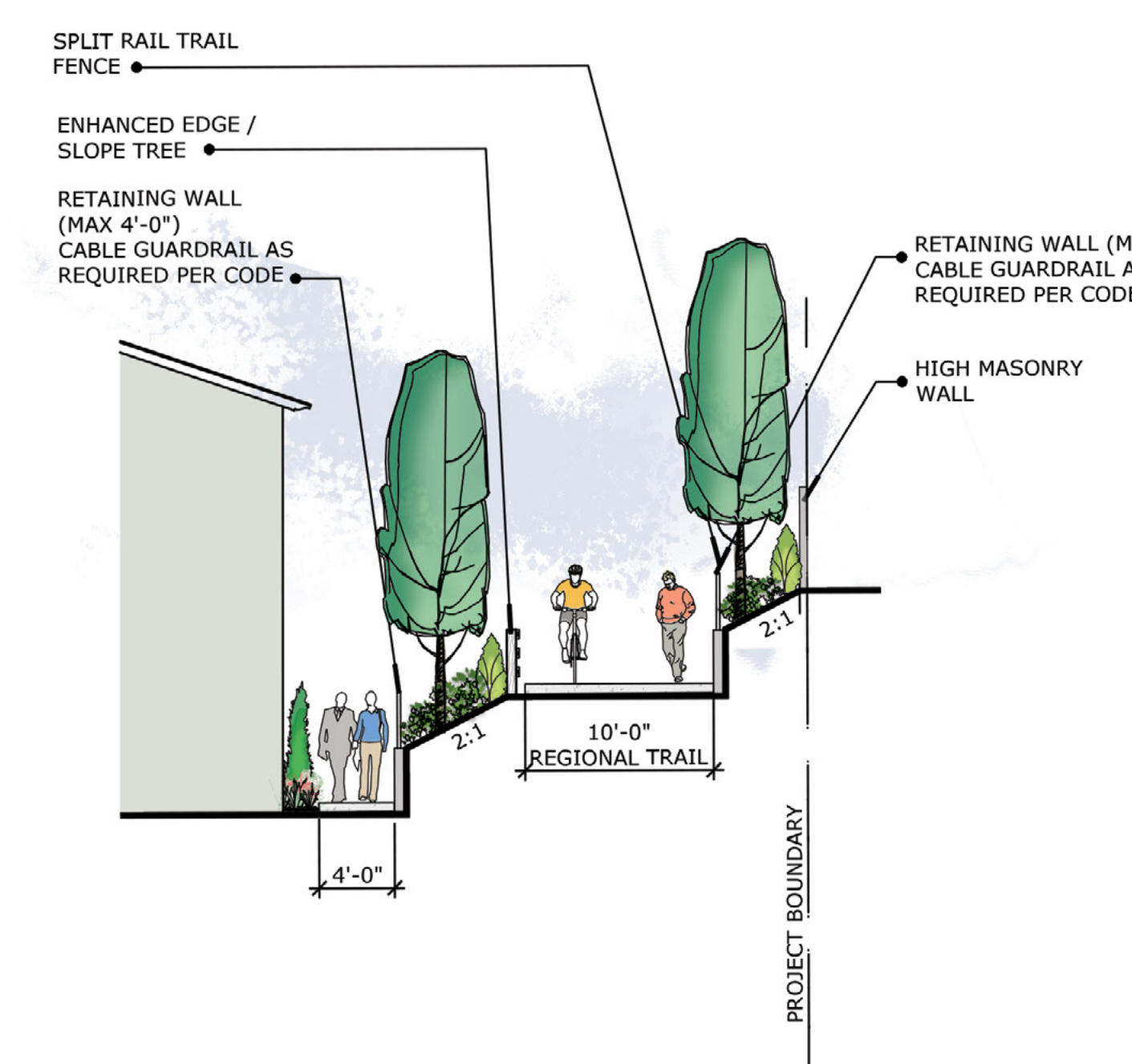
SECTION DD (SPRING STREET)



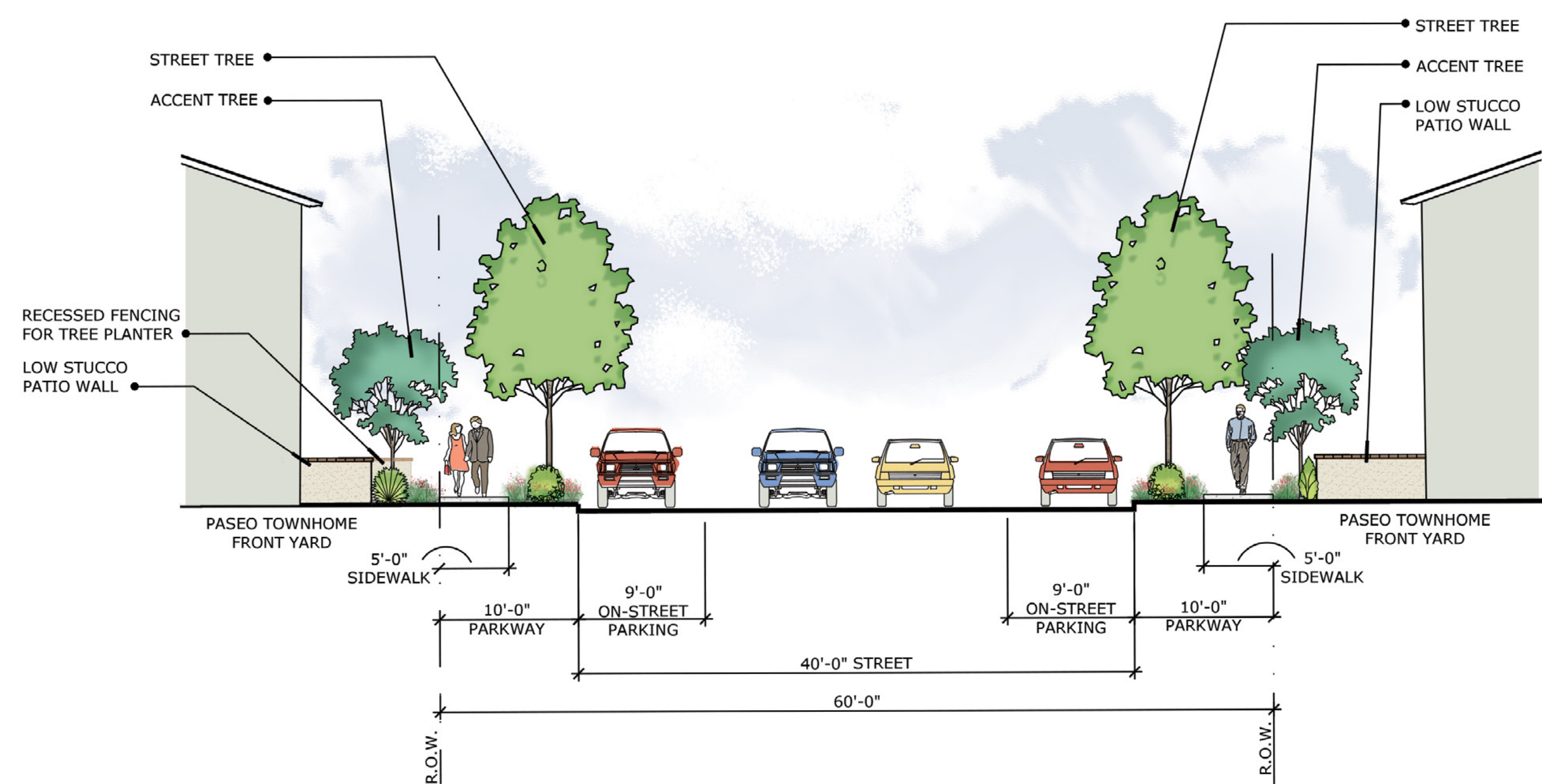
SECTION BB (G STREET)



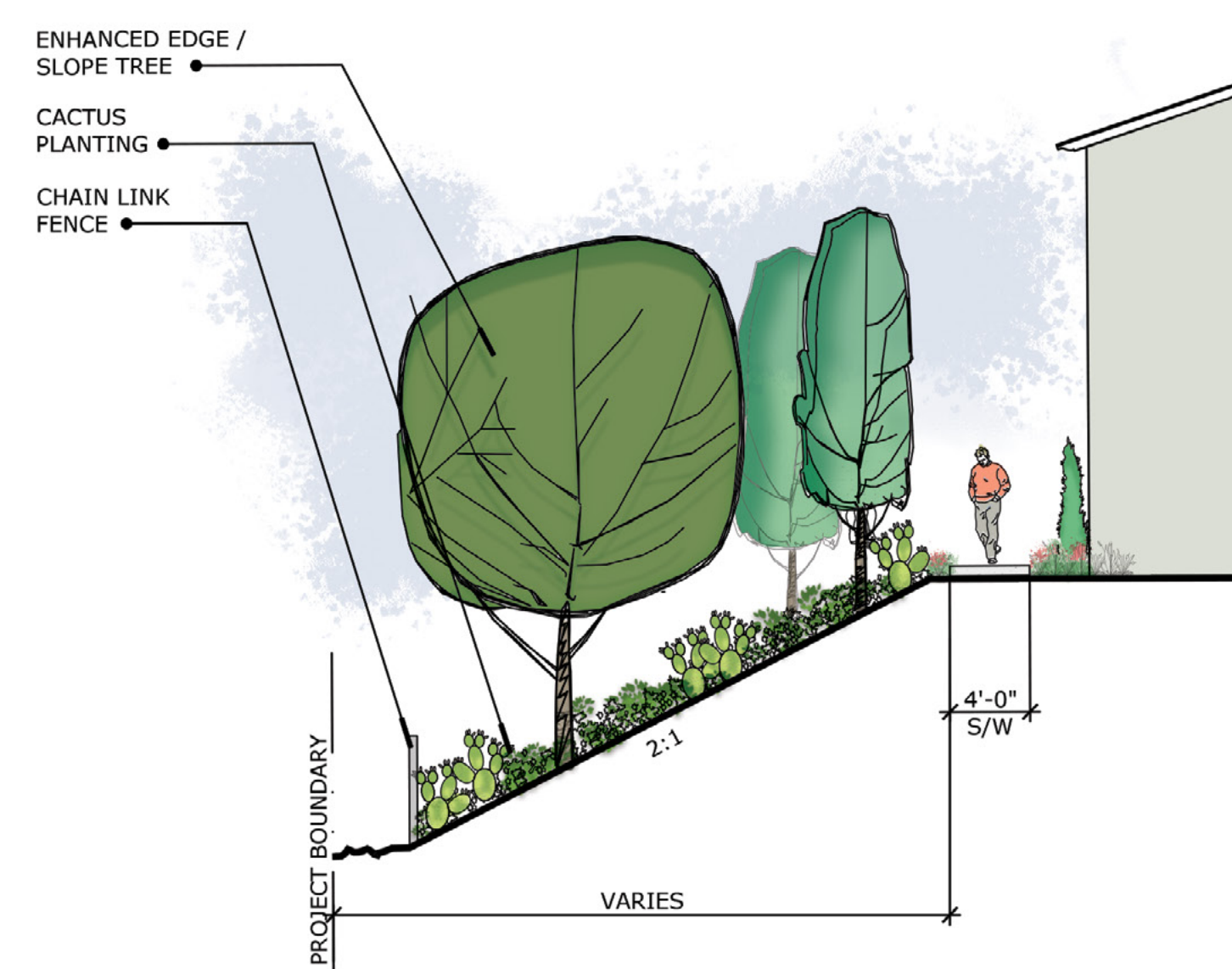
SECTION EE (SPRING STREET)



SECTION FF (REGIONAL TRAIL)



SECTION CC (A STREET)



SECTION GG (SOUTHERN PACIFIC RAILROAD R.O.W.)

Note:
Slope planting concept is compliant with minimum standards for Building & Safety erosion control standards (Ordinance 457, Section 3316.1).

Over 3 feet vertical - Ground cover plant material maximum 12" on center.

Over 15 feet vertical - shrubs maximum 10' on center, trees 20' maximum on center, or a combination thereof.

Foremost Center Street, LLC



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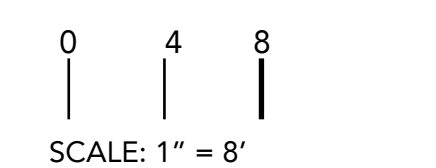
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Highgrove Town Center

Center Street, Spring Street and Garfield Avenue
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Street Enlargements / Sections Special Multi-Family Design Review





1 ENHANCED PAVING AT LANE ENTRIES



2 VINE WIRE SYSTEM



3 DECORATIVE METAL VINE TRELLIS



4 LANE ENTRY TREES



5 INTERNAL PASEO PLANTING



6 COMMON AREA & FOUNDATION PLANTING



7 ENHANCED PARKWAY / STREET TREE PLANTING



8 ACCENT TREE



9 ACCENT SHRUBS



10 UTILITIES IN LANDSCAPE AREAS (T.B.D.)



Foremost Center Street, LLC

Concept photos
Special Multi-Family Design Review

LAND CONCERN
LANDSCAPE ARCHITECTURE

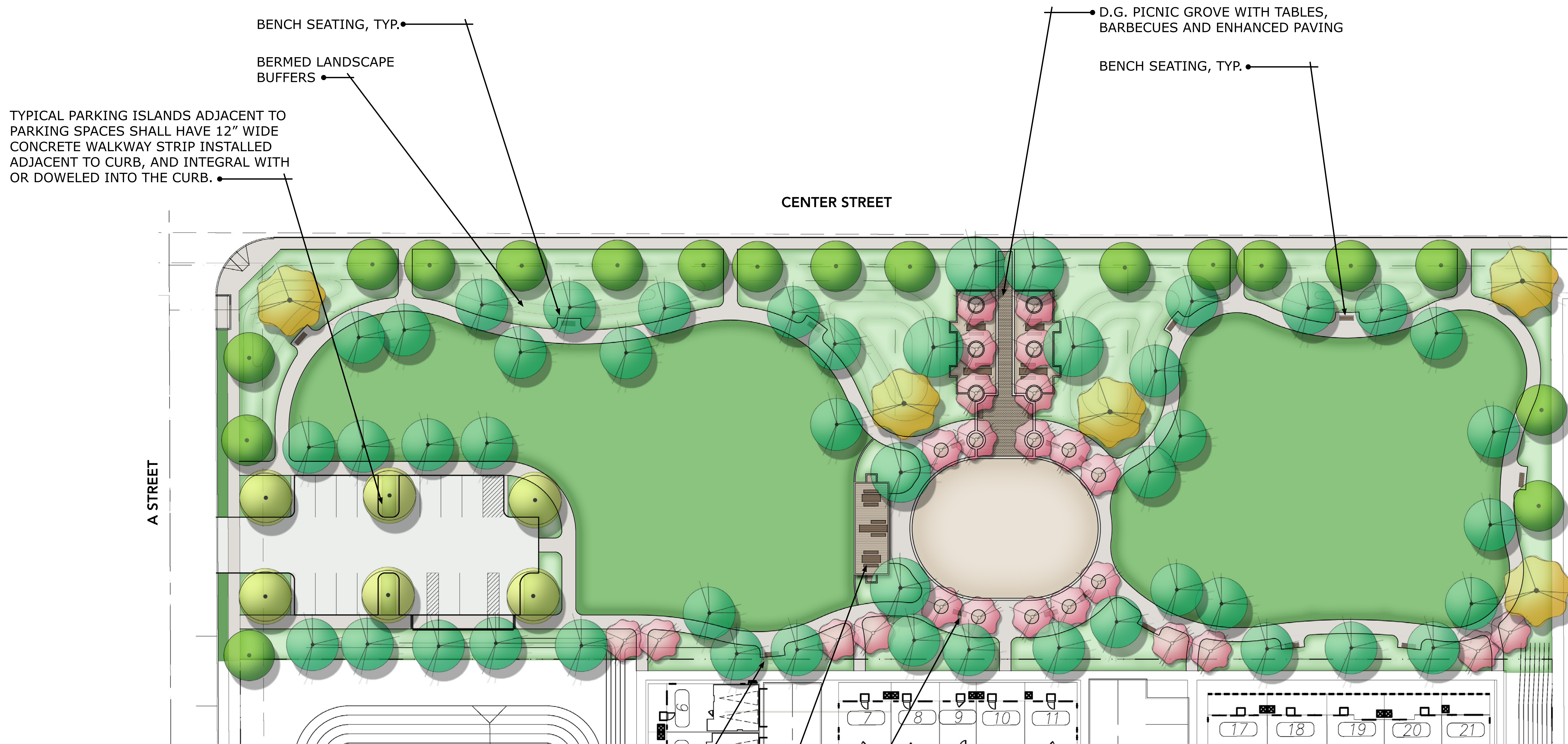
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BENCH SEATING, TYP.

PICNIC SHELTER WITH BARBECUES

BENCH SEATING



Parking Lot Shade Calculations

Tree	Center Islands - 100%		South, East and West - 50%		Corner and North - 25%		Total
	QTY	Shade SF	QTY	Shade SF	QTY	Shade SF	
Towncenter Park Parking							6,467' sq of paving
Island / Entry Trees	2	962	0	481	4	240	1,940 30% Shading
Large-Medium (Palo Verde)	0	707	0	354	0	177	0
Medium - Small (Crapes)	0	491	0	246	0	123	0
Small	0	318	0	159	0	79	0
		1924		1070		479	2884 shade achieved 44.60%

Tree Legend

- SPECIMEN TREE 60" BOX
- STREET TREES 24" BOX MIN.
- SHADE / CANOPY TREES 36" BOX MIN.
- LANE ENTRY / PARKING ISLAND 36" BOX MIN.
- ACCENT TREE 24" BOX

Foremost Center Street, LLC

Highgrove Towncenter Park (Public)
Special Multi-Family Design Review

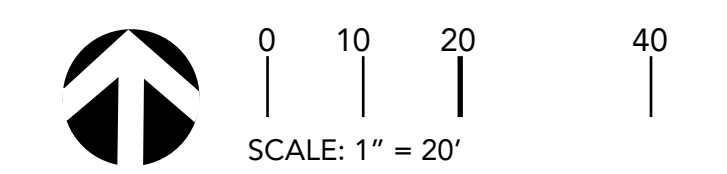
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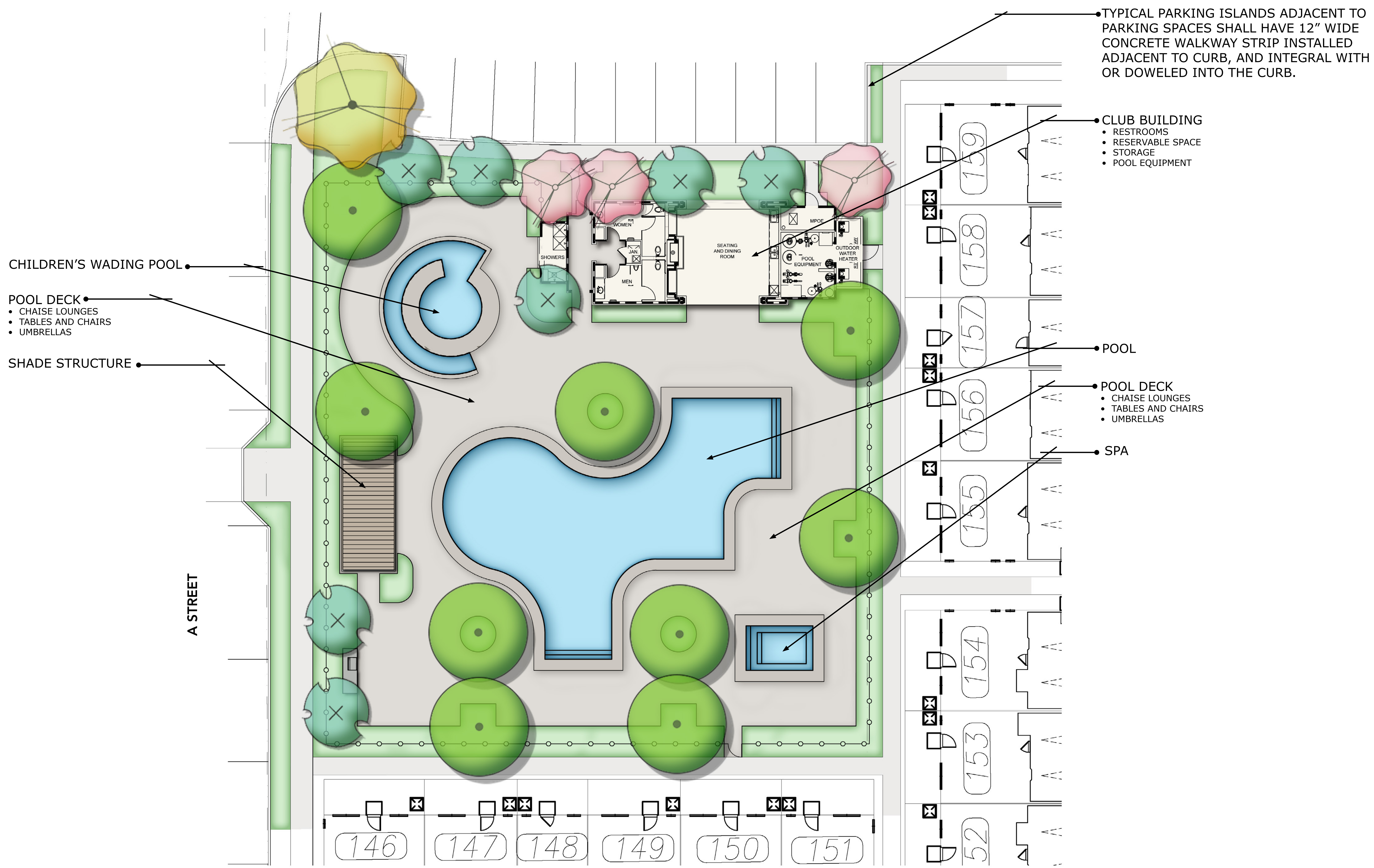
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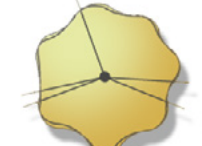

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Highgrove Town Center
Center Street, Spring Street and Garfield Avenue
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Tree Legend

-  SPECIMEN TREE
60" BOX
-  VERTICAL EVERGREEN TREE
24" BOX MIN.
-  SHADE TREES
36" BOX MIN.
-  ACCENT TREE
24" BOX

Foremost Center Street, LLC

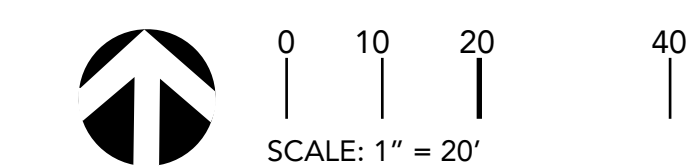
**North Recreation Center Concept (Private)
Special Multi-Family Design Review**

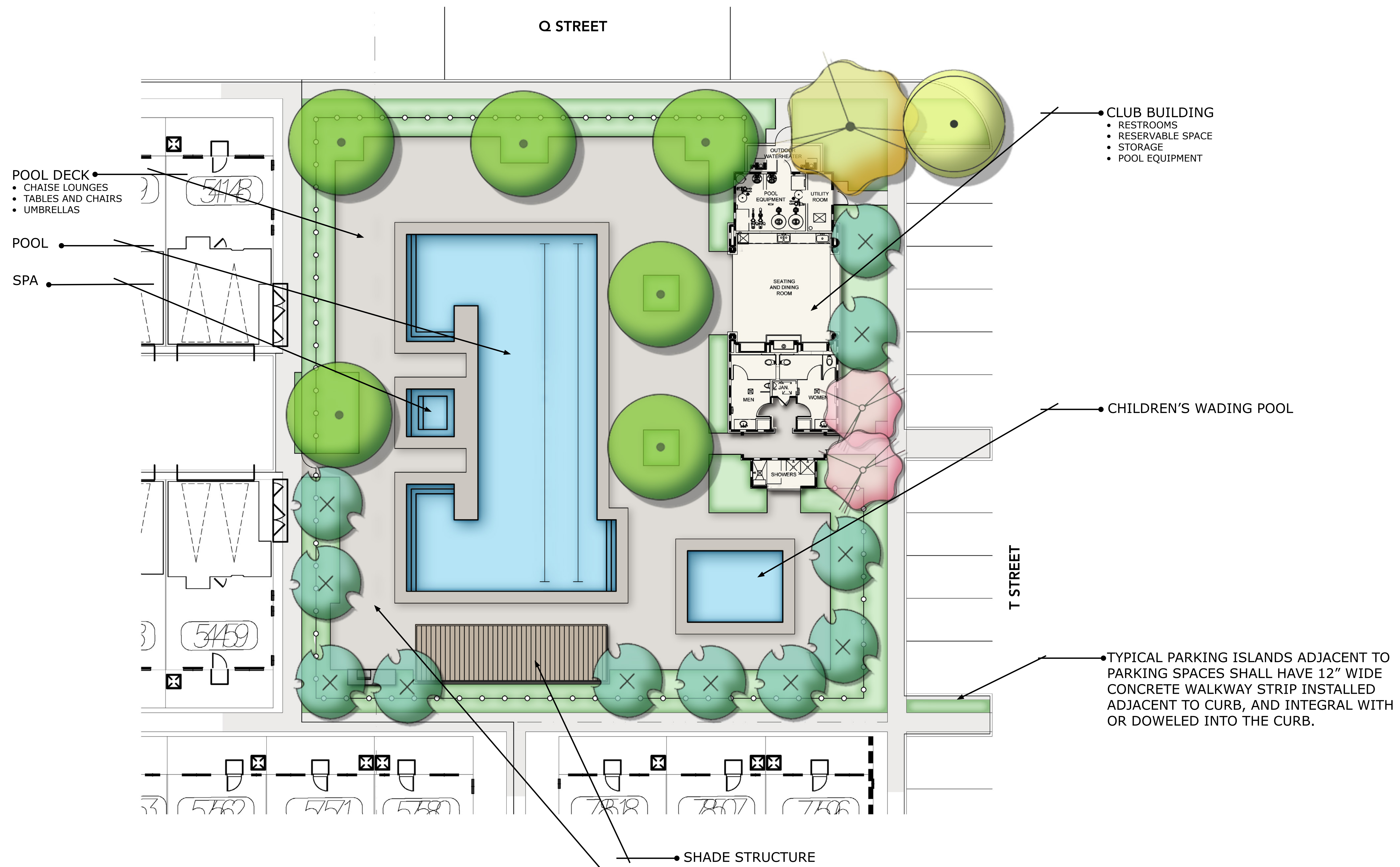
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Contact: Gregory Lansing
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Highgrove Town Center
Center Street, Spring Street and Garfield Avenue
County of Riverside, CA





POOL DECK
 • CHAISE LOUNGES
 • TABLES AND CHAIRS
 • UMBRELLAS

POOL

SPA

CLUB BUILDING
 • RESTROOMS
 • RESERVABLE SPACE
 • STORAGE
 • POOL EQUIPMENT

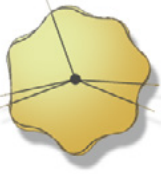
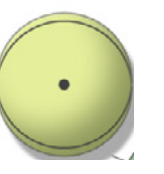



CHILDREN'S WADING POOL

TYPICAL PARKING ISLANDS ADJACENT TO PARKING SPACES SHALL HAVE 12" WIDE CONCRETE WALKWAY STRIP INSTALLED ADJACENT TO CURB, AND INTEGRAL WITH OR DOWELED INTO THE CURB.

SHADE STRUCTURE

POOL DECK
 • CHAISE LOUNGES
 • TABLES AND CHAIRS
 • UMBRELLAS

Tree Legend


-  SPECIMEN TREE
60" BOX
-  PARKING LOT TREE
36" BOX MIN.
-  SHADE TREES
24" BOX MIN.
-  ACCENT TREE
24" BOX
-  VERTICAL EVERGREEN TREE
24" BOX MIN.

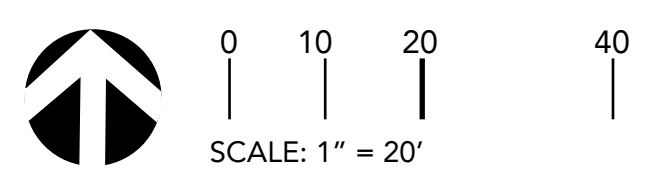


KEY MAP

**South Recreation Center Concept (Private)
 Special Multi-Family Design Review**

Foremost Center Street, LLC

 LANDSCAPE ARCHITECTURE 1750 DEERE AVE, SANTA ANA, CA 92705 O 949.250.4822 www.landconcern.com ADMINISTRATIVE APPROVAL	Owner Highgrove Village, LLC 12671 High Bluff Drive, Suite 150 San Diego, CA 92130 Contact: Gregory Lansing Glansing@lansingcompanies.com	Applicant Foremost Center Street, LLC 27271 Las Ramblas, Suite 100 Mission Viejo, CA 92691 Contact: Mike Canfield (949) 748-6714	Landscape Architect Land Concern, LTD 1750 E. Deere Ave. Santa Ana, CA 92705 Contact: Mike Sweeney MSweeney@landconcern.com
	<p>Highgrove Town Center Center Street, Spring Street and Garfield Avenue County of Riverside, CA</p>		





Parking Lot Shade Calculations

Tree	QTY	Shade SF	Center Islands - 100%	QTY	Shade SF	South, East and West - 50%	QTY	Shade SF	Corner and North - 25%	
Springbrook Park Parking										7,962 sf of paving
Shade Canopy Tree	2	962	2886	2	481	962	2	240	480	2,389 30% Shading
Large-Medium	0	707	0	0	354	0	0	177	0	
Medium - Small	0	491	0	0	246	0	0	123	0	
Small	0	314	0	0	157	0	0	79	0	
			2886			962		480		4328 shade achieved 54.36%

Tree Legend

- SPECIMEN TREE 60" BOX
- SHADE / CANOPY TREES 36" BOX MIN.
- ACCENT TREE 24" BOX



Foremost Center Street, LLC

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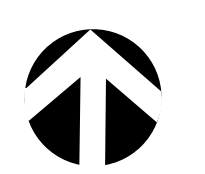
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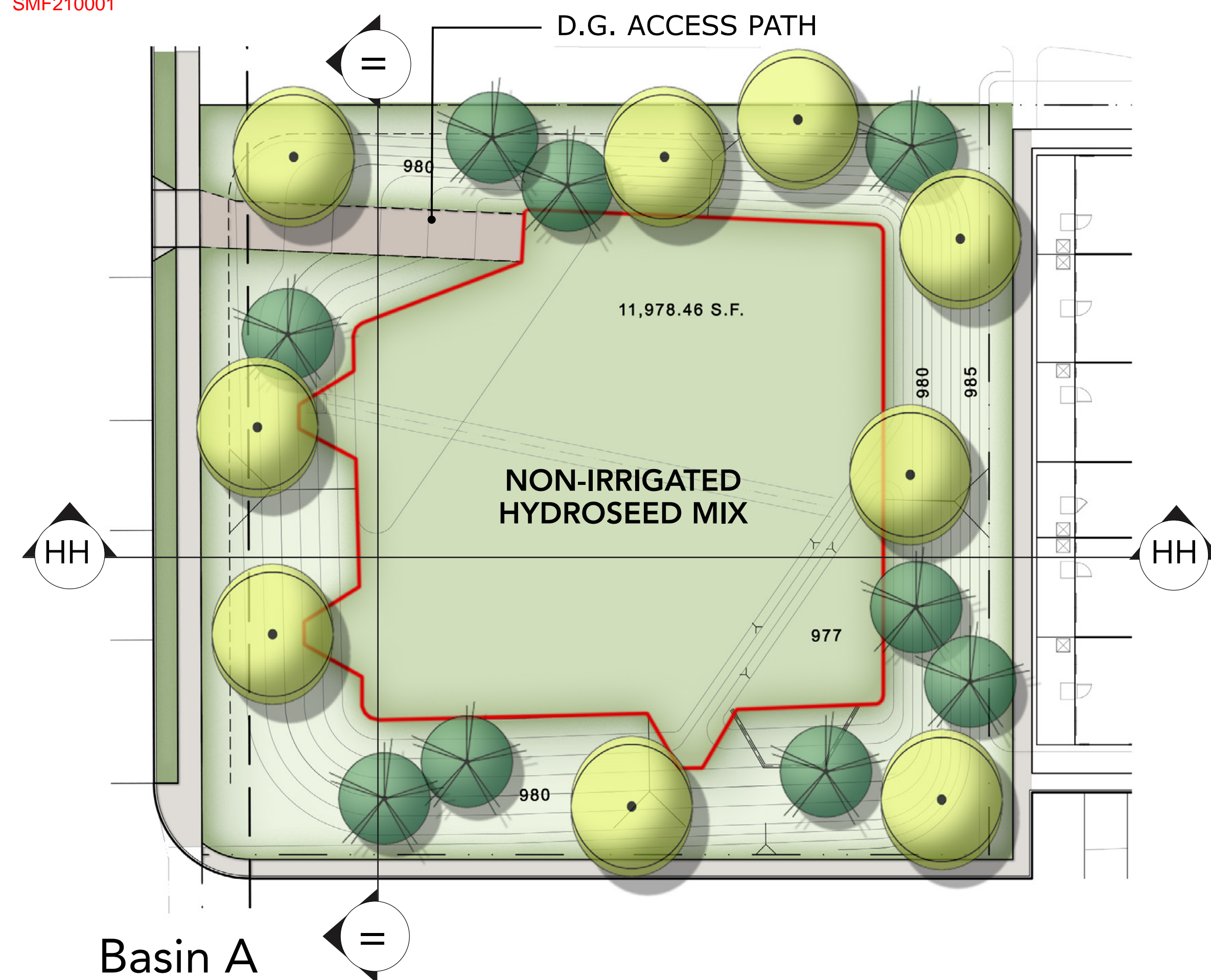
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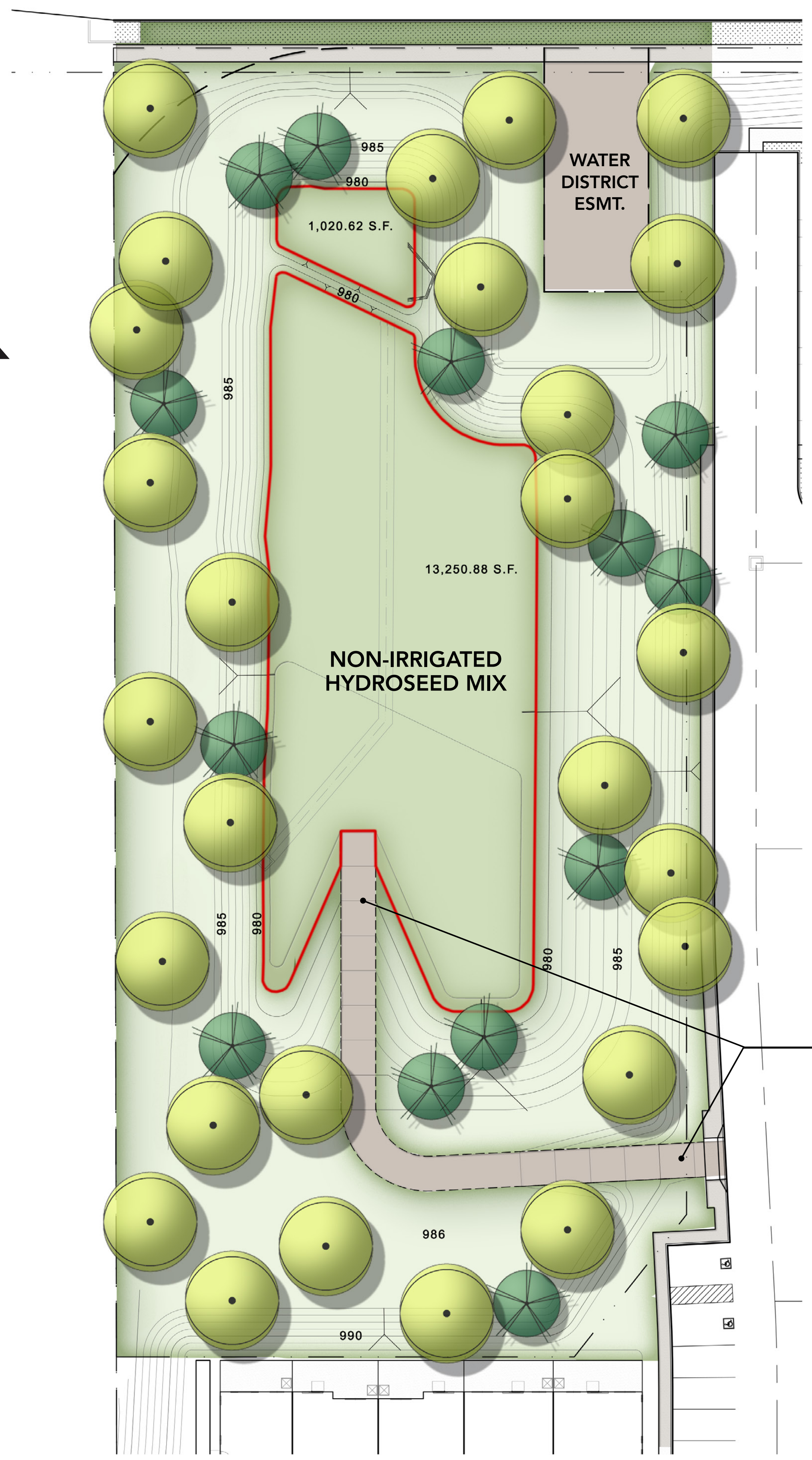
Highgrove Town Center
 Center Street, Spring Street and Garfield Avenue
 County of Riverside, CA

Springbrook Park Concept (Public)
 Special Multi-Family Design Review

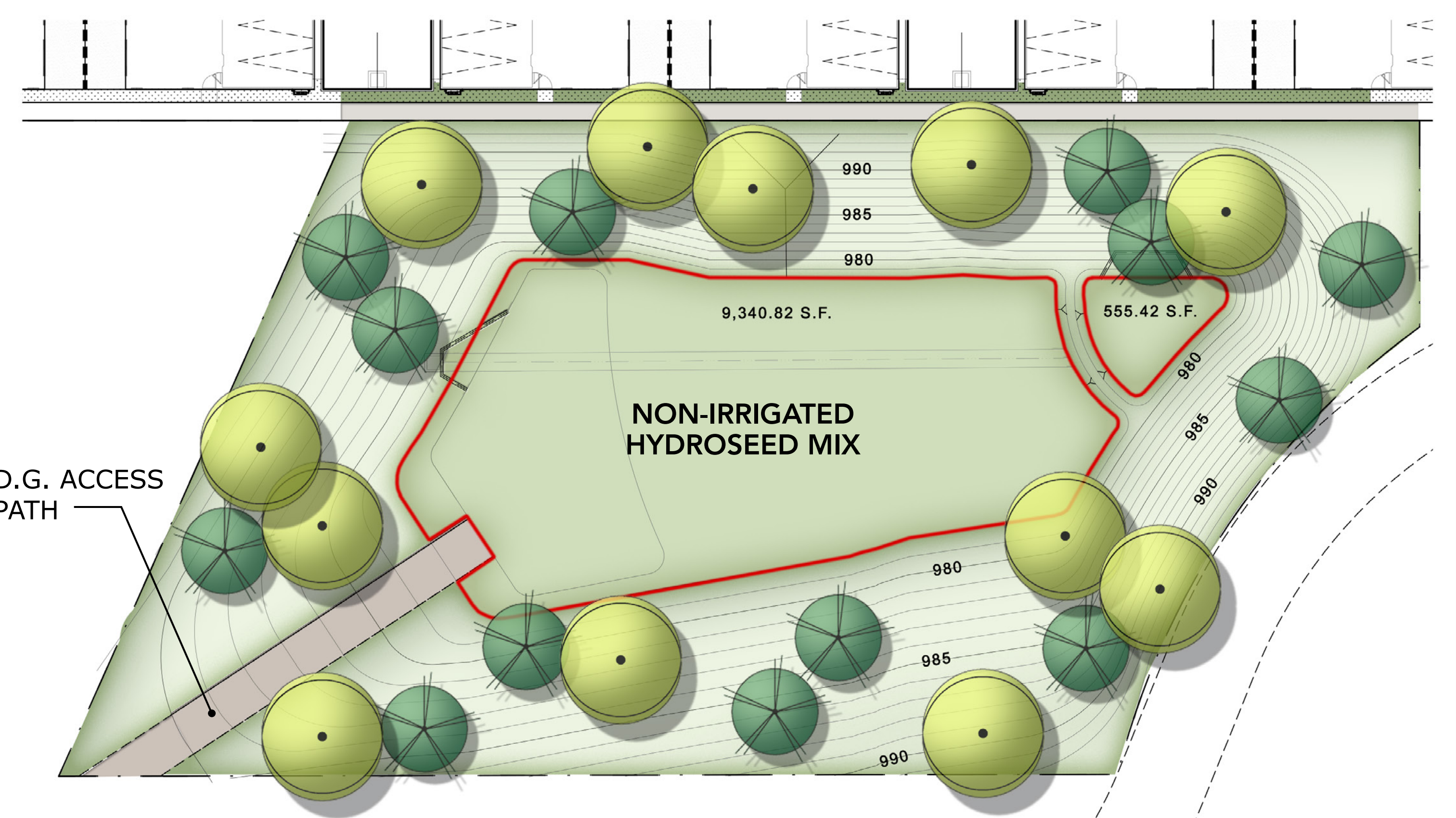




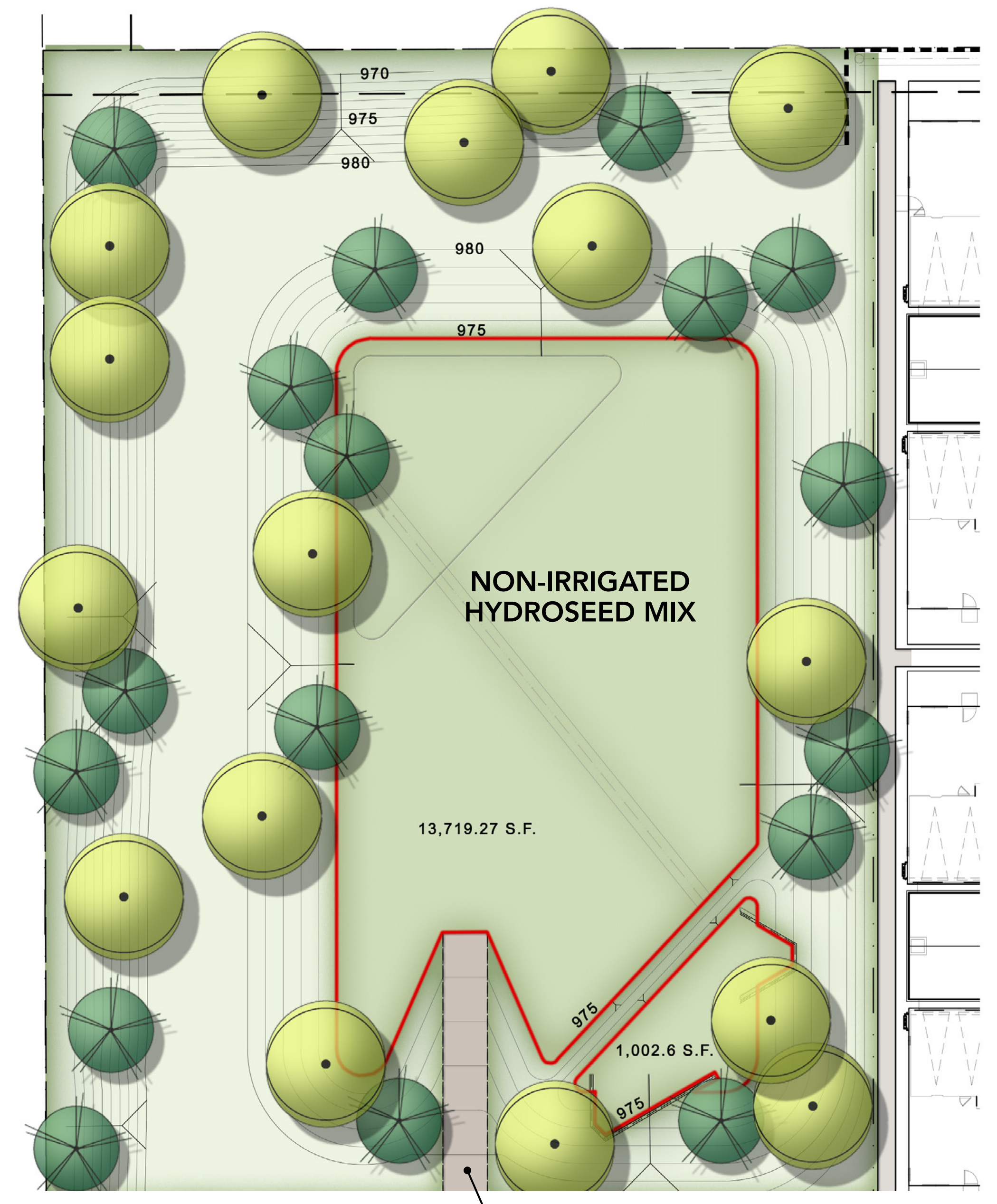
Basin A



Basin C



Basin D



Basin B

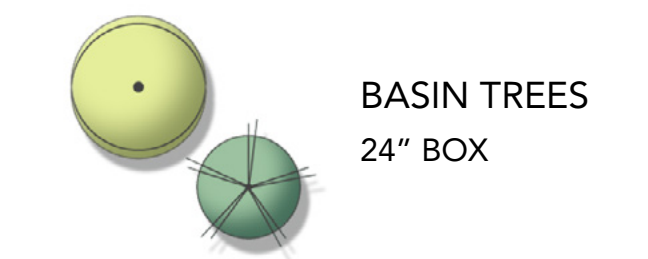
Note

Slope planting concept is compliant with minimum standards for Building & Safety erosion control standards (Ordinance 457, Section 3316.1).

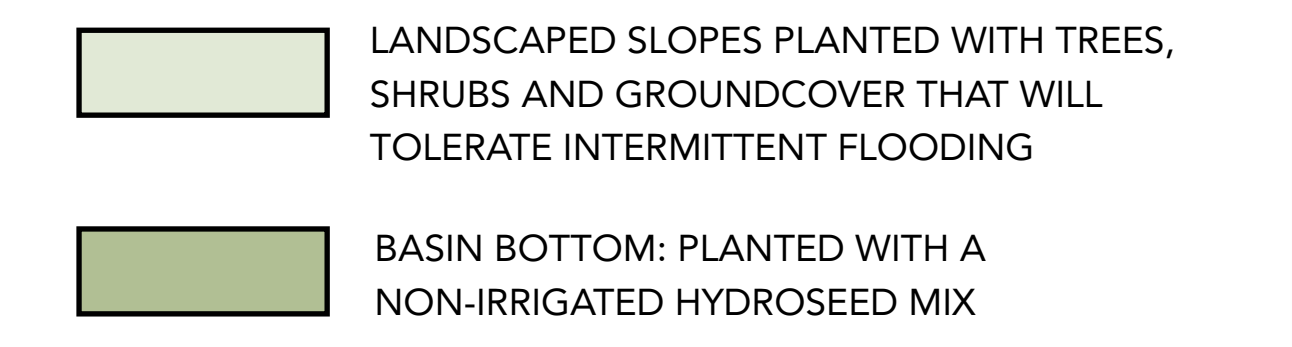
Over 3 feet vertical - Ground cover plant material maximum 12" on center.

Over 15 feet vertical - shrubs maximum 10' on center, trees 20' maximum on center, or a combination thereof.

Tree Legend



Landscape Legend



Basin Planting Palette

BOTANICAL NAME	COMMON NAME	SIZE	WUCOLS	HEIGHT / WIDTH
Baccharis pilularis 'Pigeon Point'	Dwarf Coyote Brush	1 Gal.	Low	2' x 8'
Carex praegracilis	Field Sedge	Liners	Moderate	1' x 3'
Carex spissa	San Diego Sedge	Liners	Low	2' x 2'
Geijera parviflora	Australian Willow	15 Gal.	Moderate	30' x 30'
Heteromeles arbutifolia	Toyon	5 Gal.	Low	8' x 6'
Juncus patens	Common Rush	1 Gal.	Low	2' x 2'
Muhlenbergia rigens	Deer Grass	Liners	Moderate	5' x 5'
Opuntia spp.	Prickly Pear	Pads	Very Low	3' x 4'
Pinus elderrica	Afghan Pine	15 Gal.	Low	40' x 25'
Platanus racemosa	California sycamore	15 Gal.	Moderate	50' x 35'
Populus fremontii	Cottonwood	5 Gal.	Moderate	60' x 40'
Quercus agrifolia	Coast Live Oak	15 Gal.	Low	60' x 60'
Sambucus mexicana	Elderberry	5 Gal.	Low	12' x 12'
California Native Willflower Mix (Hydrosseed mix S&S Seeds)				



KEY MAP

Water Quality Basin Conceptual Plans
Special Multi-Family Design Review

Foremost Center Street, LLC

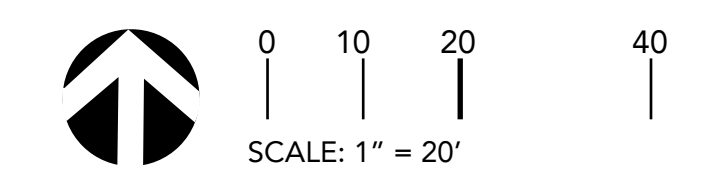
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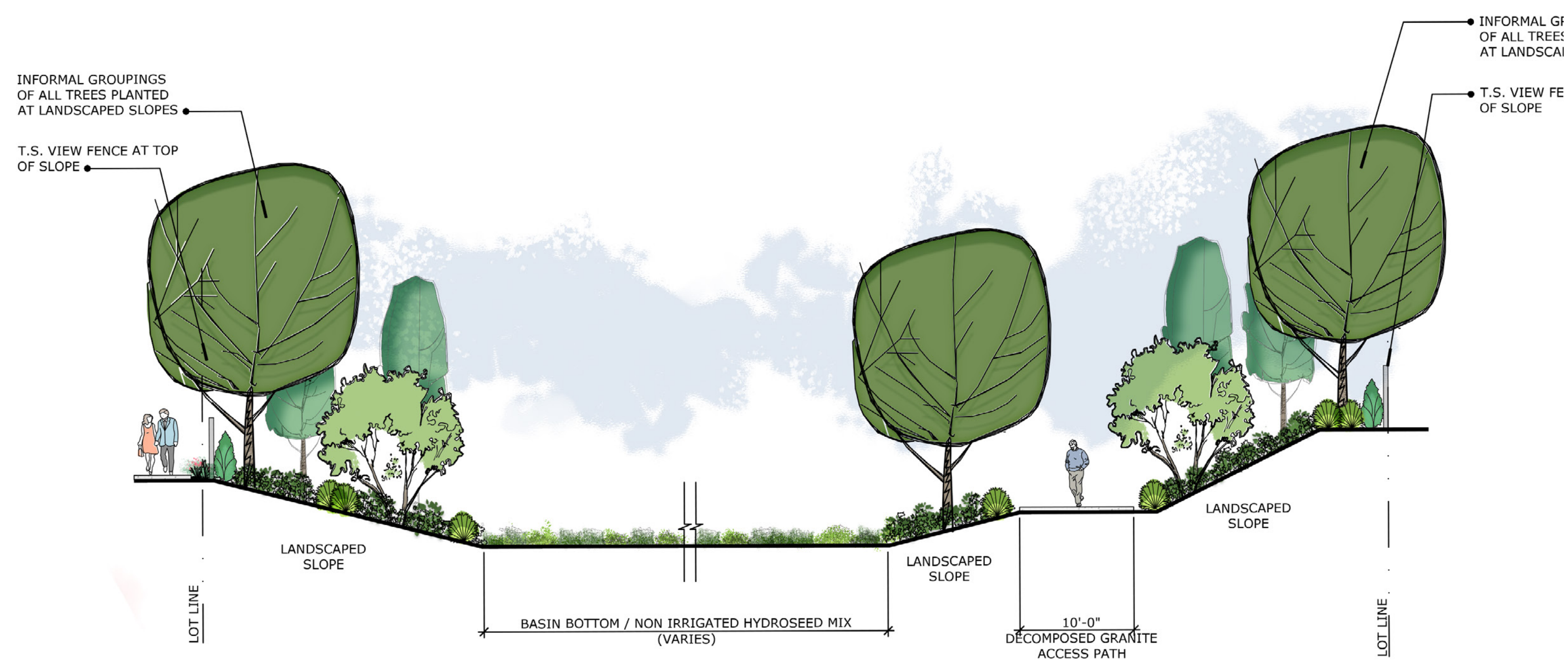
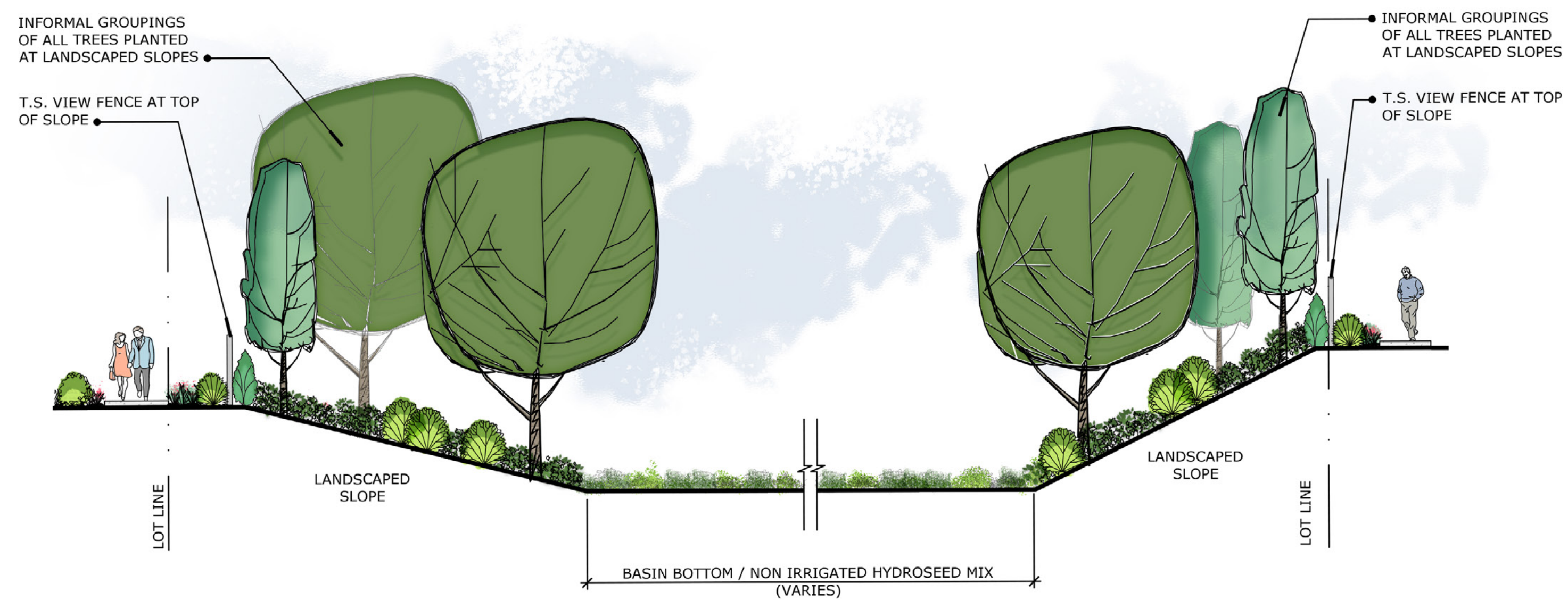
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Basin Planting Palette

BOTANICAL NAME	COMMON NAME	SIZE	WUCOLS	HEIGHT / WIDTH
Baccharis pilularis 'Pigeon Point'	Dwarf Coyote Brush	1 Gal.	Low	2' x 8'
Carex praeegracilis	Field Sedge	Liners	Moderate	1' x 3'
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Heteromeles arbutifolia	Toyon	5 Gal.	Low	8' x 6'
Juncus patens	Common Rush	1 Gal.	Low	2' x 2'
Muhlenbergia rigens	Deer Grass	Liners	Moderate	5' x 5'
Opuntia spp.	Prickly Pear	Pads	Very Low	3' x 4'
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Platanus racemosa	California sycamore	15 Gal.	Moderate	50' x 35'
Populus fremontii	Cottonwood	5 Gal.	Moderate	60' x 40'
Quercus agrifolia	Coast Live Oak	15 Gal.	Low	60' x 60'
Sambucus mexicana	Elderberry	5 Gal.	Low	12' x 12'
California Native Willflower Mix (Hydroseed mix S&S Seeds)				

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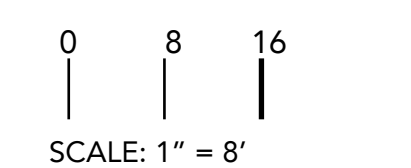
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Highgrove Town Center

Center Street, Spring Street and Garfield Avenue
County of Riverside, CA

Typical Water Quality Basin Sections

Special Multi-Family Design Review



Tree Planting Palette

BOTANICAL NAME	COMMON NAME	MIN. SIZE	WUCOLS IV	HEIGHT / WIDTH	CORNER ENHANCEMENT	STREET TREES	MOTOR COURT ENTRY	VERTICAL EVERGREEN	PASEO / ACCENT TREES	ENHANCED EDGE / SLOPE TREES	BASIN TREES	END OF ALLEY / ACCENT TREES	PARK TREES
Cercidium 'Desert Museum'	Desert Museum Palo Verde	24" Box	Low	25' x 25'					X	X		X	X
Cercis canadensis 'varieties'	Eastern Redbud	24" Box	Moderate	20' x 25'					X	X			
Cinnamomum camphora	Camphor Tree	24" Box	Moderate	50' x 50'								X	X
Cupaniopsis anacardioides	Carrotwood	24" Box	Moderate	40' x 30'		X	X					X	X
Citrus sp.	Citrus	24" Box	Moderate	20' x 20'					X	X		X	X
Elaeocarpus decipiens	Japanese Blueberry Tree	24" Box	Moderate	30' x 20'		X		X	X	X			X
Eriobotrya deflexa	Bronze Loquat	24" Box	Moderate	15' x 15'		X		X	X				
Eriobotrya japonica	Loquat	24" Box	Moderate	15' x 15'		X		X	X				
Eucalyptus microtheca	Coolibah	15 Gal.	Low	40' x 25'									X
Eucalyptus papuana	Ghost Gum	15 Gal.	Moderate	40' x 25'									X
Eucalyptus torquata	Coral Gum	15 Gal.	Moderate	30' x 25'									X
Fraxinus uhdei	Evergreen Ash	24" Box	Moderate	60' x 40'									X
Fraxinus velutina	Velvet Ash	24" Box	Moderate	40' x 50'									X
Geijera parviflora	Australian Willow	24" Box	Moderate	30' x 30'		X				X			X
Jacaranda mimosifolia	Jacaranda	24" Box	Moderate	35' x 25'	X	X	X			X		X	X
Koelreuteria bipinnata	Chinese Flame Tree	24" Box	Moderate	25' x 45'	X	X	X			X		X	X
Lagerstroemia x 'Varieties'	Crape Myrtle	24" Box	Moderate	25' x 25'	X	X	X		X	X		X	X
Laurus nobilis	Sweet Bay	24" Box	Low	20' x 15'				X	X	X			
Ligustrum lucidum	Glossy Privet	24" Box	Moderate	30' x 30'			X	X		X			
Magnolia grandiflora	Southern Magnolia	24" Box	Moderate	45' x 30'	X	X						X	X
Magnolia grandiflora 'Little Gem'	Little Gem Dwarf Southern Magnolia	24" Box	Moderate	20' x 15'		X		X	X				
Melaleuca nesophila	Pink Melaleuca	24" Box	Low	15' x 10'					X	X			
Pinus canariensis	Canary Island Pine	24" Box	Moderate	40' x 25'		X				X			X
Pinus elderica	Afghan Pine	24" Box	Low	40' x 25'		X			X				X
Pistacia chinensis 'varieties'	Chinese Pistache	24" Box	Moderate	30' x 30'	X	X	X			X		X	X
Platanus acerifolia	London Plane Tree	24" Box	Moderate	50' x 50'	X	X			X	X	X	X	X
Platanus racemosa	California sycamore	24" Box	Moderate	50' x 35'	X	X			X	X	X	X	X
Podocarpus gracilior	Fern Pine	24" Box	Moderate	40' x 25'		X	X	X		X		X	X
Prosopis alba 'thornless'	Argentine Mesquite	24" Box	Low	25' X 25'						X		X	X
Quercus agrifolia	Coast Live Oak	24" Box	Low	60' x 60'	X	X				X			X
Quercus ilex	Holly Oak	24" Box	Low	40' X 40'		X				X		X	X
Quercus tomentella	Island Oak	24" Box	Low	50' X 25'		X	X			X			X
Quercus virginiana	Southern Live Oak	24" Box	Low	50' X 70'	X	X				X			X
Rhus lancea	African Sumac	24" Box	Low	35' x 20'		X		X		X		X	X
Sambucus mexicana	Elderberry	15 Gal.	Low	12' X 12'						X	X		
Stenocarpus sinuatus	Firewheel Tree	24" Box	Moderate	25' x 25'			X	X	X	X		X	X
Tecoma x Crimson Flare 'Multi'	Solar Flare Esperanza	24" Box	Low	8' X 8'					X				
Tecoma x Solar Flare 'Multi'	Crimson Flare Esperanza	24" Box	Low	8' X 8'					X				
Tecoma stans 'Multi'	Esperanza	24" Box	Low	8' X 8'					X				
Tristania conferta (15 Gal. Max)	Brisbane Box	15 Gal.	Moderate	15' x 10'		X		X		X			X
Ulmus parvifolia 'Drake'	Chinese Evergreen elm	24" Box	Low	35' x 35'		X	X			X			X

Shrub Planting Palette

BOTANICAL NAME	COMMON NAME	WUCOLS IV	COUNTY MAINTAINED
Buxus species	Boxwood	Moderate	
Callistemon 'Little John'	Dwarf Callistemon	Low	X
Chondropetalum tectorum	Small Cape Rush	Low	X
Cistus pulverulentus 'Sunset'	Magenta Rock Rose	Low	X
Clivia miniata	Kaffir Lily	Moderate	
Coprosma repens 'Marble Queen'	Dwarf Variegated Mirror Plant	Moderate	
Correa 'Ivory Bells'	White Australian Fuchsia	Low	
Correa 'Wyn's Wonder'	Variegated Australian Fuchsia	Low	
Dianella 'Little Rev'	Little Rev Flax Lily	Low	X
Dietes bicolor	Fortnight Lily	Moderate	X
Dietes 'Orange Drop'	Orange Drop Lily	Moderate	X
Elaeocarpus decipiens	Japanese Blueberry Tree	Moderate	
Escallonia sp.	Escallonia	Moderate	X
Euonymus japonicus	Euonymus	Moderate	X
Feijoa sellowiana	Pineapple Guava	Moderate	
Guara lindheimeri	Guara	Low	X
Grevillea x 'Noell'	Noell Grvillea	Low	X
Ilex vomitoria 'Nana'	Dwarf Yaupon Holly	Moderate	X
Lantana x 'New Gold'	Yellow Sage	Low	X
Laurus nobilis	Sweet Bay	Low	X
Lavandula sp.	Lavender	Low	
Leucophyllum candidum	Thundercloud	Low	X
Ligustrum japonicum 'Texanum'	Waxleaf Privet	Moderate	X
Myoporum parvifolium 'Putah Creek'	Creeping Myoporum	Low	X
Myrica californica	Pacific Wax Myrtle	Low	X
Myrtus communis 'Compacta'	Dward Myrtle	Low	
Nandina domestica 'varieties'	Heavenly bamboo	Moderate	
Olea europaea 'Montra'	Little Ollie® Dwarf Olive	Low	X
Philodendron 'Xanadu'	Cut-leaf Philodendron	Moderate	
Pittosporum crassifolium 'Nana'	Dwarf Karo	Moderate	
Pittosporum tenuifolium 'Golf Ball'	Golf Ball Kohuhu	Moderate	
Pittosporum tobira 'varieties'	Mock Orange	Moderate	X
Pittosporum tenuifolium	Tawhiwhi	Moderate	X
'Marjoree Channon'	Yew Pine	Moderate	
Podocarpus macrophyllus 'Maki'	Yew Pine	Moderate	
Prunus caroliniana 'Bright n Tight'	Bright 'N Tight Carolina Laurel Cherry	Moderate	
Rhamnux californica 'Eve Case'	Coffeeberry	Low	X
Rhaphiolepis indica 'varieties'	Indian Hawthorn	Moderate	X
Rhaphiolepis umbellata 'Minor'	Yedoo Hawthorn	Low	X
Rhus ovata	Sugar Bush	Low	X
Rosa floribunda 'Iceberg'	White Shrub Rose	Moderate	
Rosa 'Flower Carpet'	Flower Carpet Rose	Moderate	X
Russelia equisetiformis	Coral Fountain	Low	X
Salvia leucantha	Mexican Bush Sage	Low	X
Salvia 'Pozo Blue'	Grey Musk Sage	Low	X
Strelitzia reginae	Bird of Paradise	Moderate	
Tecoma 'Crimson Flare' (or equal)	Esperanza	Low	X
Tecoma 'Sierra Apricot'	Esperanza	Low	X
Tecoma 'Solar Flare' (or equal)	Esperanza	Low	X
Tecoma stans	Esperanza	Low	X
Tulbaghia violacea	Sweet Garlic	Moderate	X
Viburnum tinus compactum	Compact Laurustinus	Moderate	X
Westringia fruticosa sp.	Coast Rosemary	Low	X

Basin Planting Palette

BOTANICAL NAME	COMMON NAME	SIZE	WUCOLS	HEIGHT / WIDTH
Baccharis pilularis 'Pigeon Point'	Dwarf Coyote Brush	1 Gal.	Low	2' x 8'
Carex praegracilis	Field Sedge	Liners	Moderate	1' x 3'
Carex spissa	San Diego Sedge	Liners	Low	2' x 2'
Geijera parviflora	Australian Willow	15 Gal.	Moderate	30' x 30'
Heteromeles arbutifolia	Toyon	5 Gal.	Low	8' x 6'
Juncus patens	Common Rush	1 Gal.	Low	2' x 2'
Muhlenbergia rigens	Deer Grass	Liners	Moderate	5' x 5'
Opuntia spp.	Prickly Pear	Pads	Very Low	3' x 4'
Pinus elderica	Afghan Pine	15 Gal.	Low	40' x 25'
Platanus racemosa	California sycamore	15 Gal.	Moderate	50' x 35'
Populus fremontii	Cottonwood	5 Gal.	Moderate	60' x 40'
Quercus agrifolia	Coast Live Oak	15 Gal.	Low	60' x 60'
Sambucus mexicana	Elderberry	5 Gal.	Low	12' X 12'
California Native Willflower Mix (Hydrosseed mix S&S Seeds)				

Groundcover Palette

BOTANICAL NAME	COMMON NAME	WUCOLS	COUNTY MAINTAINED
Acacia redolens 'Desert Carpet'	Prostrate Acacia	Low	X
Baccharis pilularis 'Pigeon Point'	Dwarf Coyote Brush	Low	X
Carrisa macrocarpa 'Boxwood Beauty'	Tuttle Natal Plum	Low	X
Dymondia margaritae	Silver Carpet	Low	
Erigeron karvinskianus	Santa Barbara Daisy	Low	
Pyracantha koildumii 'Santa Cruz'	Santa Cruz Firethorn	Moderate	X
Rosmarinus officinalis 'Huntington Carpet'	Rosemary	Low	X
Salvia 'Bee's Bliss'	Bee's Bliss Sage	Low	X
Trachelospermum asiaticum	Asian Jasmine	Moderate	X
Trachelospermum jasminoides	Star Jasmine	Moderate	

Grass Palette

BOTANICAL NAME	COMMON NAME	WUCOLS	COUNTY MAINTAINED
Bouteoua gracilis	Blond Ambition Grass	Low	X
Carex flacca 'Blue Zinger'	Blue Zinger Sedge	Low	X
Carex tumulicola	Berkeley sedge	Low	X
Festuca mairei	Maire's Fescue	Moderate	X
Helictotrichon sempervirens	Blue Oat Grass	Moderate	X
Leymus condensatus	Canyon Prince	Low	X
'Canyon Prince'	Wild Rye	Low	X
Lomandra longifolia 'Breeze'	Dwarf Mat Rush	Low	X
Miscanthus transmorrisonensis	Evergreen Eulalia	Low	X
Muhlenbergia capilaris 'Regal Mist'	Hairy Awn Muhly	Low	X
Muhlenbergia dubia	Pine Muhly	Low	X
Muhlenbergia lindheimeri	Lindheimer muhly	Moderate	X
Muhlenbergia rigens	Deer Grass	Moderate	X
Ophiopogon japonicus	Mondo Grass	Moderate	
Pennisetum spathiolatum	Slender Veldt Grass	Low	X

Succulent Palette

BOTANICAL NAME	COMMON NAME	WUCOLS	COUNTY MAINTAINED
Aeonium spp.	Canary Island Rose	Low	
Agave sp.	Agave	Very Low	X
Aloe sp.	Aloe	Low	X
Crassula sp.	Jade Plant	Low	
Dasyliiron wheeleri	Desert Spoon	Low	
Echeveria sp.	Echeveria	Low	
Graptopetalum paraguayense	Ghost Plant	Low	
Hesperaloe parvifolia	Red Yucca	Low	X
Opuntia spp.	Prickly Pear	Very Low	X
Sedum sp.	Stonecrop	Low	
Senecio mandraliscae	Blue Chalk Sticks	Low	X
Senecio serpens	Blue Chalk Sticks	Low	X
Yucca sp.	Yucca	Low	X

Vine Palette

BOTANICAL NAME	COMMON NAME	WUCOLS IV
Calliandra haematorcephala	Pink Powder Puff	Moderate
Clytostoma callistegioides	Lavender Trumpet Vine	Moderate
Distictis buccinatoria	Blood Red Trumpet Vine	Moderate
Distictis 'Rivers'	Royal Trumpet Vine	Moderate
Gelsemium sempervirens	Berkeley sedge	Moderate
Grewia occidentalis	Lavender Star Flower	Moderate
Tecoma x 'Varities (espalier)	Esperanza	Low
Trachelospermum asiaticum	Asian Jasmine	Moderate

Foremost Center Street, LLC

Conceptual Planting Palette
Special Multi-Family Design Review

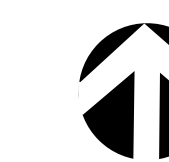
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LANDSCAPE ARCHITECTURE

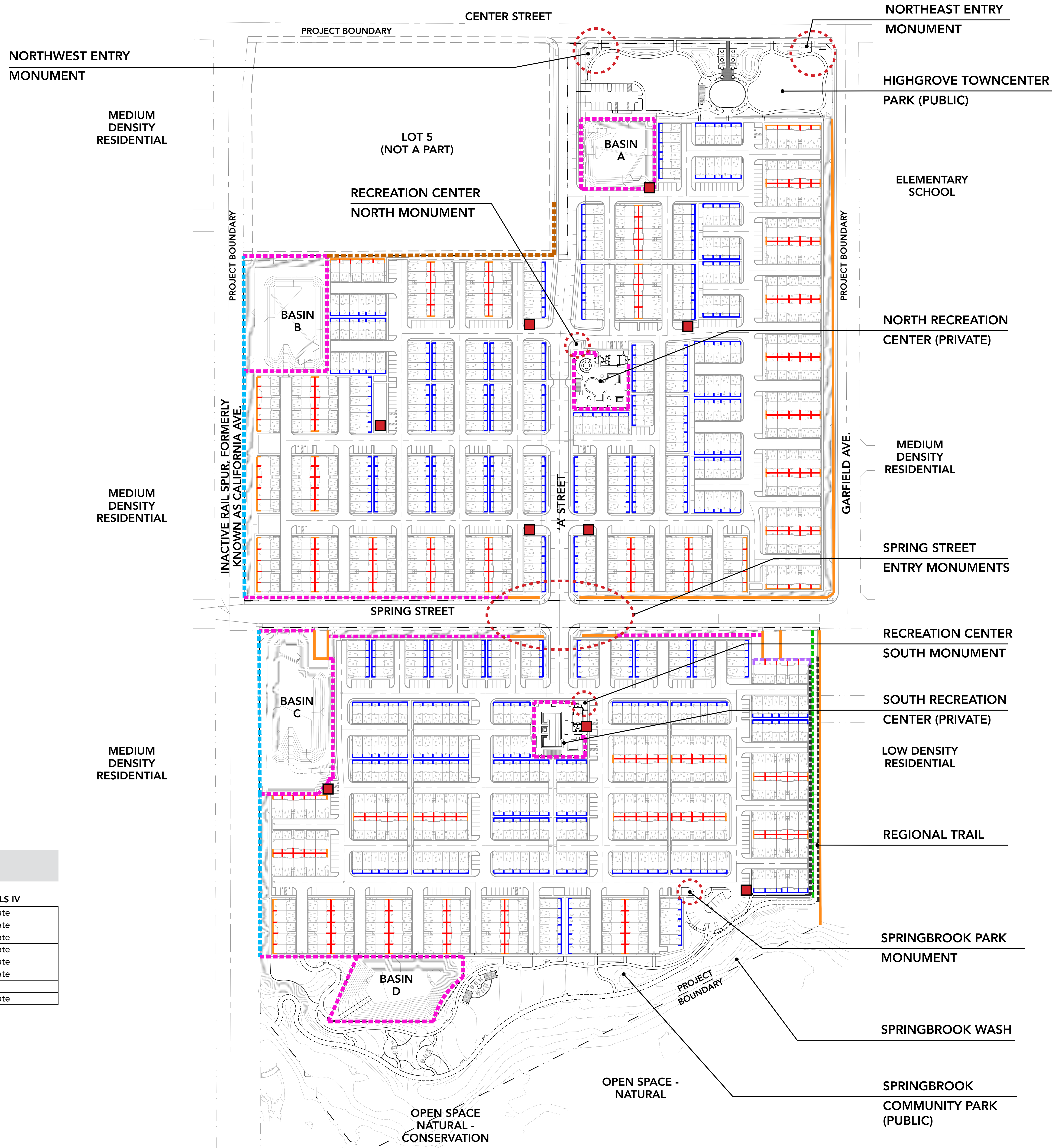
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Highgrove Town Center
Center Street, Spring Street and Garfield Avenue
County of Riverside, CA



Vine Palette For Fences and Walls

BOTANICAL NAME	COMMON NAME	WUCOLS IV
Calliandra haematorcephala	Pink Powder Puff	Moderate
Clytostoma callistegioides	Lavender Trumpet Vine	Moderate
Distictis buccinatoria	Blood Red Trumpet Vine	Moderate
Distictis 'Rivers'	Royal Trumpet Vine	Moderate
Gelsemium sempervirens	Berkeley sedge	Moderate
Grewia occidentalis	Lavender Star Flower	Moderate
Tecoma x 'Varieties (espalier)	Esperanza	Low
Trachelospermum asiaticum	Asian Jasmine	Moderate

Legend

- 36" High Patio Wall (Per Architectural Style)
- 6'-0" High Vinyl Fence
- 36" High Trail Fence
- 6'-0" High Masonry Wall
- Up to 10'-0" High Masonry Wall
- Combo Wall: High Masonry Wall on Retaining Wall
- Low Retaining Wall (Cable Guardrail as Required per Code)
- 6'-0" High T.S. View Fence
- 6'-0" High Chain Link Fence
- Proposed Mailbox Location

Foremost Center Street, LLC

Conceptual Monumentation, Fence and Wall and Mailbox Plan
Special Multi-Family Design Review

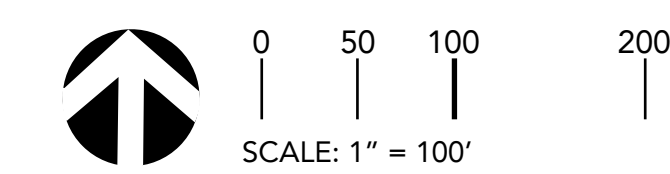
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O 949.250.4822 www.landconcern.com
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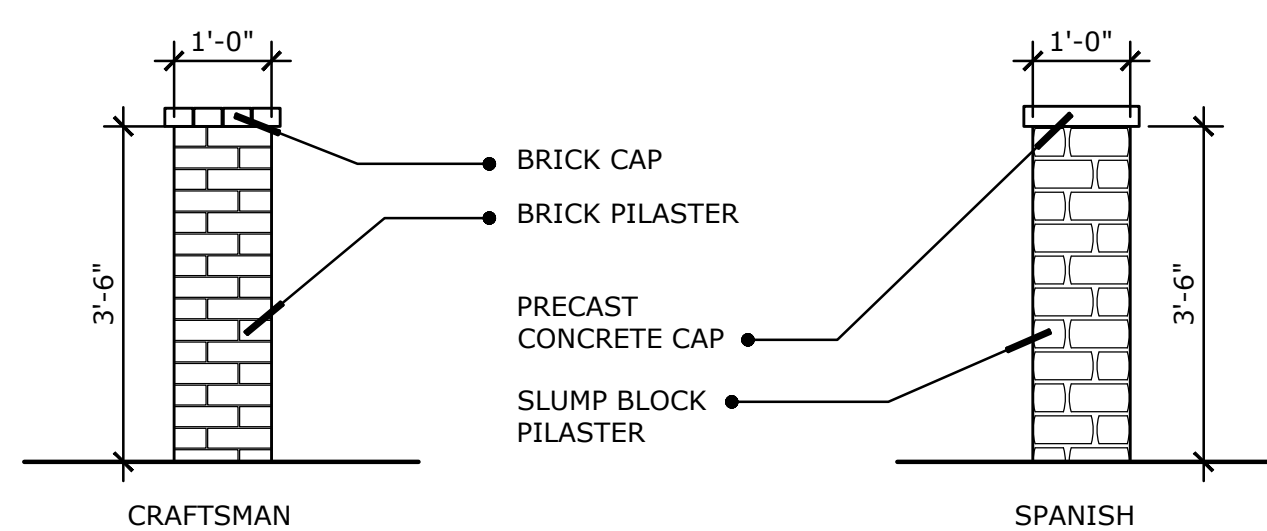
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Highgrove Town Center
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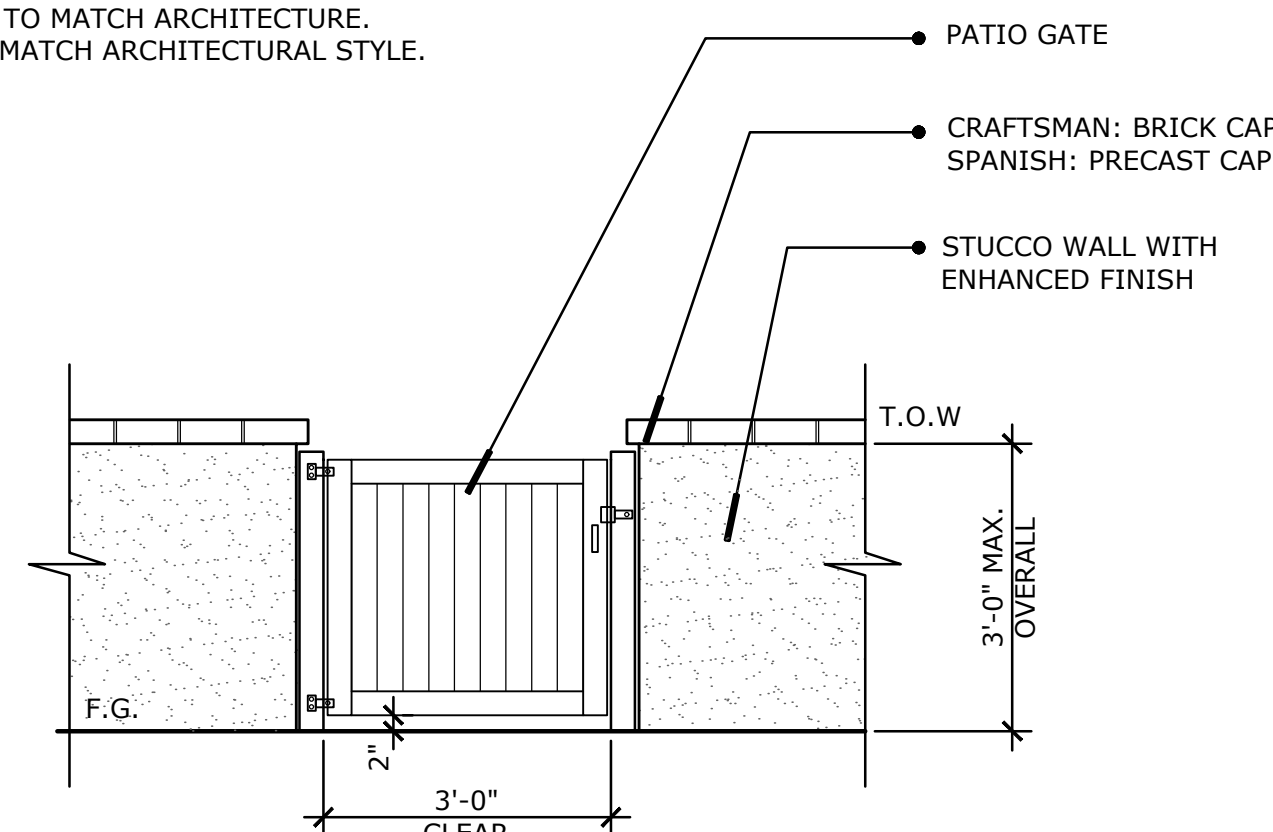
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PASEO ENTRY PILASTER

SCALE: 1/2"=1'-0" .24

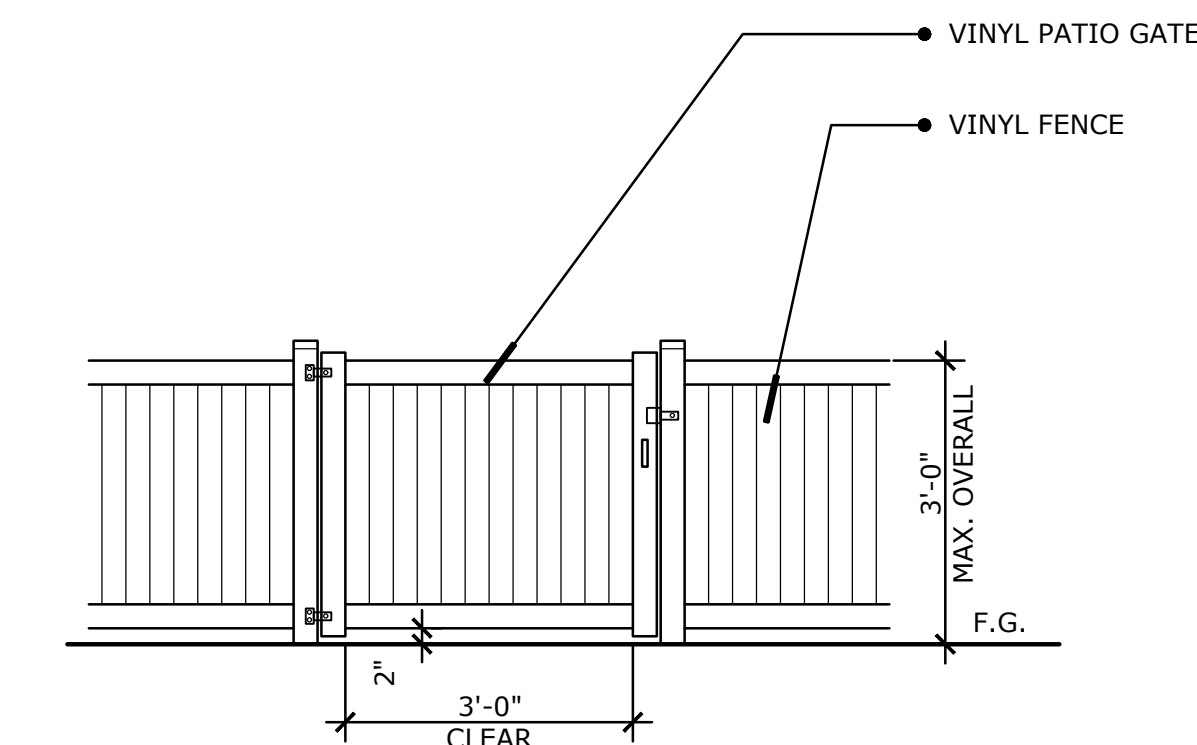
NOTE: GATE STYLE TO MATCH ARCHITECTURE. COLORS TO MATCH ARCHITECTURAL STYLE.



PATIO ENCLOSURE

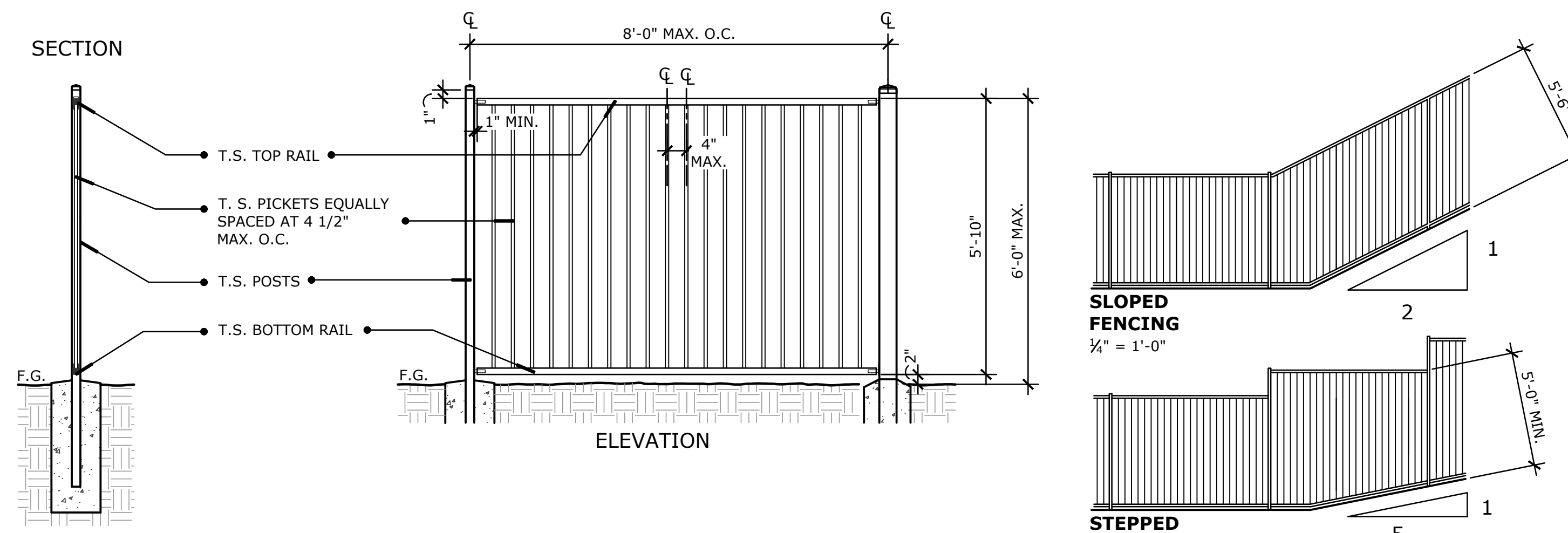
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NOTE: GATE STYLE TO MATCH ARCHITECTURE. COLORS TO MATCH ARCHITECTURAL STYLE.



POSSIBLE OPTION: CRAFTSMAN PATIO ENCLOSURE - LOW VINYL FENCE

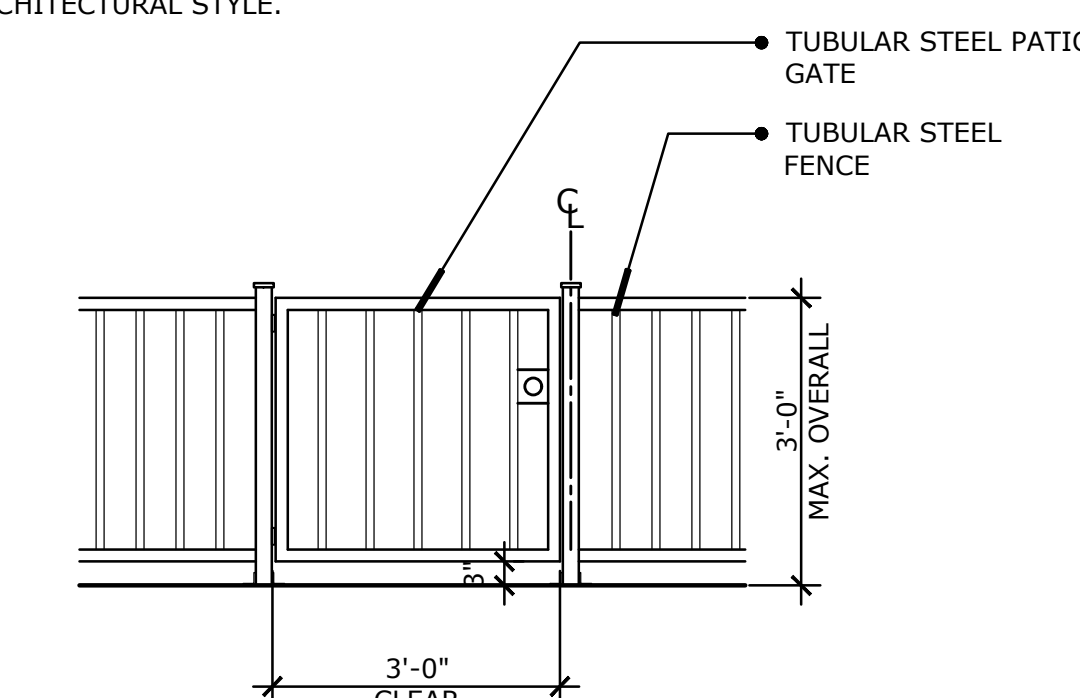
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T.S. VIEW FENCE

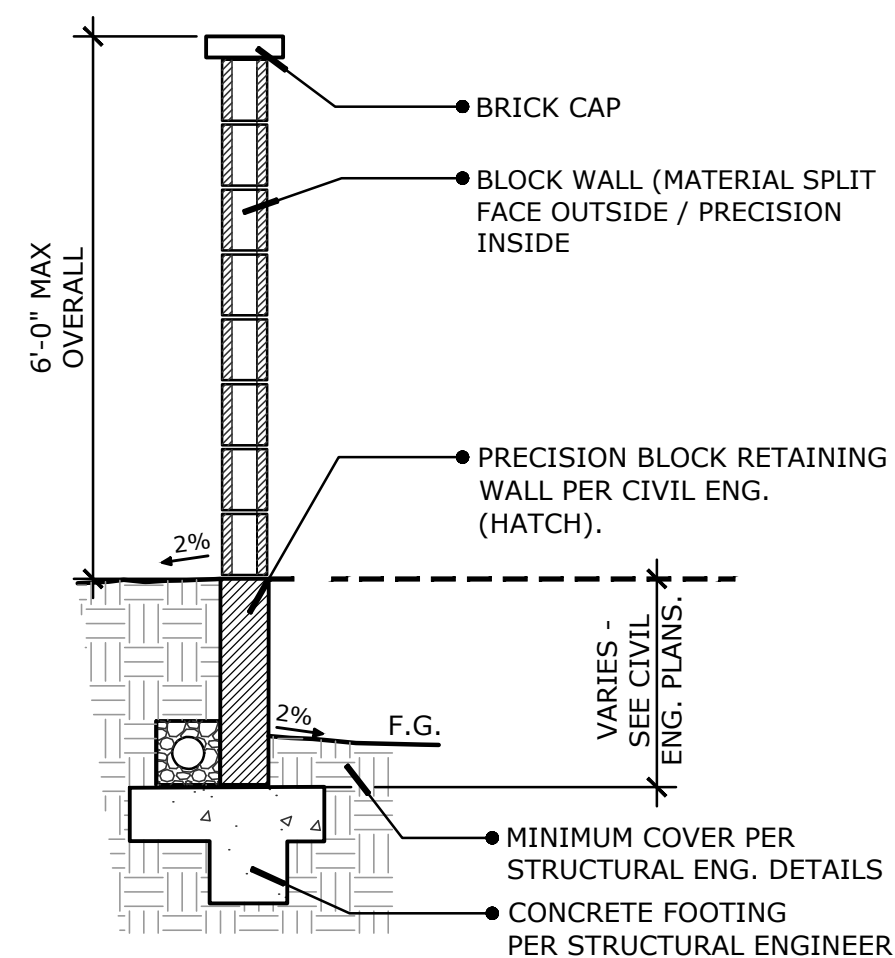
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NOTE: GATE STYLE TO MATCH ARCHITECTURE. COLORS TO MATCH ARCHITECTURAL STYLE.

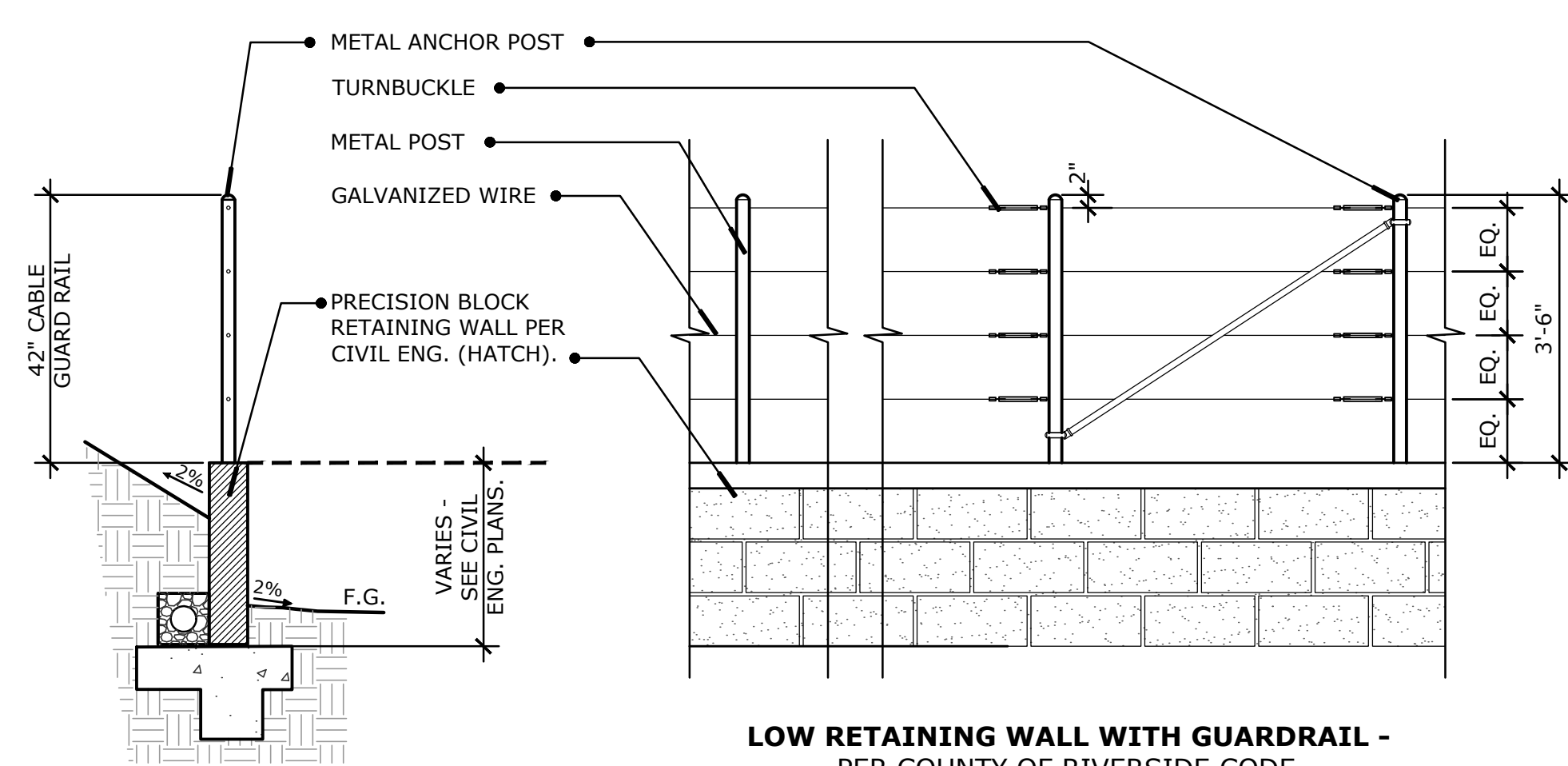


POSSIBLE OPTION: SPANISH PATIO ENCLOSURE - LOW T.S. FENCE

SCALE: 1/2"=1'-0" .24

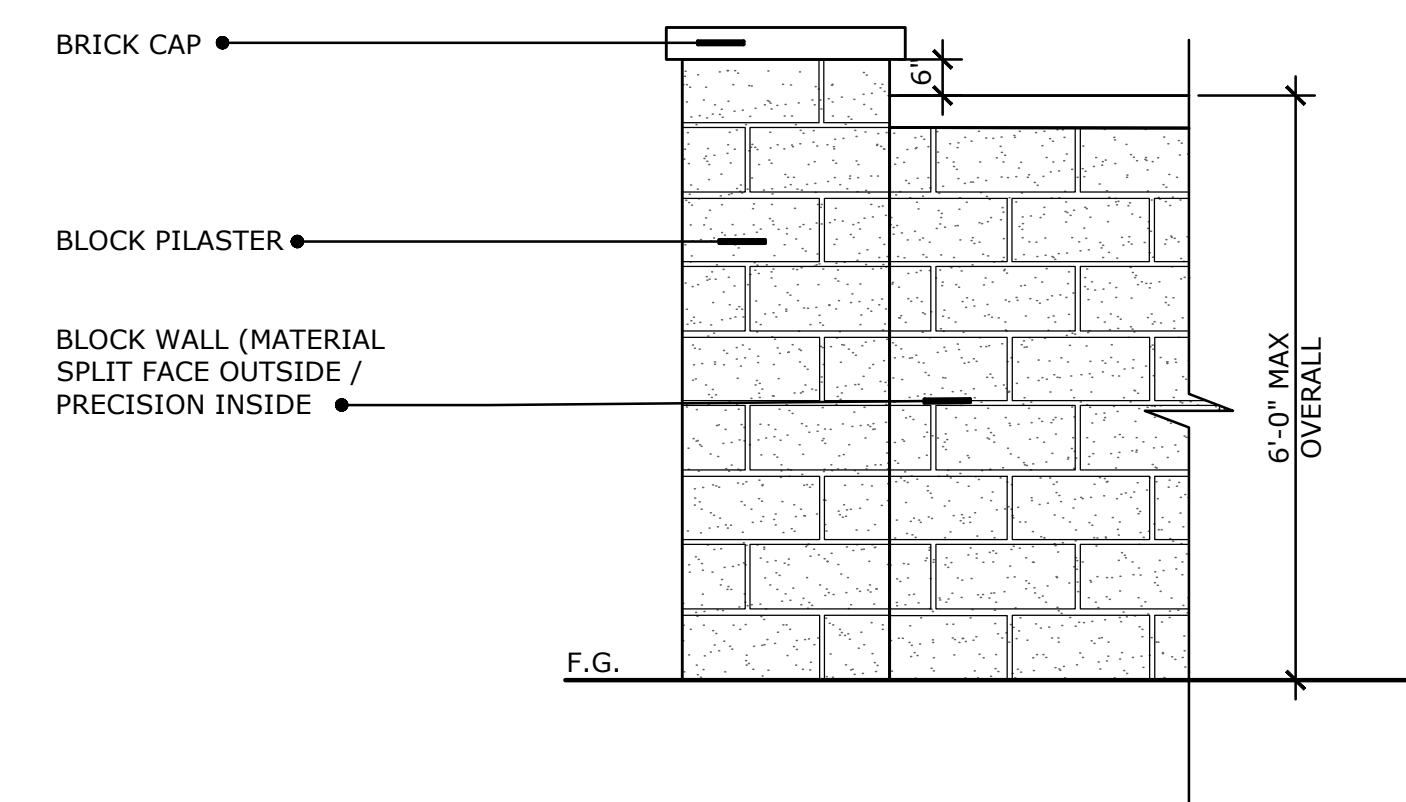


MASONRY RETAINING WALL



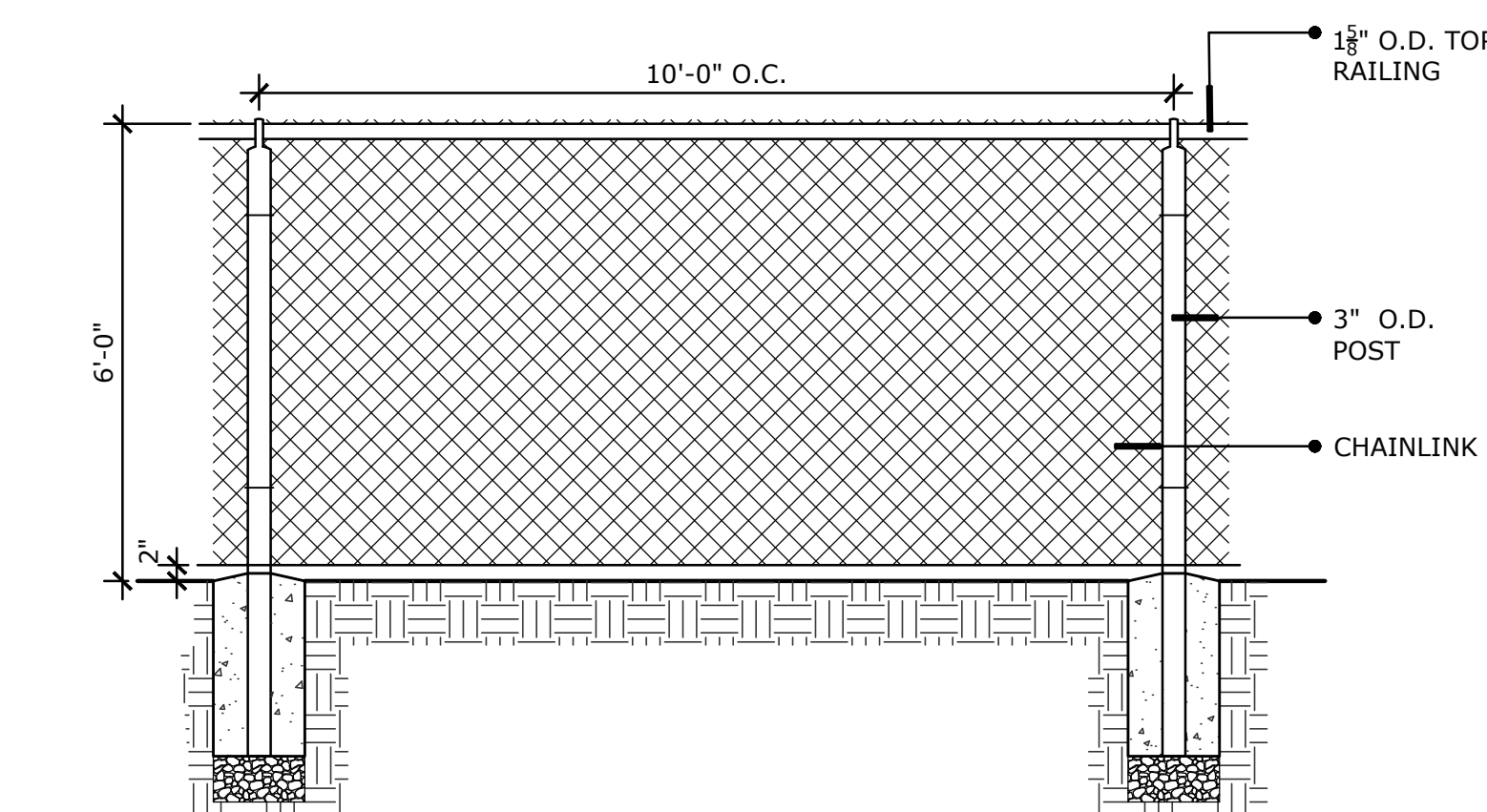
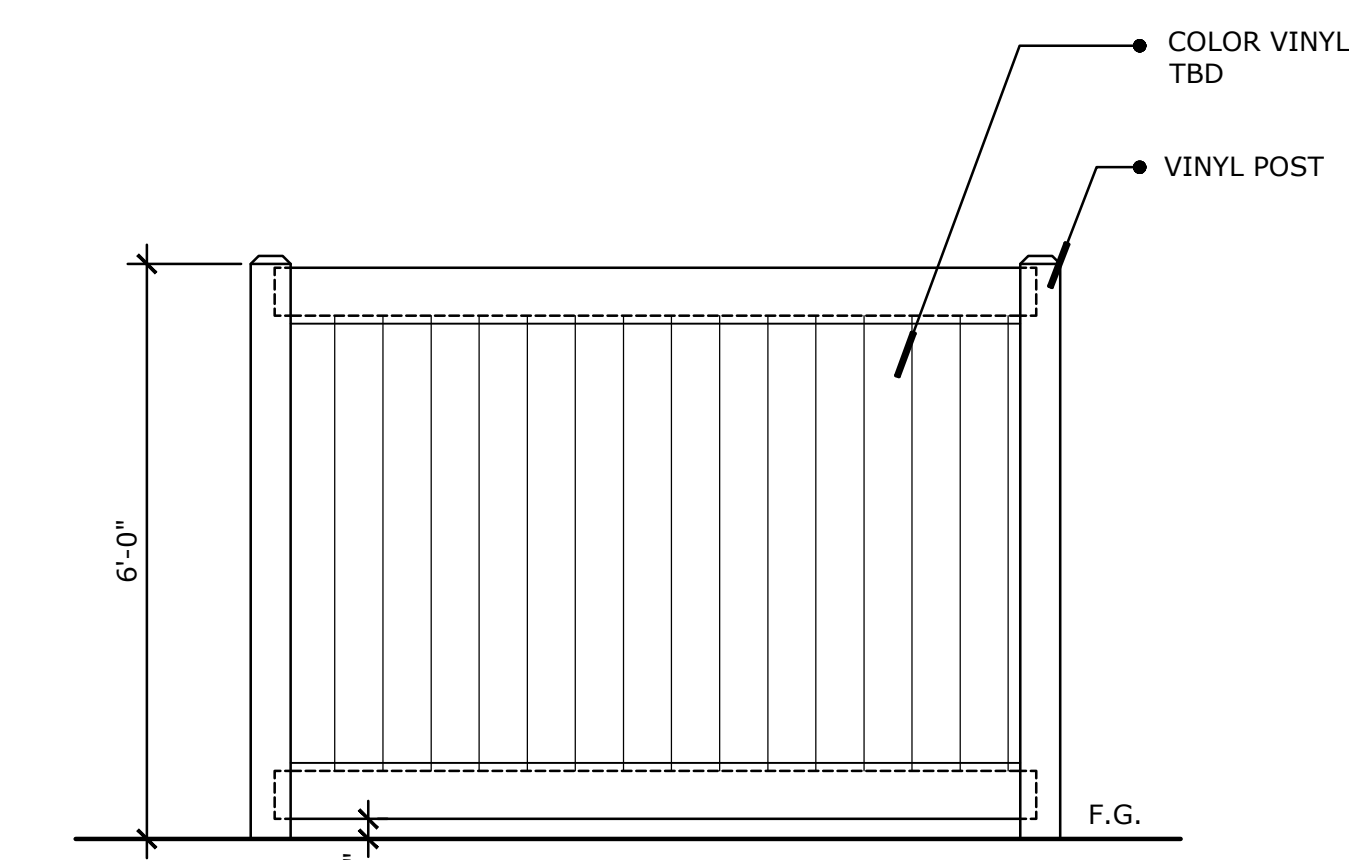
HIGH MASONRY WALL

SCALE: 1/2"=1'-0" .24



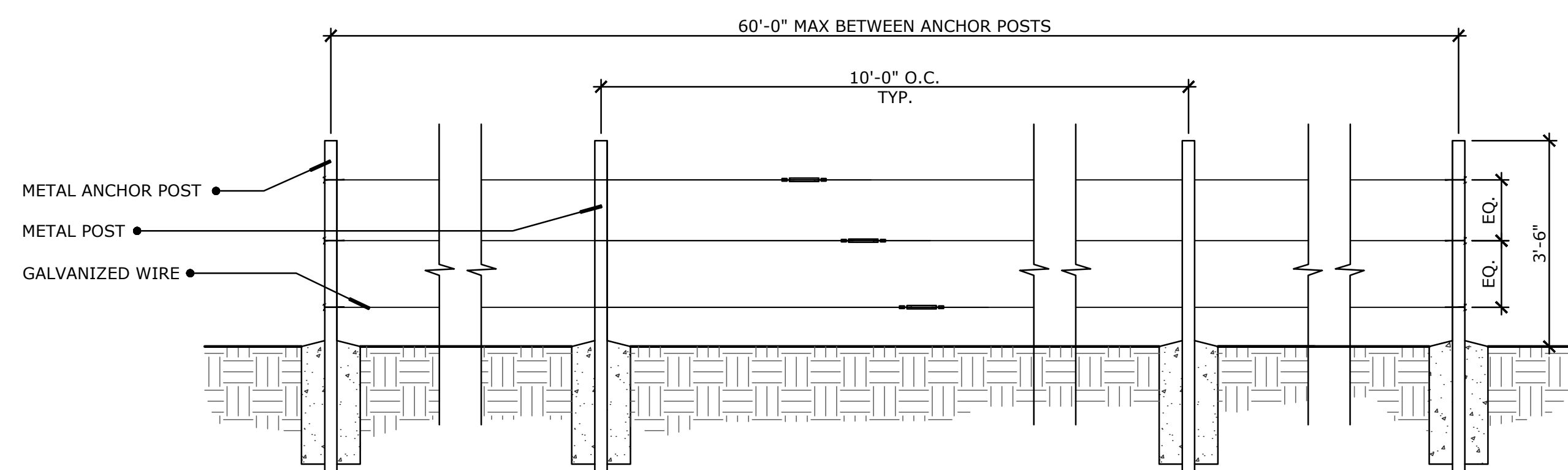
VINYL FENCE (ALT. PRECISION BLOCK WALL)

SCALE: 1/2"=1'-0" .24



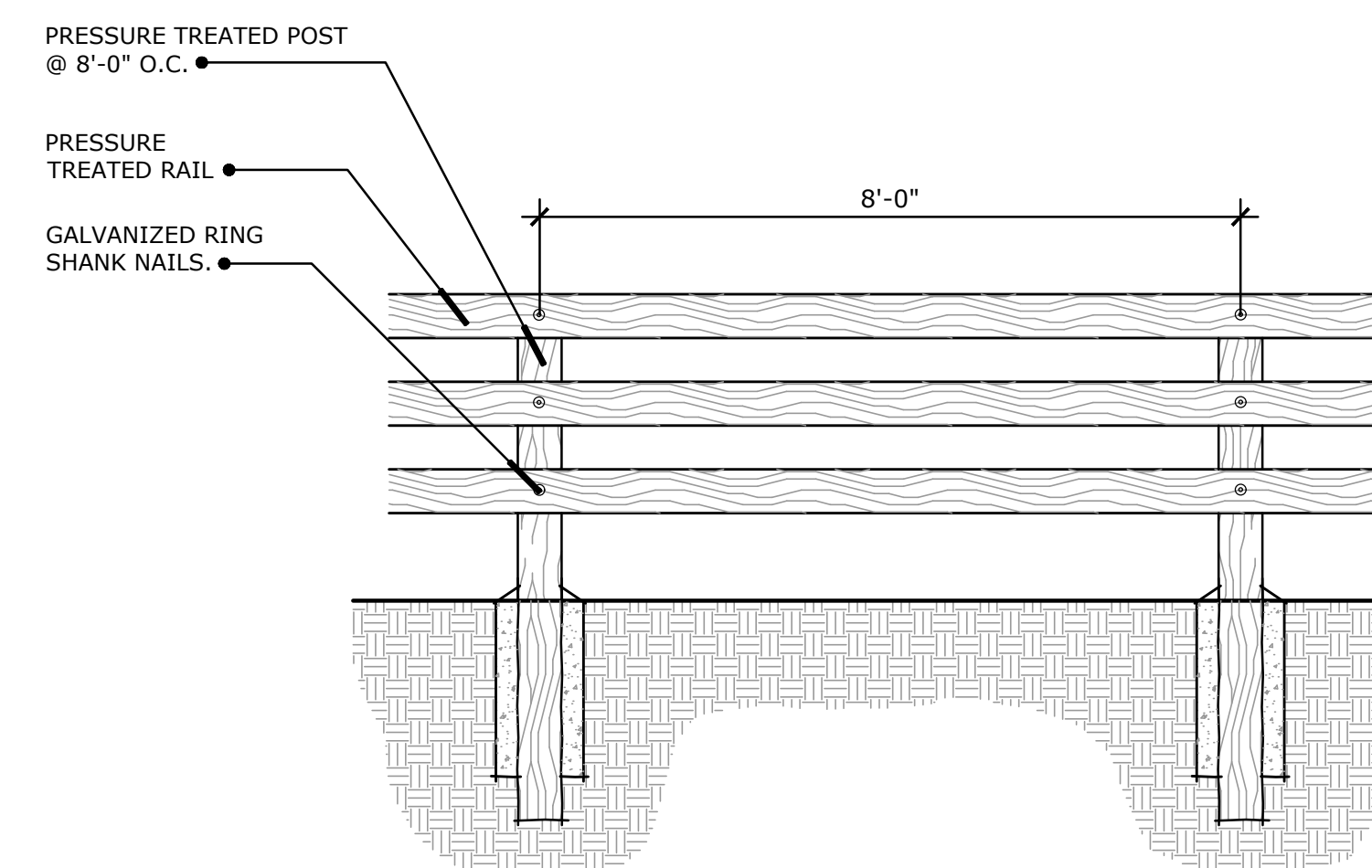
CHAIN LINK FENCE

SCALE: 1/2"=1'-0" .24



POSSIBLE TRAIL FENCE OPTION: CABLE FENCE

SCALE: 1/2"=1'-0" .24



SPLIT RAIL TRAIL FENCE

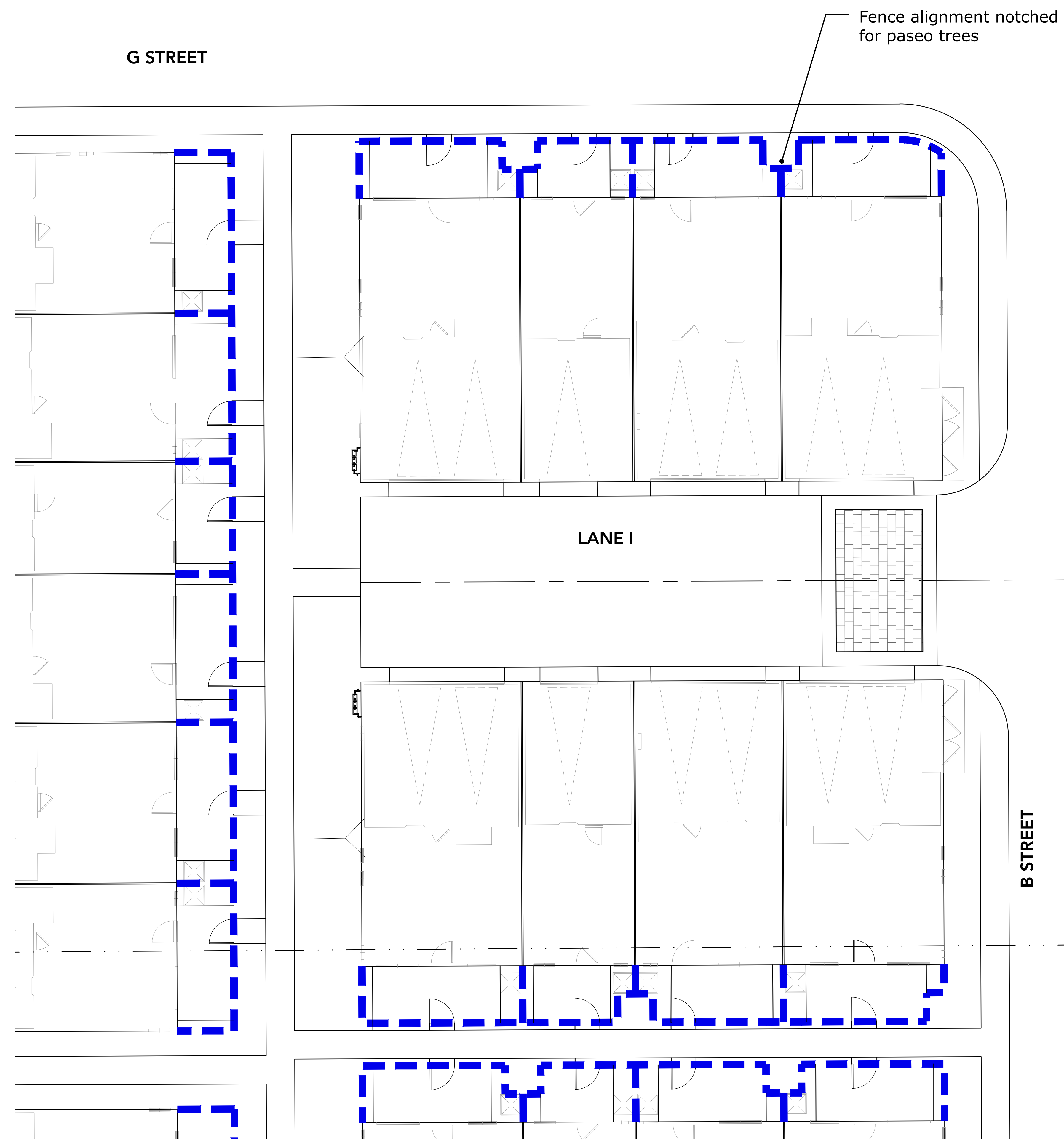
SCALE: 1/2"=1'-0" .24



PATIO WALLS
Craftsman: Stucco with Brick Cap (color to compliment architecture)
Spanish: Stucco with Precast Cap (color to compliment architecture)



PATIO FENCES
Craftsman: Vinyl Fence (color to compliment architecture)
Spanish: Tubular Steel Fence (color to compliment architecture)



Enhanced Paseo Townhomes

F&W Legend

36" High Patio Wall (Per Architectural Style)

Foremost Center Street, LLC



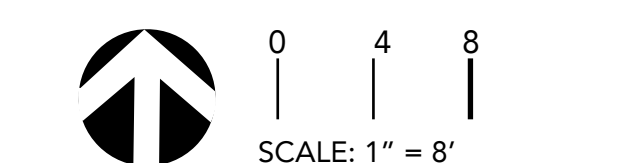
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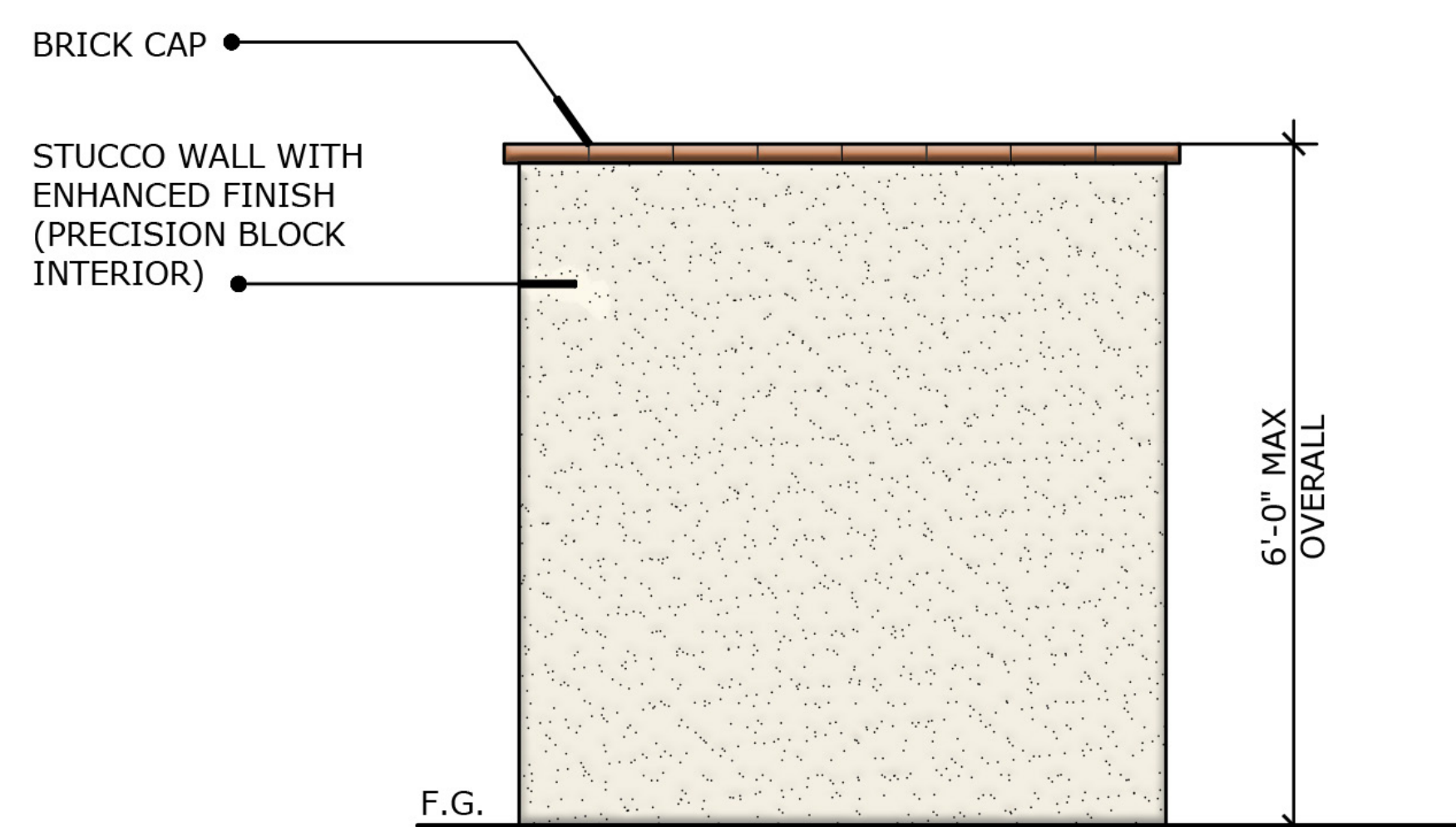
Highgrove Town Center
Center Street, Spring Street and Garfield Avenue
County of Riverside, CA

Paseo Townhome Fence and Wall Plan
Special Multi-Family Design Review

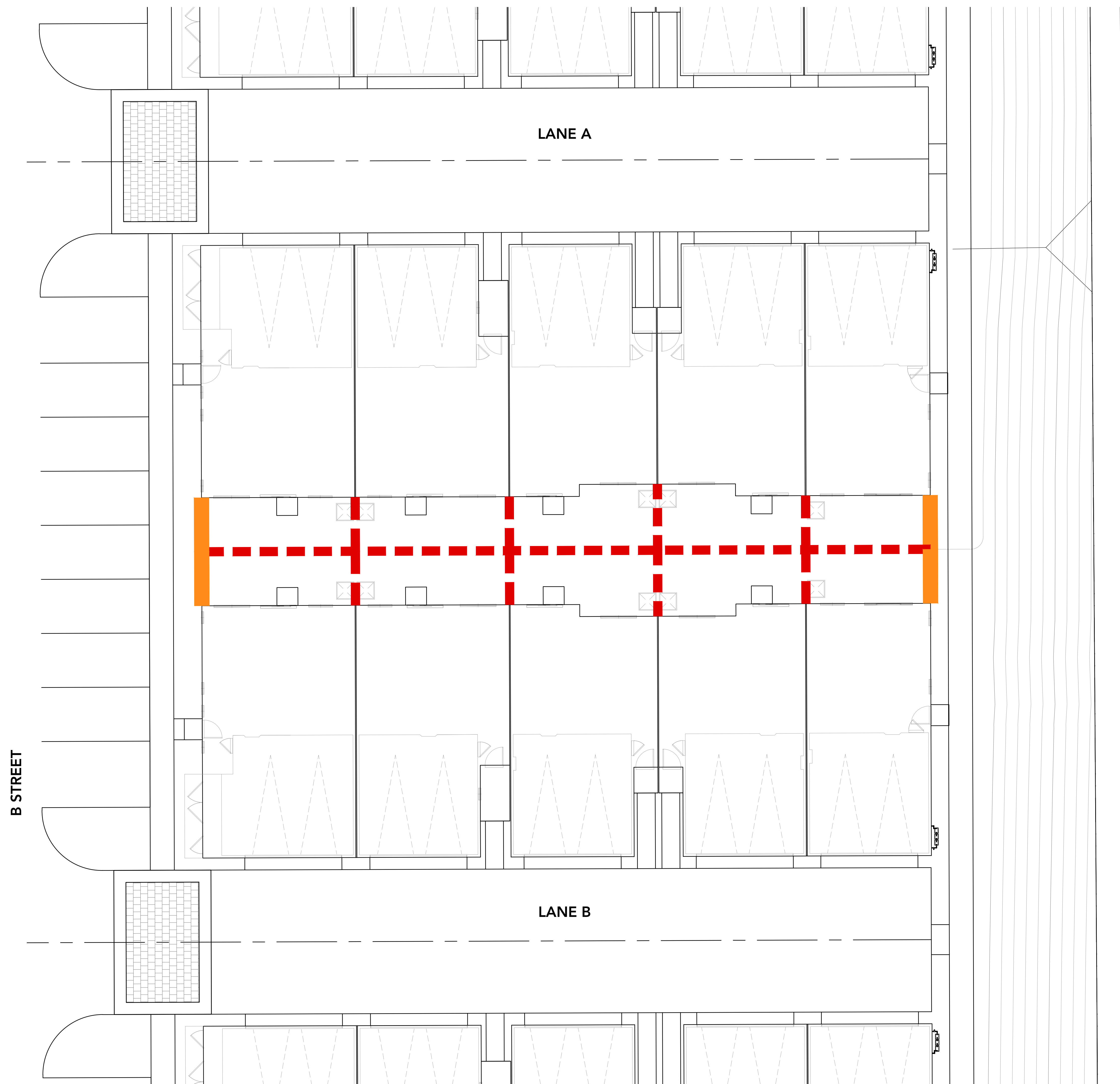




VINYL FENCE
(Walls exposed to common areas at end conditions shall be precision block.)



STUCCO WALL WITH BRICK CAP



F&W Legend

- 6'-0" High Vinyl Fence
- 6'-0" High Stucco Wall

Typical Yard Townhome Fence and Wall Plan
Special Multi-Family Design Review

Foremost Center Street, LLC



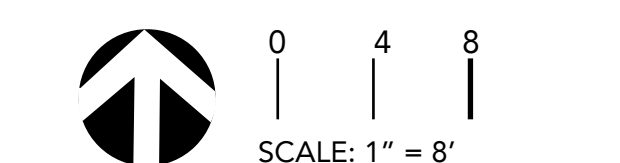
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NORTHEAST CENTER STREET ENTRY MONUMENT



NORTHWEST CENTER STREET ENTRY MONUMENT



SPRING STREET ENTRY MONUMENT NORTH

6'-6" Tan Split Face Block Pilaster with Brick Cap.

6'-0" Tan Split Face Block Wall with Brick Cap.



PARK AND REC CENTER MONUMENTS

NOTE: TEXT IS SAMPLE ONLY



SPRING STREET ENTRY MONUMENT SOUTH

6'-6" Tan Split Face Block Pilaster with Brick Cap.

5'-6" Black Tubular Steel Fence

Foremost Center Street, LLC

Highgrove Towncenter Conceptual Entry Monument Special Multi-Family Design Review

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Highgrove Town Center

Center Street, Spring Street and Garfield Avenue
County of Riverside, CA

Highgrove Town Center

HIGHGROVE AREA, RIVERSIDE COUNTY

**SPECIAL MULTIPLE-FAMILY DEVELOPMENT REVIEW
PHASING COMMITMENT
AMENITIES AND TRAFFIC IMPROVEMENTS**

PREPARED BY:

Michael L. Canfield, Manager
Foremost Center Street, LLC

JULY 1, 2021

1 INTRODUCTION

This Phasing Commitment presents a summary of the phasing of key amenities and traffic improvements/contributions of the 57.4 acre Highgrove Town Center development (“Project”), located south of Center Street, west of Garfield Avenue in the unincorporated Highgrove area of Riverside County (see Exhibit 1.1). This Phasing Commitment is made by the Project Applicant, Foremost Center Street, LLC (“Applicant”). All improvements will be made pursuant to County standards.

The traffic related improvements, fees, and fair-share payments described below are based on and will be consistent with the findings and recommendations of the Traffic Analysis dated January 27, 2021 prepared for the Project by Urban Crossroads, dated January 27, 2021 (“Traffic Analysis”).

1.1 PROJECT OVERVIEW

As shown on Exhibit 1-2, the Project includes the development of 846 multifamily residential dwelling units (townhomes). In addition, the Project will include the following elements:

- **Public Amenities** - The Project will develop the following major amenities which will be open to the public: a) 2.1 acre Highgrove Town Center Park, b) 3.8 acre Springbrook Wash Park, and c) Regional Trail.
- **Private Amenities** - The Project will also develop the following private amenities which will be for the exclusive use of residents of the Project: a) North Recreation Center, and b) South Recreation Center.
- **On-Site and Adjacent Traffic Improvements** - The Project will construct the following on-site and adjacent traffic improvements in conjunction with development of the site: a) parkway landscaping on south side of Center Street from A Street to Garfield Avenue, b) widening of Garfield Avenue and parkway landscaping from Center Street to Spring Street, c) widening of Spring Street and parkway landscaping from California Avenue ROW to Garfield Avenue, d) construction of A Street and parkway landscaping from Center Street to Spring Street through the Project as a public street, and e) installation of Stop controls for on-site intersections.
- **Contributions toward Off-Site Traffic Improvements** - Based on the Traffic Analysis, the development of the Project will not require the construction of any off-site traffic improvements, however, there are traffic improvement needs identified at off-site intersections for future traffic analysis scenarios where the Project will contribute traffic. As such, the Applicant’s responsibility for the Project’s contributions towards off-site intersection deficiencies is fulfilled through payment of fair share or participation in the pre-existing fee programs that would be assigned to construction of the identified off-site traffic improvements. The Applicant will pay the requisite fair share contributions and fee payments.

2 IMPROVEMENTS AND PHASING

2.1 PRIOR TO FIRST CERTIFICATE OF OCCUPANCY

The following improvements will be made prior to issuance of the Certificate of Occupancy for the First production (non-model) home within the Project.

- **Center Street** – Center Street is currently built out to its ultimate half-section. As such, there are no roadway improvements required. However, the Project will construct/install parkway improvements along the Project’s frontage.
- **Entry Monumentation** – Project will install entry monumentation at Center Street and A Street.
- **Street A** - Project will construct curb-to-curb improvements of Street A from Center Street to Spring Street at its ultimate full-section width as a Local road (60-foot right-of-way).
- **Garfield Avenue** - Project will widen the west side of Garfield Avenue from Center Street to Spring Street to its ultimate full-section curb to curb width as a Local road (60-foot right-of-way).
- **Street A & Center Street** – Project will install a stop control on the northbound approach and a northbound shared left-right turn lane.
- **Street A & Spring Street** –
 - Install a stop control on the northbound approach and a northbound shared left-through-right turn lane.
 - Install a stop control on the southbound approach and a southbound shared left-through-right turn lane.

2.2 PRIOR TO 101ST CERTIFICATE OF OCCUPANCY

The following improvements will be made prior to issuance of the Certificate of Occupancy for the 101st production (non-model) home within the Project.

- **Spring Street** - Project will widen the north side of Spring Street from California Avenue to Garfield Avenue at its ultimate full-section width as a Collector (74-foot right-of-way), including construction/installation of the parkway on the north side.
- **Garfield & Spring Street** – Project will install a crosswalk at the intersection of Garfield Avenue & Spring Street.
- **Street A** - Project will construct/install parkways along both sides of Street A from Center Street to Spring Street.
- **Garfield Avenue** - Project will construct/install parkway on west side of Garfield Avenue from Center Street to Spring Street.

- **North Recreation Center** – Project will complete the construction of the building and the pool of the North Recreation Center.

2.3 PRIOR TO 301ST CERTIFICATE OF OCCUPANCY

The following improvements will be made prior to issuance of the Certificate of Occupancy for the 301st production (non-model) home within the Project.

- **Highgrove Town Center Park** – Project will construct the Highgrove Town Center Park.

2.4 PRIOR TO FIRST CERTIFICATE OF OCCUPANCY SOUTH OF SPRING STREET

The following improvements will be made prior to issuance of the Certificate of Occupancy for the First production (non-model) home in the Project sough of Spring Street.

- **Spring Street** - Project will widen the south side of Spring Street from California Avenue to Garfield Avenue at its ultimate full-section width as a Collector (74-foot right-of-way), including construction/installation of the parkway on the south side.
- **Street B & Spring Street** – Install a stop control on the northbound approach and a northbound shared left-right turn lane.

2.5 PRIOR TO 101ST CERTIFICATE OF OCCUPANCY SOUTH OF SPRING STREET

The following improvements will be made prior to issuance of the Certificate of Occupancy for the 101st production (non-model) home in the Project sough of Spring Street.

- **South Recreation Center** – Project will complete the construction of the building and the pool of the South Recreation Center.

2.6 PRIOR TO 251ST CERTIFICATE OF OCCUPANCY SOUTH OF SPRING STREET

The following improvements will be made prior to issuance of the Certificate of Occupancy for the 251st production (non-model) home within the Project south of Spring Street.

- **Springbrook Wash Park** – Project will construct the Springbrook Wash Park.
- **Regional Trail** – Project will construct the Regional Trail from Spring Street through to the west side of Springbrook Wash Park.

3 CONTRIBUTIONS TOWARD OFF-SITE TRAFFIC IMPROVEMENTS

3.1 PRIOR TO FIRST CERTIFICATE OF OCCUPANCY

The Project will make the following fair-share contributions prior to issuance of the Certificate of Occupancy for the First production (non-model) home within the Project (see Table 1-1).

- **Iowa Ave. & Center St.** - \$36,093 to Riverside County as the Project’s 30.7% Fair Share Cost of modifying the traffic signal to protect the EB and WB left turns.
- **Iowa Ave. & Palmyrita Ave.** - \$34,400 to City of Riverside as the Project’s 17.6% Fair Share Cost of a) NB right turn lane, and b) modifying the traffic signal to implement overlap phasing for the NB right turn lane.
- **Iowa Ave. & Spruce St.** - \$17,235 to City of Riverside as the Project’s 22% Fair Share Cost to a) restripe the SB approach to provide dual left turn lanes, two through lanes, and one right turn lane, and b) restripe the EB approach to provide one left turn lane, one through lane, and one shared through-right turn lane.
- **Garfield Ave. & Center St.** - \$80,595 to Riverside County as the Project’s 12.6% Fair Share Cost to a) install a traffic signal, and b) restripe the WB approach to provide one left turn lane and two through lanes.

3.2 AT BUILDING PERMIT ISSUANCE

The Project will pay the following fees per unit at issuance of building permits by the County:

- **WRCOG TUMF** – The multi-family per unit TUMF fee.
- **County DIF** – The multi-family per unit DIF fee (which includes components for traffic improvement facilities and traffic signals).
- **City of Riverside Traffic & Railroad Signal Mitigation Fee** – The multi-family per unit fee.
- **City of Riverside Transportation Impact Fee** – The multi-family per unit fee.

Exhibit 1-1: Location Map

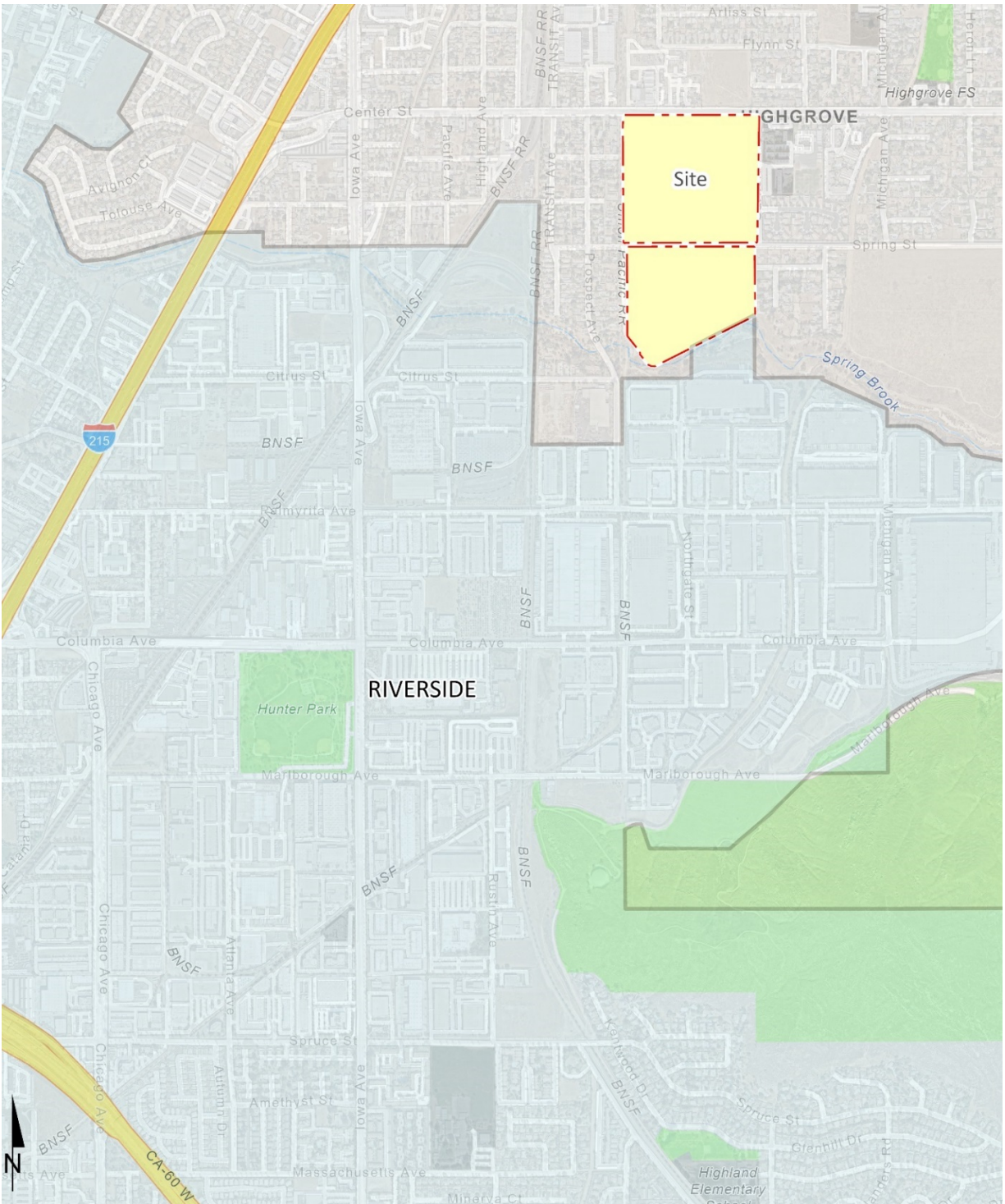


EXHIBIT 1-2: SITE PLAN

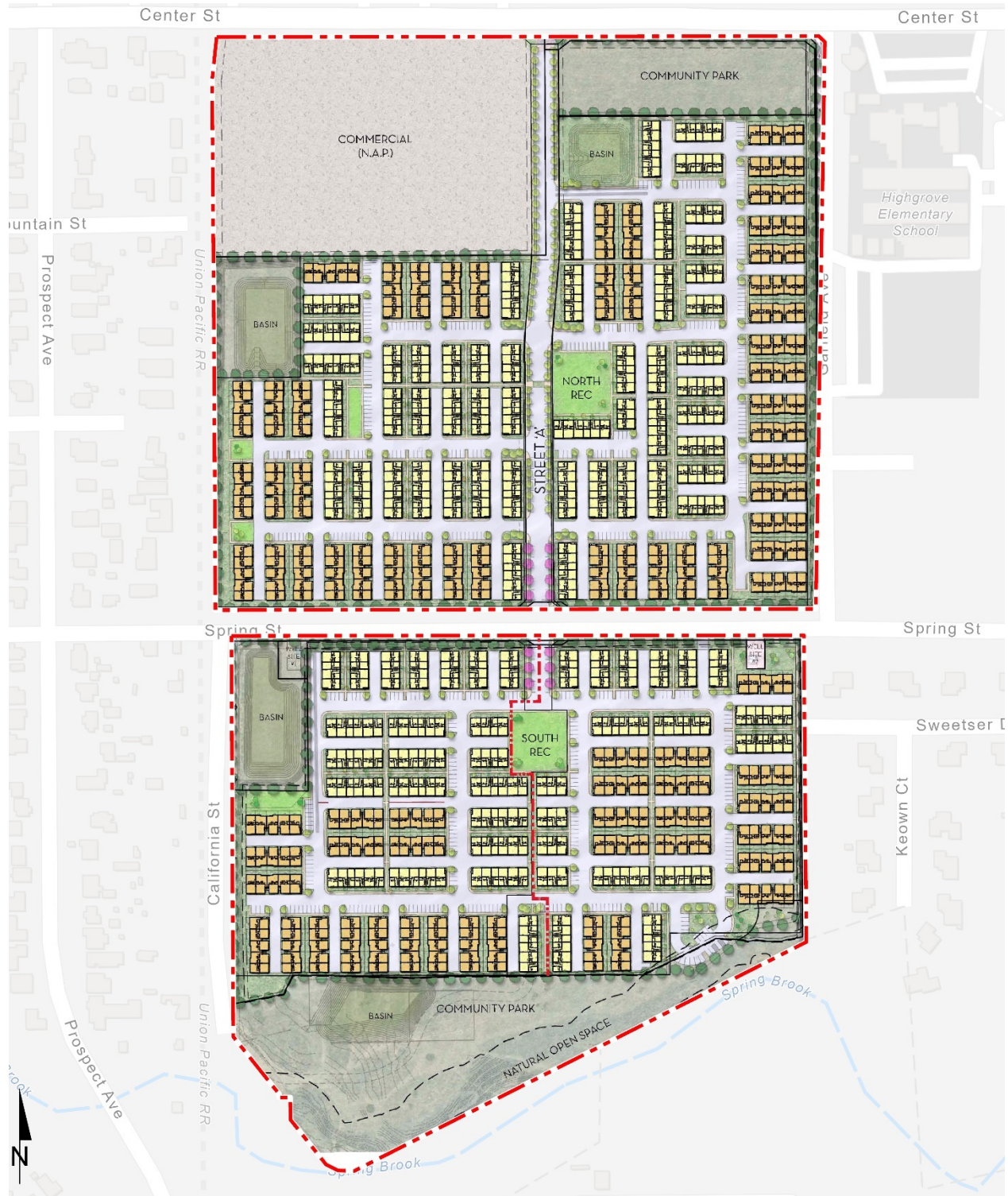


EXHIBIT 1-3: TRAFFIC AREA

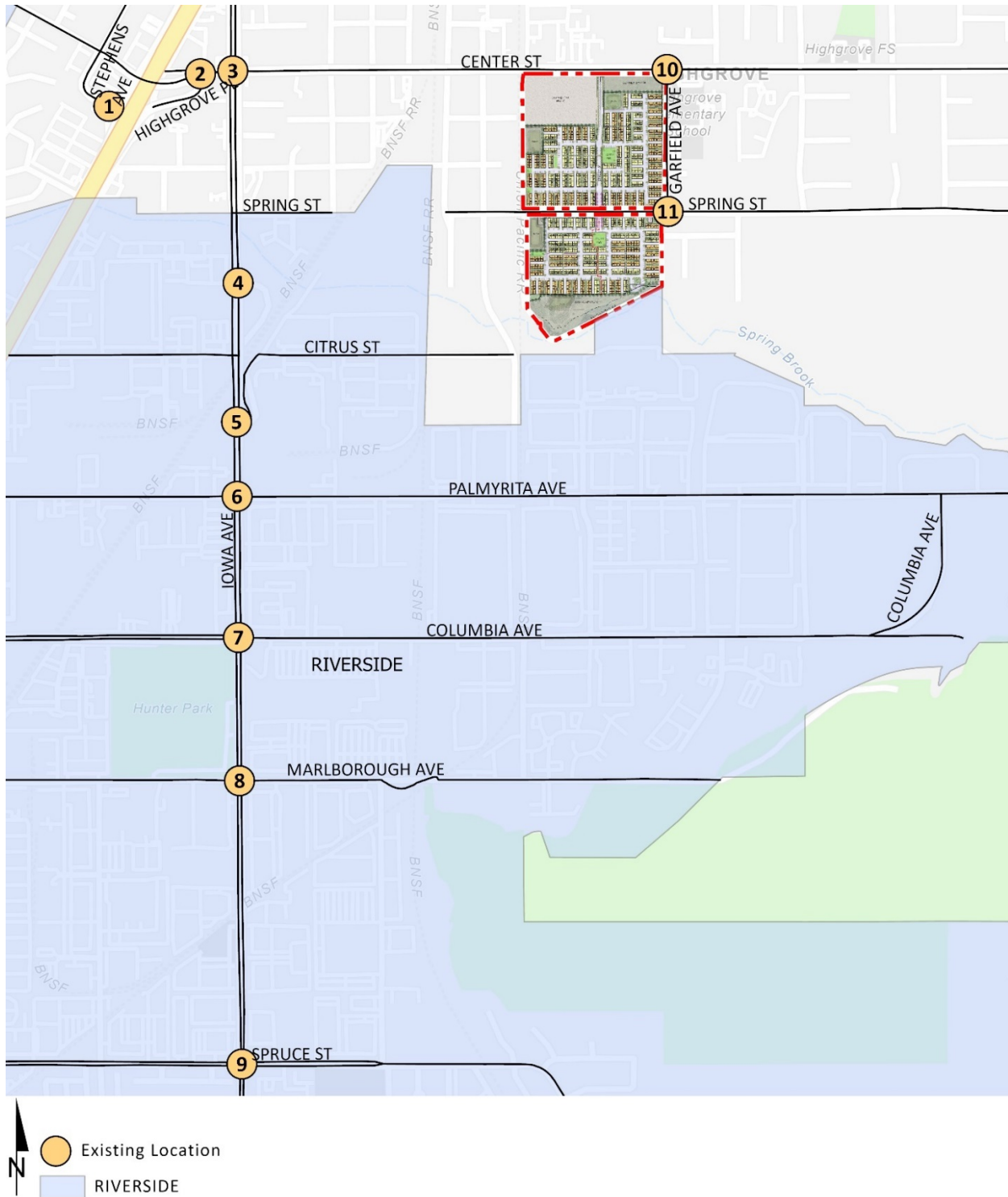
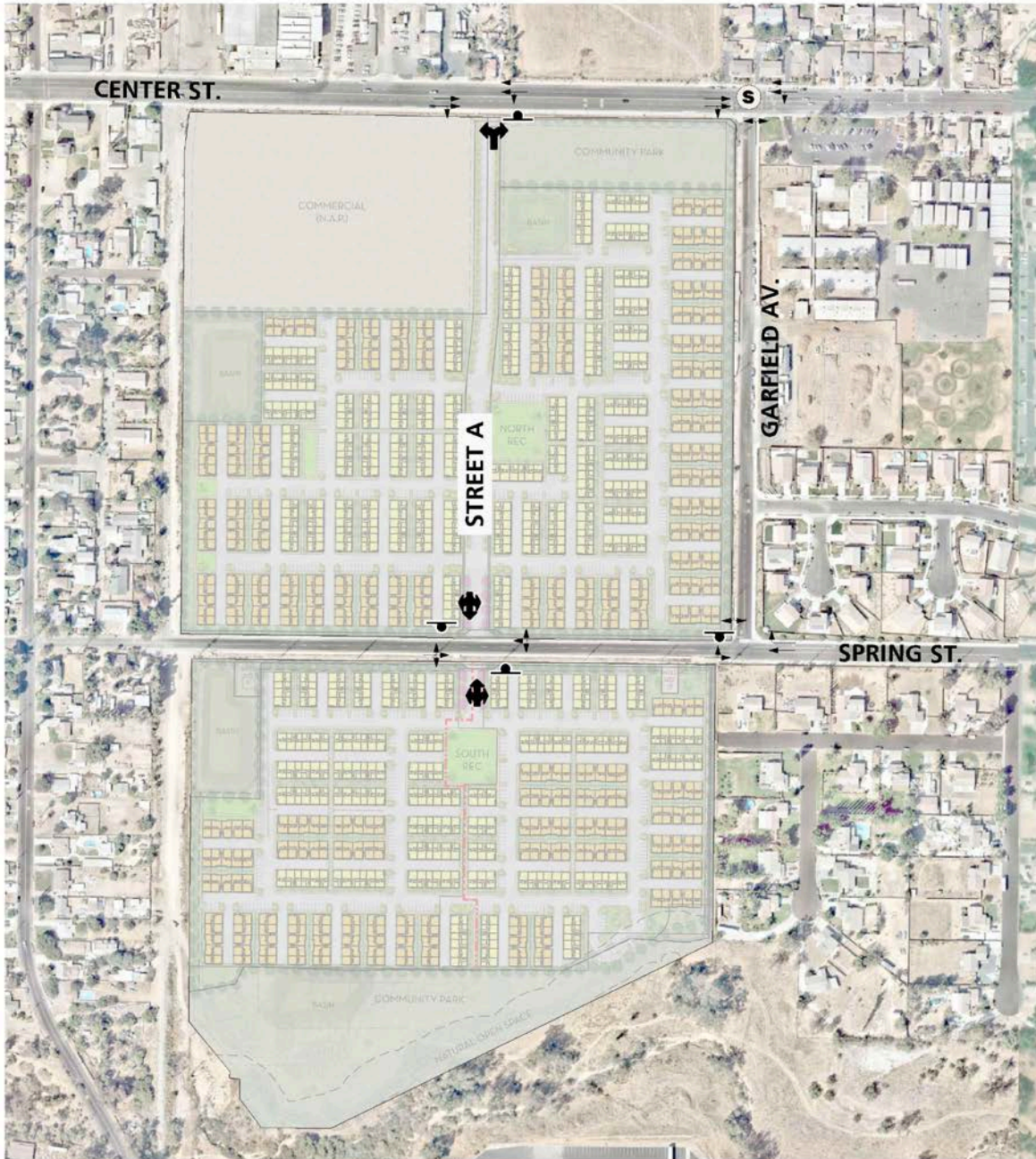


EXHIBIT 1-4: ON-SITE AND ADJACENT TRAFFIC IMPROVEMENTS



LEGEND:

-  = ALL WAY STOP
-  = STOP SIGN
-  = EXISTING LANE
-  = LANE IMPROVEMENT



TABLE 1-1: SUMMARY OF CONTRIBUTIONS

#	Intersection Location	Jurisdiction	Existing (2020)	E-P	EAP (2027)	EAPC (2027)	Improvements in County TUMF/DIF ²	Project Responsibility ²	Total Cost ⁶	Fair Share %	Fair Share Cost ⁷
2	Highgrove Pl. & Center St.	County of Riverside	Not Applicable	Not Applicable	Not Applicable	Traffic Signal Add EB left turn lane ⁵ Add WB left turn lane ⁵	Yes (DIF) Yes (TUMF) Yes (TUMF)	Fees Fees Fees	\$0 \$0 \$0	--	\$0
3	Iowa Av. & Center St.	County of Riverside	None	None	Modify the traffic signal to protect the EB and WB left turns	Same Restripe the WB approach to provide one left turn lane, one through lane, and one shared through-right turn lane ⁵	No Yes (TUMF)	Fair Share Fees	\$117,600 \$0	30.7%	\$36,093
6	Iowa Av. & Palmyrita Av.	City of Riverside	None	None	None	NB right turn lane Modify the traffic signal to implement overlap phasing for the NB right turn lane	No No	Fair Share Fair Share	\$78,400 \$117,600	17.6%	\$13,760 \$20,640
9	Iowa Av. & Spruce St.	City of Riverside	None	None	Restripe the SB approach to provide dual left turn lanes, two through lanes, and one right turn lane ⁵	Restripe the EB approach to provide one left turn lane, one through lane, and one shared through-right turn lane ⁵	No	Fair Share	\$196,000 \$39,200		\$34,400 \$8,618
10	Garfield Av. & Center St.	County of Riverside	None	None	None	Install a Traffic Signal Restripe the WB approach to provide one left turn lane and two through lanes	No No	Fair Share Fair Share	\$78,400 \$600,000 \$39,200	12.6%	\$17,235 \$75,652 \$4,943
Total Costs of Improvements									\$1,031,200		\$80,595
Total Project Fair Share Contribution to the County of Riverside (non-DIF)⁸											\$116,688
Total Project Fair Share Contribution to the City of Riverside⁹											\$51,635

NOTE: Improvements identified as "Not Applicable" are not needed to achieve a acceptable peak hour operations based on the current due diligence analysis.

¹ Improvements included in TUMF Nexus, or County of Riverside DIF fee programs.

² Identifies the Project's responsibility to construct an improvement or contribute via fair share or fee payment towards the implementation of the improvements shown.

³ Program improvements constructed by project may be eligible for fee credit, at discretion of County. See Table 10 for Fair Share Calculations.

⁴ Intersection was previously identified as deficient in the 2014 Traffic Study, however the previous project contributed less than 50 peak hour trips. As such, no improvements were previously recommended.

⁵ Identified as improvement needs under 2035 Without Project traffic conditions in the 2014 Traffic Study.

⁶ Costs have been estimated using the data provided in Appendix "G" of the San Bernardino CMP (2016 Update) for preliminary construction costs.

⁷ Rough order of magnitude cost estimate.

⁸ Total project fair share contribution consists of the improvements which are not already included in a fee program for those intersections wholly or partially within the County of Riverside.

⁹ Total project fair share contribution consists of the improvements which are not already included in a fee program for those intersections wholly or partially within the City of Riverside.



Highgrove Town Center

TRAFFIC ANALYSIS

COUNTY OF RIVERSIDE

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JANUARY 27, 2021

13222-04 TA Report

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
BNSF	Burlington Northern Santa Fe
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CMP	Congestion Management Program
DIF	Development Impact Fee
EAP	Existing Plus Ambient Growth Plus Project
EAPC	Existing Plus Ambient Growth Plus Project Plus Cumulative
HCM	Highway Capacity Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
PeMS	Performance Measurement System
PHF	Peak Hour Factor
Project	Highgrove Town Center
RCTC	Riverside County Transportation Commission
RivTAM	Riverside County Transportation Analysis Model
RTA	Riverside Transit Authority
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SCAG	Southern California Association of Governments
TA	Traffic Analysis
TUMF	Transportation Uniform Mitigation Fee
WRCOG	Western Riverside Council of Governments
V/C	Volume to Capacity

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1 INTRODUCTION

This report presents the results of the traffic analysis (TA) for the proposed Highgrove Town Center development (**Project**), which is located south of Center Street, between California Avenue and Garfield Avenue in the Highgrove area within the County of Riverside, as shown on Exhibit 1-1.

The purpose of this TA is to evaluate the potential deficiencies related to traffic and circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to resolve identified deficiencies and to achieve acceptable circulation system operational conditions. This traffic study has been prepared in accordance with the County of Riverside's Transportation Analysis Guidelines for Level of Service Vehicle Miles Traveled (December 2020). (1) For the purposes of this traffic analysis, the same study area intersections have been analyzed that were previously analyzed in the Bixby-Highgrove Residential (TTM No. 36668) Traffic Impact Analysis for the same Project site, referred to hereafter as the **2014 Traffic Study**. (2)

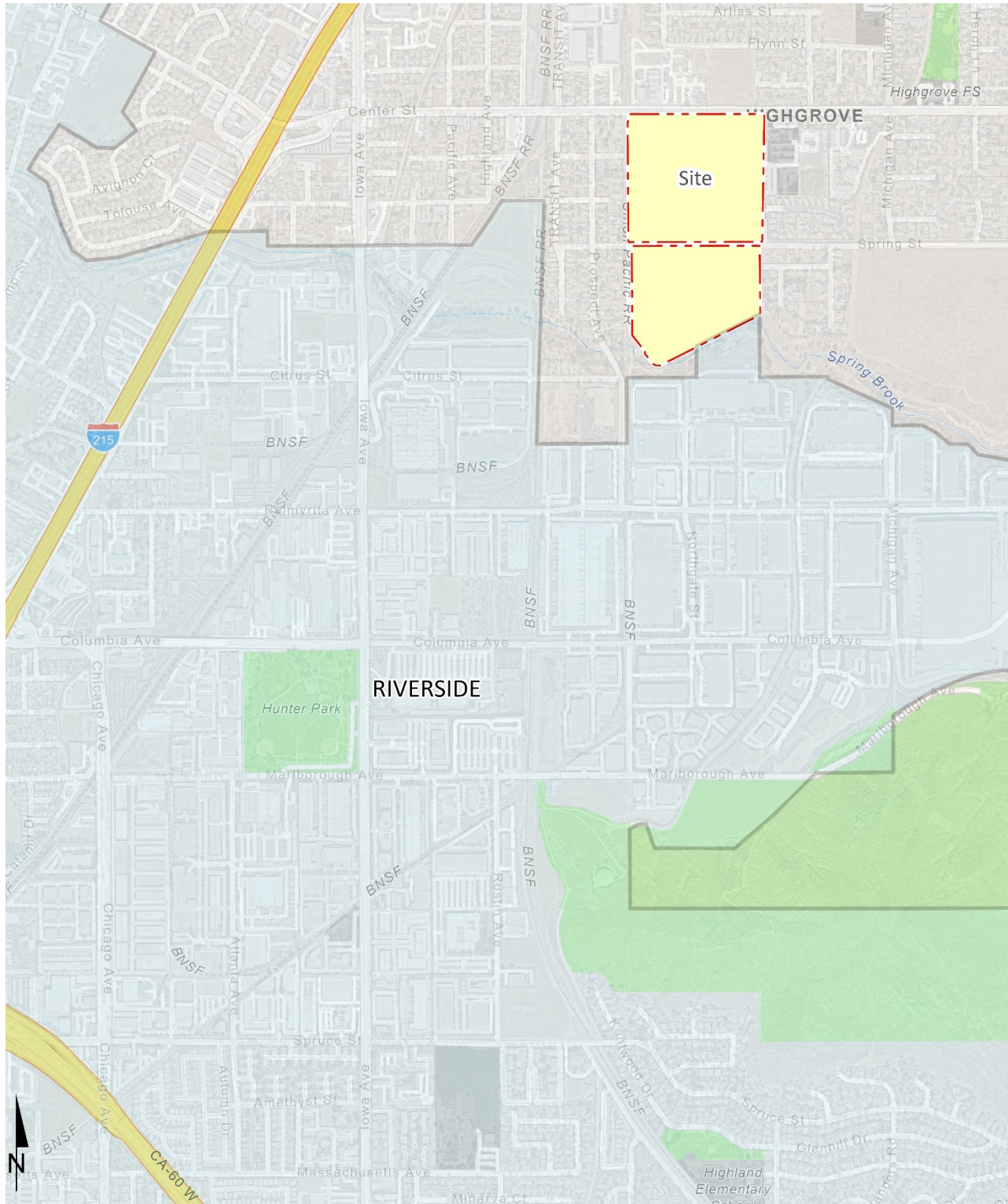
1.1 SUMMARY OF FINDINGS

The Project is proposing to construct the following improvements as design features in conjunction with development of the site:

- Project to construct Garfield Avenue from Center Street to Spring Street at its ultimate full-section width as a Local road (60-foot right-of-way) in compliance with the circulation recommendations found in the County of Riverside General Plan Circulation Element.
- Project to construct Spring Street from California Avenue to Garfield Avenue at its ultimate full-section width as a Collector (74-foot right-of-way) in compliance with the circulation recommendations found in the County of Riverside General Plan Circulation Element.
- Construct A Street from Center Street to Spring Street through the Project as a public street at its ultimate full-section width as a Local road (60-foot right-of-way) in compliance with the circulation recommendations found in the County of Riverside General Plan Circulation Element.
- Stop controls are to be provided for egress traffic from the Project at all driveways in conjunction with a single lane into and out of the site.
- Note that Center Street is currently built out to its ultimate half-section. As such, there are no roadway improvement recommendations aside from the curb and gutter, sidewalk, and landscaping improvements needed along the Project's frontage and those improvements needed to accommodate site access, consistent with the County's standards.

Additional details and intersection lane geometrics are provided in Section 1.6 *Recommendations* of this report.

EXHIBIT 1-1: LOCATION MAP



The development of the proposed Project is not anticipated to require the construction of any off-site improvements, however, there are improvement needs identified at off-site intersections for future traffic analysis scenarios where the Project would contribute traffic. As such, the Project Applicant's responsibility for the Project's contributions towards off-site intersection deficiencies is fulfilled through payment of fair share or participation in the pre-existing fee programs that would be assigned to construction of the identified recommended improvements. The Project Applicant would be required to pay requisite fair share contributions and fee payments consistent with the County's requirements (see Section 8 *Local and Regional Funding Mechanisms*).

1.2 PROJECT OVERVIEW

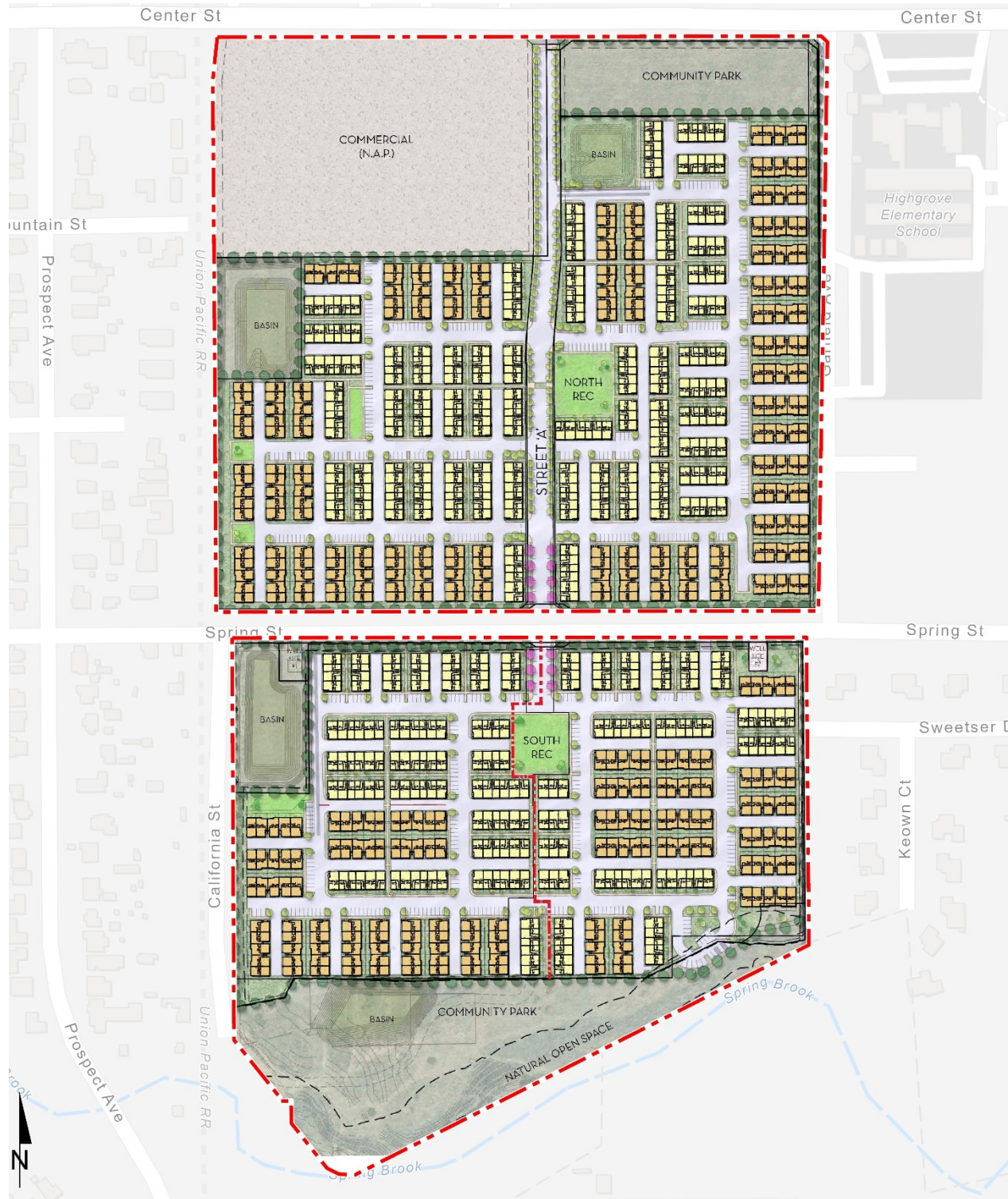
As shown on Exhibit 1-2, the proposed Project currently includes the development of 846 multifamily residential dwelling units (townhomes). However, for the purposes of this TA, a previous plan (which is more conservative) has been evaluated, which consists of the development of 836 multifamily residential dwelling units (townhomes or apartments) and 44 cluster single family detached residential dwelling units. The Project opening year could occur sooner however an Opening Year of 2027 has conservatively been utilized for the purposes of this TA. Vehicular and truck traffic access will be provided via the following driveways (see Exhibit 1-1):

- Street A & Center Street
- Street B & Spring Street
- Street A & Spring Street

Regional access to the Project site is available from the I-215 Freeway via Center Street.

Trips generated by the Project's land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) [Trip Generation Manual](#), (10th Edition, 2017). (3) The proposed Project is anticipated to generate a total of 6,536 two-way trips per day, 417 AM peak hour trips and 512 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

EXHIBIT 1-2: PRELIMINARY SITE PLAN



1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential deficiencies to traffic and circulation have been assessed for each of the following conditions:

- Existing (2020)
- Existing plus Project (E+P)
- Existing Plus Ambient Growth Plus Project (EAP) (2027)
- Existing Plus Ambient Growth Plus Project Plus Cumulative Projects (EAPC) (2027)

1.3.1 EXISTING (2020) CONDITIONS

Information for Existing (2020) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared. Traffic count utilized for the purposes of this analysis were collected in February 2020 prior to the currently ongoing COVID-19 pandemic. Local schools were in session and operating on normal bell schedules when the traffic counts were collected. As such, no adjustments have been made to the existing traffic count data aside from adjustments made to balance traffic flow between closely spaced intersections.

1.3.2 EXISTING PLUS PROJECT CONDITIONS

The Existing Plus Project (E+P) analysis determines any traffic operation and circulation system deficiencies that would occur on the existing roadway system in the scenario of the Project being placed upon Existing conditions.

1.3.3 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT (2027) CONDITIONS

The EAP (2027) conditions analysis determines the potential circulation system deficiencies based on a comparison of the EAP traffic conditions to Existing conditions. To account for background traffic growth, an ambient growth factor from Existing (2020) conditions of 14.87% (2 percent per year, compounded over 7 years) is included for EAP (2027) traffic conditions. The assumed ambient growth factor is based on the requirements per the County of Riverside traffic study guidelines. Consistent with Riverside County traffic study guidelines, the EAP analysis is intended to identify "Opening Year" deficiencies associated with the development of the proposed Project based on the expected background growth within the study area.

1.3.4 EXISTING PLUS AMBIENT GROWTH PLUS PROJECT PLUS CUMULATIVE (2027) CONDITIONS

The EAPC (2027) traffic conditions analysis determines the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, an ambient growth factor of 14.87% from Existing conditions are included for EAPC traffic conditions (2 percent per year, compounded over 7 years).

Conservatively, the TA estimates the area ambient traffic growth and then adds traffic generated by other known or probable related projects. These related projects are at least in part already accounted for in the assumed 14.87% of ambient growth; and some of these related projects would likely not be implemented and operational within the 2027 Opening Year time frame

assumed for the Project. The resulting traffic growth utilized in the TA (14.87% ambient growth factor plus traffic generated by related projects) would therefore tend to overstate rather than understate background cumulative traffic deficiencies under 2027 conditions.

1.4 STUDY AREA

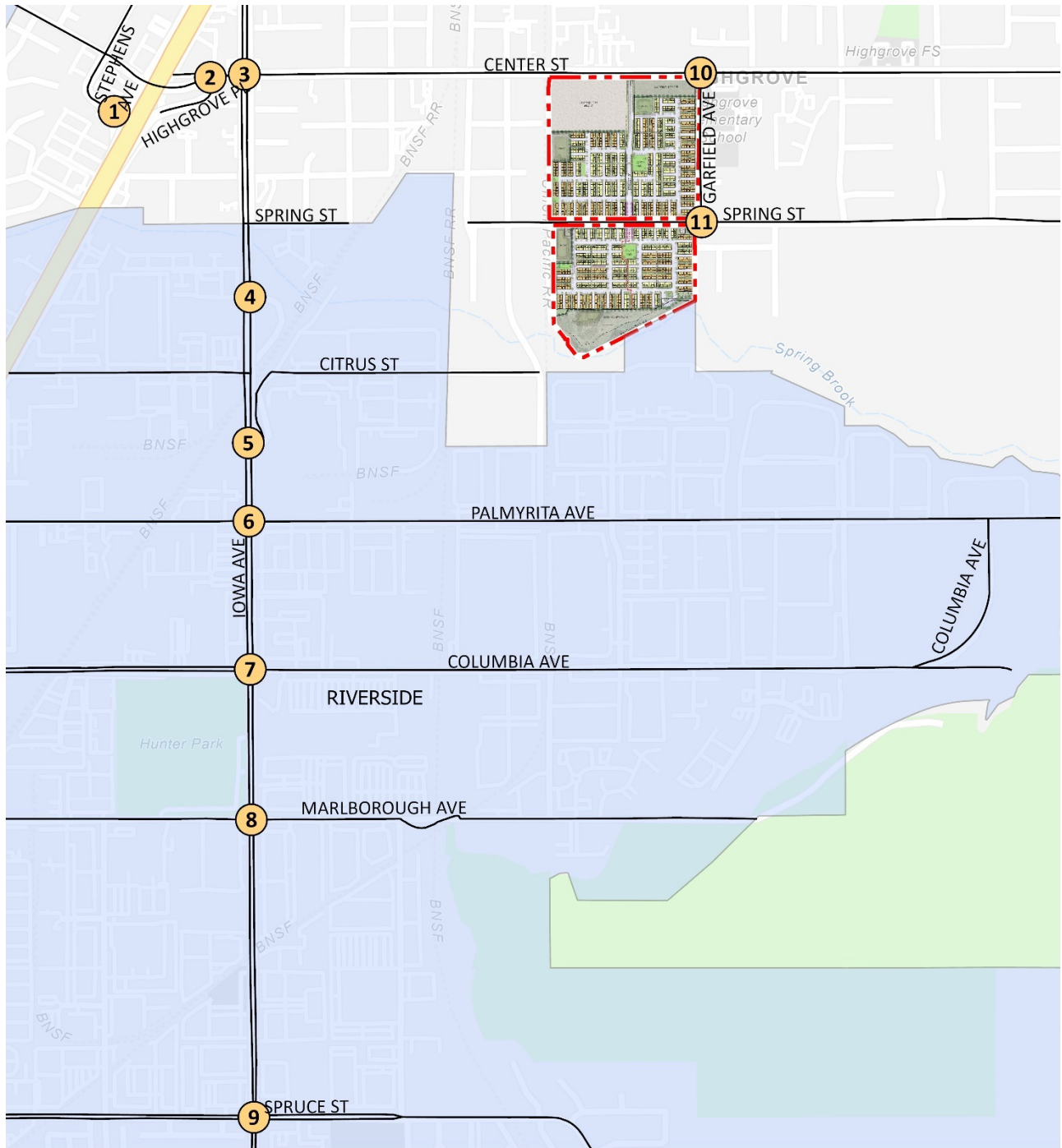
The 11 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for evaluation in this TA consistent with the locations evaluated in the 2014 Traffic Study.

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Stephens Av. & Center St.	County of Riverside	No
2	Highgrove Pl. & Center St.	County of Riverside	No
3	Iowa Av. & Center St.	County of Riverside	No
4	Iowa Av. & W. Citrus St.	City of Riverside	No
5	Iowa Av. & E. Citrus St.	City of Riverside	No
6	Iowa Av. & Palmyrita Av.	City of Riverside	No
7	Iowa Av. & Columbia Av.	City of Riverside	No
8	Iowa Av. & Marlborough Av.	City of Riverside	No
9	Iowa Av. & Spruce St.	City of Riverside	No
10	Garfield Av. & Center St.	County of Riverside	No
11	Garfield Av. & Spring St.	County of Riverside	No

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. The County of Riverside CMP became effective with the passage of Proposition 111 in 1990 and updated most recently updated in 2011. The Riverside County Transportation Commission (RCTC) adopted the 2011 CMP for the County of Riverside in December 2011. (4) CMP intersections are identified in Table 1-1. There are no study area intersections identified as a Riverside County CMP facility.

EXHIBIT 1-3: STUDY AREA



1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *E+P Traffic Conditions*, Section 6 *EAP (2027) Traffic Conditions*, and Section 7 *EAPC (2027) Traffic Conditions* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented in Table 1-2.

TABLE 1-2: SUMMARY OF DEFICIENT INTERSECTIONS BY ANALYSIS SCENARIO

#	Intersection	Existing		E+P		EAP (2027)		EAPC (2027)	
		AM	PM	AM	PM	AM	PM	AM	PM
1	Stephens Av. & Center St.	●	●	●	●	●	●	●	●
2	Highgrove Pl. & Center St.	●	●	●	●	●	●	●	●
3	Iowa Av. & Center St.	●	●	●	●	●	●	●	●
4	Iowa Av. & W. Citrus St.	●	●	●	●	●	●	●	●
5	Iowa Av. & E. Citrus St.	●	●	●	●	●	●	●	●
6	Iowa Av. & Palmyrita Av.	●	●	●	●	●	●	●	●
7	Iowa Av. & Columbia Av.	●	●	●	●	●	●	●	●
8	Iowa Av. & Marlborough Av.	●	●	●	●	●	●	●	●
9	Iowa Av. & Spruce St.	●	●	●	●	●	●	●	●
10	Garfield Av. & Center St.	●	●	●	●	●	●	●	●

● = A - D ● = E ● = F

1.5.1 E+P CONDITIONS

All of the study area intersections are anticipated to continue to operate at an acceptable LOS with the addition of Project traffic, consistent with Existing (2020) traffic conditions.

1.5.2 EAP (2027) CONDITIONS

The following study area intersections are anticipated to operate at a deficient LOS (i.e., LOS E or worse) during one or both peak hours for EAP (2027) traffic conditions:

- Iowa Avenue & Center Street (#3) – LOS E AM and PM peak hours
- Iowa Avenue & Spruce Street (#9) – LOS E PM peak hour only

1.5.3 EAPC (2027) CONDITIONS

The following study area intersection is anticipated to operate at a deficient LOS (i.e., LOS E or worse) during one or both peak hours for EAPC (2027) traffic conditions:

- Highgrove Place & Center Street (#2) – LOS F AM and PM peak hours
- Iowa Avenue & Center Street (#3) – LOS F AM and PM peak hours
- Iowa Avenue & Palmyrita Avenue (#6) – LOS E AM peak hour; LOS F PM peak hour
- Iowa Avenue & Spruce Street (#9) – LOS F PM peak hour only
- Garfield Avenue & Center Street (#10) – LOS F AM peak hour only

1.6 RECOMMENDATIONS

1.6.1 SITE ADJACENT AND SITE ACCESS RECOMMENDATIONS

The following recommendations are based on the improvements needed to accommodate site access. Exhibit 1-4 shows the site adjacent recommendations.

Recommendation 1: Street A & Center Street – The following improvement is necessary to accommodate site access:

- Install a stop control on the northbound approach and a northbound shared left-right turn lane.

Recommendation 2: Street A & Spring Street – The following improvements necessary to accommodate site access:

- Install a stop control on the northbound approach and a northbound shared left-through-right turn lane.
- Install a stop control on the southbound approach and a southbound shared left-through-right turn lane.

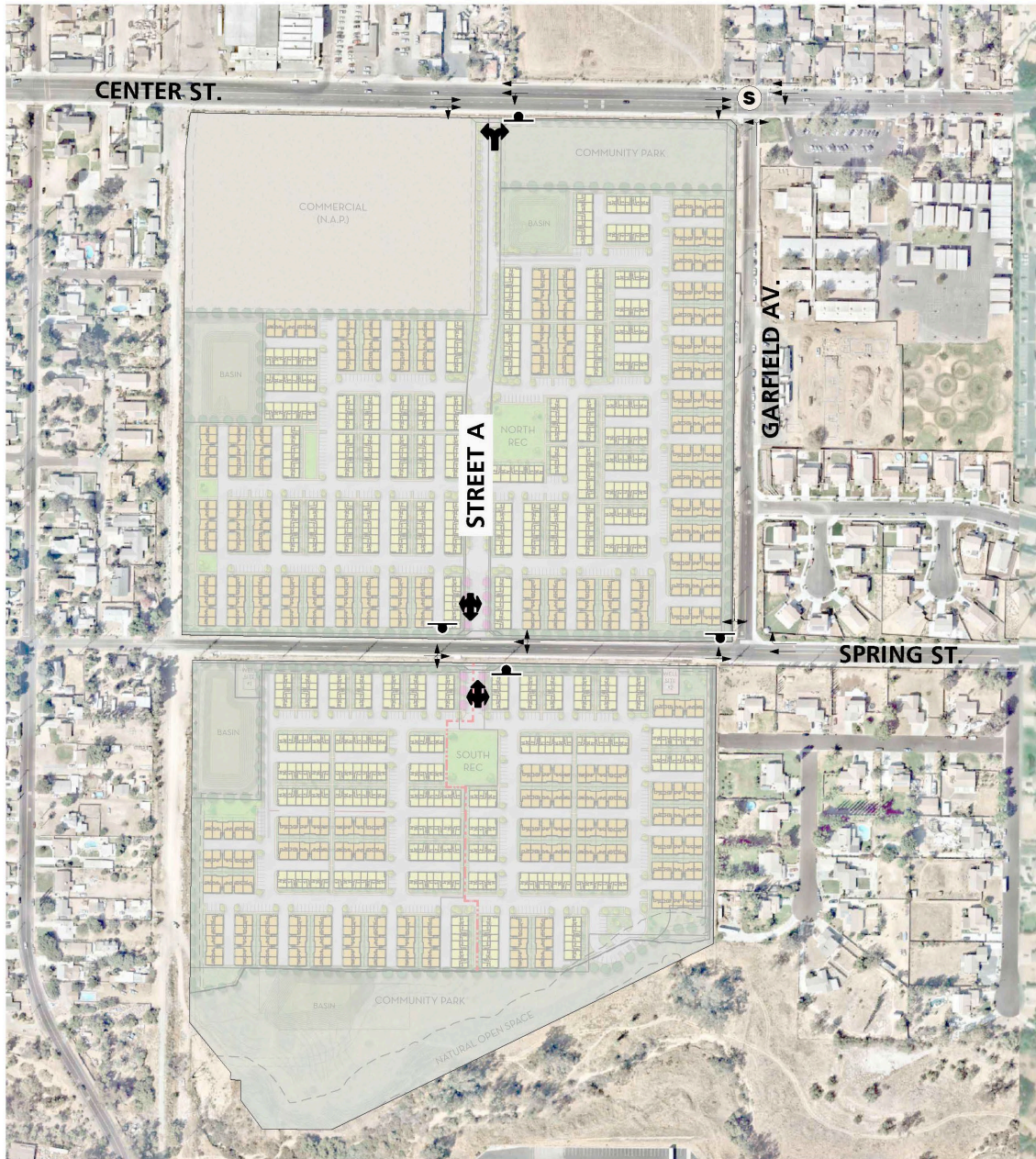
Recommendation 3: Street B & Spring Street – The following improvement is necessary to accommodate site access:

- Install a stop control on the northbound approach and a northbound shared left-right turn lane.

At the intersections of Garfield Avenue & Center Street (#10) and Garfield Avenue & Spring Street (#11), no improvements are recommended; the existing traffic control and intersection geometrics should be maintained.

Recommendation 4: Center Street is an east-west oriented roadway located along the Project's northern boundary. According to the County of Riverside's Circulation Element, Center Street is currently built out to its ultimate half-section. As such, there are no roadway improvement recommendations. However, curb, gutter, and sidewalk improvements are recommended, as needed for site access along the Project's frontage, consistent with the County's standards.

EXHIBIT 1-4: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS



LEGEND:

-  = ALL WAY STOP
-  = STOP SIGN
-  = EXISTING LANE
-  = LANE IMPROVEMENT



Recommendation 5: Garfield Avenue is a north-south oriented roadway located along the Project's eastern boundary. Project to construct Garfield Avenue from Center Street to Spring Street at its ultimate full-section width as a Local road (60-foot right-of-way) in compliance with the circulation recommendations found in the County of Riverside's Circulation Element.

Recommendation 6: Spring Street is an east-west oriented roadway that bisects the Project. Project to construct Spring Street from California Avenue to Garfield Avenue at its ultimate full-section width as a Collector (74-foot right-of-way) in compliance with the circulation recommendations found in the County of Riverside's Circulation Element.

Recommendation 7: Street A is a north-south oriented roadway located within the Project. Project to construct Street A from Center Street to Spring Street at its ultimate full-section width as a Local road (60-foot right-of-way) in compliance with the circulation recommendations found in the County of Riverside's Circulation Element.

Exhibit 1-5 illustrates the proposed Project trails. A regional trail is shown on the south side of Spring Street and is proposed to run down the east side of the Project boundary and along the southern Project boundary within the Springbrook Community Park. The Project is proposing to implement internal trail connections between the 2.1-acre park site on Central Street, north recreation center, south recreation center, and the Springbrook Community Park located along the southern boundary of the Project. Public park trail connections are also proposed throughout the 2.1-acre park site on Central Street and the Springbrook Community Park.

On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard Caltrans and County of Riverside sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

1.6.2 OFF-SITE RECOMMENDATIONS

The recommended improvements needed to address the cumulative deficiencies identified under Existing (2020), E+P, EAP (2027), and EAPC (2027) traffic conditions are shown in Table 1-3. For those improvements listed in Table 1-3 and not constructed as part of the Project, the Applicant's responsibility for the Project's contributions towards deficient intersections is fulfilled through payment of fair share and/or TUMF/DIF fees (if applicable) that would be assigned to construction of the identified recommended improvements. The Project Applicant would be required to pay TUMF/DIF and/or fair share fees consistent with the County's requirements (see Section 8 *Local and Regional Funding Mechanisms*).

EXHIBIT 1-5: PROPOSED PROJECT TRAILS

Sheet Index

- A** YARD TOWNHOMES: SEE SHEET L-4
- B** PASCO TOWNHOMES: SEE SHEET L-5
- C** ENHANCED PARKWAY: SEE SHEET L-6
- D** 2.1 ACRE PARK SITE: SEE SHEET L-9
- E** NORTH RECREATION CENTER: SEE SHEET L-10
- F** SOUTH RECREATION CENTER: SEE SHEET L-11
- G** SPRINGBROOK COMMUNITY PARK: SEE SHEET L-12
- H** BASIN 1A: SEE SHEET L-13
- I** BASIN 1B: SEE SHEET L-13
- J** BASIN 2A: SEE SHEET L-13
- K** BASIN 2B: SEE SHEET L-13

Trail Legend

- INTERNAL TRAIL CONNECTION TO RECREATION / PARK SITE
- PUBLIC PARK TRAIL CONNECTION
- REGIONAL TRAIL

Architecture Legend

- 'PASCO' TOWNHOMES
- 'YARD' TOWNHOMES

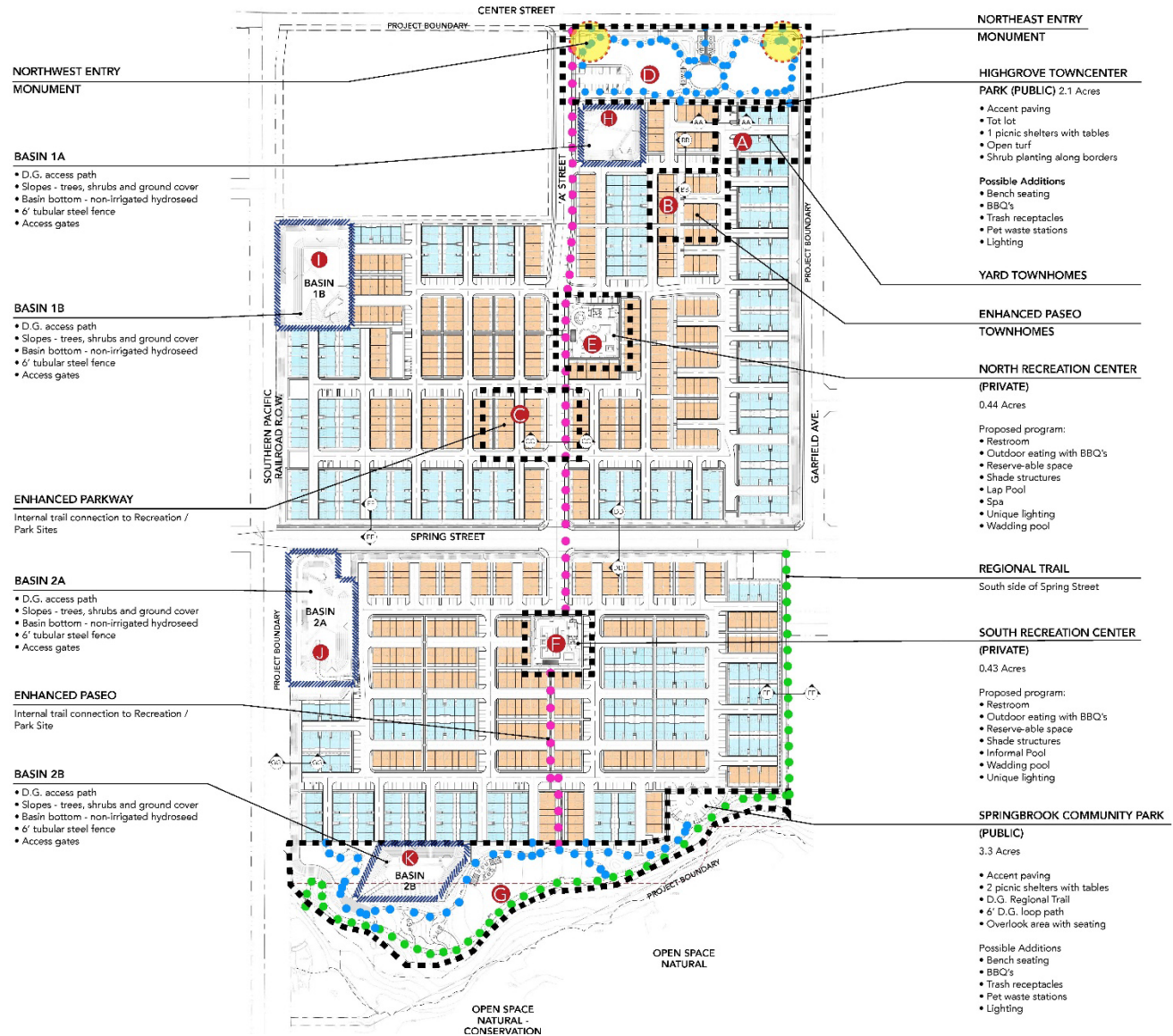


TABLE 1-3: SUMMARY OF IMPROVEMENTS BY ANALYSIS SCENARIO

#	Intersection Location	Jurisdiction	Existing (2020)	E+P	EAP (2027)	EAPC (2027)	Improvements in County TUMF/DIF? ¹	Project Responsibility ²	Total Cost ⁶	Fair Share % ³	Fair Share Cost ⁷		
2	Highgrove Pl. & Center St.	County of	Not Applicable	Not Applicable	Not Applicable	Traffic Signal Add EB left turn lane ⁵ Add WB left turn lane ⁵	Yes (DIF) Yes (TUMF) Yes (TUMF)	Fees Fees Fees	\$0 \$0 \$0	--	\$0 \$0 \$0		
									Total		\$0		
3	Iowa Av. & Center St.	County of Riverside	None	None	Modify the traffic signal to protect the EB and WB left turns	Same Restripe the WB approach to provide one left turn lane, one through lane, and one shared through-right turn lane ⁵	No Yes (TUMF)	Fair Share Fees	\$117,600 \$0	30.7%	\$36,093 \$0		
									Total		\$117,600		\$36,093
6	Iowa Av. & Palmyrita Av.	City of Riverside	None	None	None	NB right turn lane Modify the traffic signal to implement overlap phasing for the NB right turn lane	No No	Fair Share Fair Share	\$78,400 \$117,600	17.6%	\$13,760 \$20,640		
									Total		\$196,000		\$34,400
9	Iowa Av. & Spruce St.	City of Riverside	None	None	Restripe the SB approach to provide dual left turn lanes, two through lanes, and one right turn lane ⁵	Restripe the EB approach to provide one left turn lane, one through lane, and one shared through-right turn lane ⁵	No No	Fair Share Fair Share	\$39,200 \$39,200		\$8,618 \$8,618		
									Total		\$78,400		\$17,235
10	Garfield Av. & Center St.	County of Riverside	None	None	None	Install a Traffic Signal Restripe the WB approach to provide one left turn lane and two through lanes	No No	Fair Share Fair Share	\$600,000 \$39,200	12.6%	\$75,652 \$4,943		
									Total		\$639,200		\$80,595
Total Costs of Improvements									\$1,031,200		\$168,323		
Total Project Fair Share Contribution to the County of Riverside (non-DIF)⁸											\$116,688		
Total Project Fair Share Contribution to the City of Riverside⁹											\$51,635		

NOTE: Improvements identified as "Not Applicable" are not needed to achieve acceptable peak hour operations based on the current due diligence analysis.

- ¹ Improvements included in TUMF Nexus, or County of Riverside DIF fee programs.
- ² Identifies the Project's responsibility to construct an improvement or contribute via fair share or fee payment towards the implementation of the improvements shown.
- ³ Program improvements constructed by project may be eligible for fee credit, at discretion of County. See Table 10 for Fair Share Calculations.
- ⁴ Intersection was previously identified as deficient in the 2014 Traffic Study, however the previous project contributed less than 50 peak hour trips. As such, no improvements were previously recommended.
- ⁵ Identified as improvement needs under 2035 Without Project traffic conditions in the 2014 Traffic Study.
- ⁶ Costs have been estimated using the data provided in Appendix "G" of the San Bernardino CMP (2016 Update) for preliminary construction costs.
- ⁷ Rough order of magnitude cost estimate.
- ⁸ Total project fair share contribution consists of the improvements which are not already included in a fee program for those intersections wholly or partially within the County of Riverside.
- ⁹ Total project fair share contribution consists of the improvements which are not already included in a fee program for those intersections wholly or partially within the City of Riverside.

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2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. The methodologies described are generally consistent with County of Riverside traffic study guidelines. (1)

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (5) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

County of Riverside and City of Riverside

The County of Riverside and City of Riverside require signalized intersection operations analysis based on the methodology described in the HCM (6th Edition). Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1. Study area intersections have been evaluated using the Synchro (Version 10) analysis software package.

The traffic modeling and signal timing optimization software package Synchro (Version 10) is utilized to analyze signalized intersections within the County of Riverside and City of Riverside. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up	F	F

Source: HCM, 6th Edition

A saturation flow rate of 1900 has been utilized for all study area intersections located within the County of Riverside and City of Riverside. The peak hour traffic volumes are adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g., $PHF = [Hourly Volume] / [4 \times Peak\ 15\text{-minute\ Flow\ Rate}]$). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per the HCM, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (5)

2.2.2 UNSIGNALIZED INTERSECTIONS

County of Riverside and City of Riverside

The County of Riverside and City of Riverside require the operations of unsignalized intersections be evaluated using the methodology described the HCM. (5) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM, 6th Edition

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop controlled intersections, LOS is computed for the intersection as a whole. For side-street stop-controlled intersections, LOS is reported for the worst minor street movement.

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TA uses the signal warrant criteria presented in the latest edition of the California Department of Transportation (Caltrans) California Manual on Uniform Traffic Control Devices (CA MUTCD). (6)

The signal warrant criteria for Existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The Caltrans CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (6) Specifically, this TA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing study area intersections for all analysis scenarios. Warrant 3 is appropriate to use for this TA because it provides specialized warrant criteria for intersections with rural characteristics (e.g., located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Future intersections that do not currently exist have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

Traffic signal warrant analyses were performed for the following unsignalized study area intersection shown in Table 2-3:

TABLE 2-3: TRAFFIC SIGNAL WARRANT ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction
2	Highgrove Pl. & Center St.	County of Riverside
10	Garfield Av. & Center St.	County of Riverside
11	Garfield Av. & Spring St.	County of Riverside

The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analyses for future conditions are presented in Section 5 *E+P Traffic Conditions*, Section 6 *EAP (2027) Traffic Conditions*, and Section 7 *EAPC (2027) Traffic Conditions* of this report.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 MINIMUM LEVEL OF SERVICE (LOS)

2.4.1 COUNTY OF RIVERSIDE

The definition of an intersection deficiency has been obtained from the County of Riverside General Plan. Riverside County General Plan Policy C 2.1 states that the County will maintain the following County-wide target LOS:

The following minimum target levels of service have been designated for the review of development proposals in the unincorporated areas of Riverside County with respect to transportation impacts on roadways designated in the Riverside County Circulation Plan which are currently County maintained, or are intended to be accepted into the County maintained roadway system:

- *LOS C shall apply to all development proposals in any area of the Riverside County not located within the boundaries of an Area Plan, as well as those areas located within the following Area Plans: REMAP, Eastern Coachella Valley, Desert Center, Palo Verde Valley, and those non-Community Development areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*
- *LOS D shall apply to all development proposals located within any of the following Area Plans: Eastvale, Jurupa, Highgrove, Reche Canyon/Badlands, Lakeview/Nuevo, Sun City/Menifee Valley, Harvest Valley/Winchester, Southwest Area, The Pass, San Jacinto Valley, Western Coachella Valley and those Community Development Areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*

- *LOS E may be allowed by the Board of Supervisors within designated areas where transit-oriented development and walkable communities are proposed.*

The applicable minimum LOS utilized for the purposes of this analysis is LOS D per the County-wide target LOS for projects located within a Community Development Area of the Temescal Canyon Area Plan.

2.4.2 CITY OF RIVERSIDE

The City of Riverside General Plan states the City will strive to maintain LOS D or better on arterial streets wherever possible. At some key locations, such as City arterial roadways, which are used as freeway bypass by regional through traffic and at heavily traveled freeway intersections, LOS E may be acceptable as determined on a case-by-case basis. Locations that may warrant the LOS E standard include portions of Arlington Avenue/Alessandro Boulevard, Van Buren Boulevard throughout the City, portions of La Sierra Avenue, and selected freeway interchanges. A higher standard, such as LOS C or better, may be adopted for Local and Collector streets in residential areas. The City recognizes that along key free-way feeder segments during peak commute hours, LOS F may be expected due to regional travel patterns. A minimum LOS utilized for the purposes of this analysis is LOS D.

2.5 DEFICIENCY CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies.

2.5.1 COUNTY OF RIVERSIDE

The following deficiency criteria has been utilized for the County of Riverside. To determine whether the addition of project-related traffic at a study intersection would result in a deficiency, the following will be utilized:

- A deficiency occurs at study area intersections if the pre-Project condition is at or better than LOS D (i.e., acceptable LOS), and the addition of project trips causes the peak hour LOS of the study area intersection to operate at unacceptable LOS (i.e., LOS E or F). Per the County of Riverside traffic study guidelines, for intersections currently operating at unacceptable LOS (LOS E or F), a deficiency will occur if the Project contributes 50 or more peak hour trips to pre-project traffic conditions.

2.5.2 CITY OF RIVERSIDE

For the study area intersections that lie within the City of Riverside, to determine whether the addition of Project traffic (as defined through the comparison of Existing traffic conditions to E+P traffic conditions) at a study intersection would result in a direct project-specific traffic impact, the following will be utilized:

- When the pre-Project condition is at or better than LOS D (i.e., acceptable LOS), and project-generated traffic, as measured by 50 or more peak hour trips, causes deterioration below LOS D (i.e., unacceptable LOS) or increases to the peak hour delay as defined in Table 2-4, a deficiency is deemed to occur.

TABLE 2-4: THRESHOLDS OF SIGNIFICANCE

Pre-Project LOS	Project-Related Delay Increase	Mitigation Measure
A/B	10.0 Seconds or More	Achieve Pre-project delay or better
C	8.0 Seconds or More	Achieve Pre-project delay or better
D	5.0 Seconds or More	Achieve Pre-project delay or better
E	2.0 Seconds or More	Achieve Pre-project delay or better
F	1.0 Second or More	Achieve Pre-project delay or better

2.6 PROJECT FAIR SHARE CALCULATION METHODOLOGY

In cases where this TA identifies that the Project would contribute additional traffic volumes to cumulative traffic deficiencies, Project fair share costs of improvements necessary to address deficiencies have been identified. The Project's fair share cost of improvements is determined based on the following equation, which is the ratio of Project traffic to net new traffic (where net new traffic is EAPC traffic less existing traffic):

$$\text{Project Fair Share \%} = \text{Project Traffic} / (\text{EAPC 2027} - \text{Existing})$$

The Project fair share has been calculated for both the AM and PM peak hours and the higher of the two has been selected for purposes of calculating the Project's rough order of magnitude fair share contribution towards off-site study area intersections.

3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the County of Riverside General Plan Circulation Network, and a review of existing peak hour intersection operations and traffic signal warrant analyses.

3.1 EXISTING CIRCULATION NETWORK

The study area includes a total of 11 existing and future intersections as shown previously on Exhibit 1-3 consistent with the locations evaluated in the 2014 Traffic Study. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 GENERAL PLAN CIRCULATION ELEMENTS

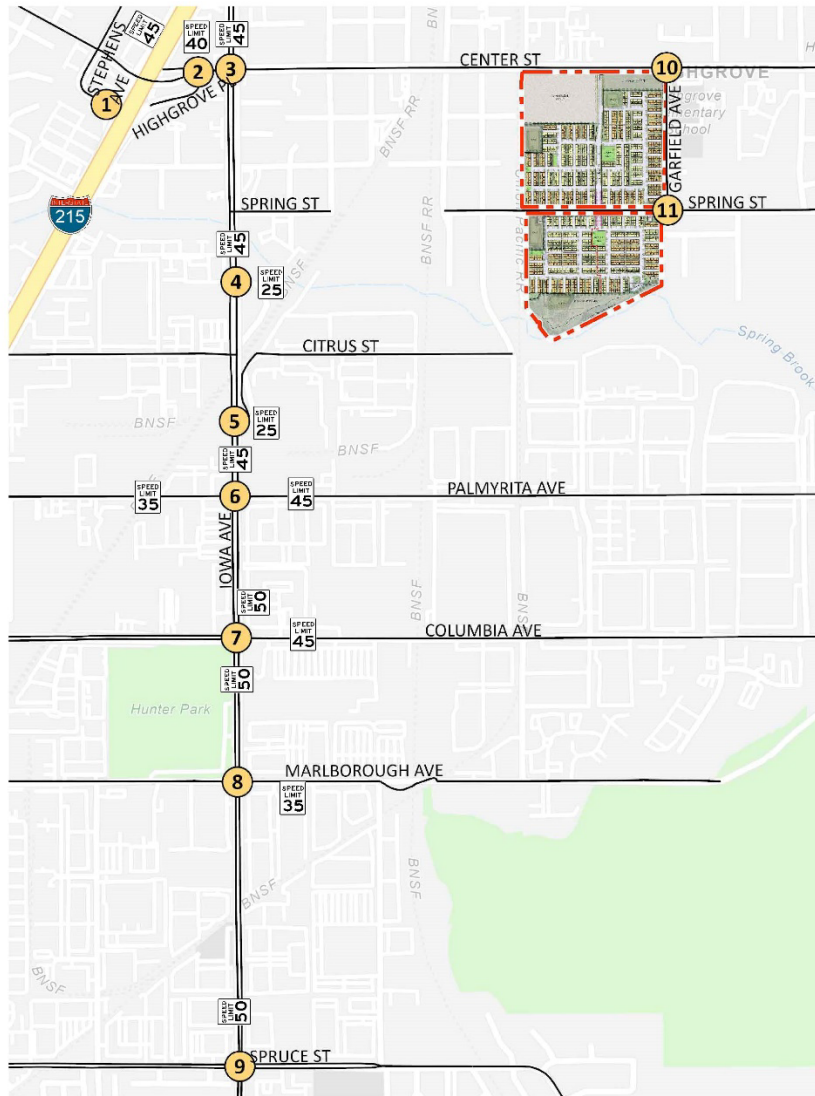
As noted previously, the Project site is located within the County of Riverside. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified on County of Riverside General Plan Circulation Element, are described subsequently. Exhibit 3-2 shows the County of Riverside General Plan Circulation Element and Exhibit 3-3 illustrates the County of Riverside General Plan roadway cross-sections.

Portions of the study area also includes intersections within the City of Riverside. As such, Exhibit 3-4 shows the City of Riverside General Plan Circulation Element and the General Plan roadway cross-sections are shown on Exhibit 3-5.

3.3 TRANSIT SERVICE

The County of Riverside is currently served by the Riverside Transit Authority (RTA), a public transit agency serving the unincorporated Riverside County region. RTA Route 13 runs along Marlborough Avenue and Spruce Street while RTA Route 14 runs along Iowa Avenue and Central Avenue. Route 14 could likely serve the proposed Project. Exhibit 3-6 shows the existing transit lines for the study area. Transit service is reviewed and updated by RTA periodically to address ridership, budget, and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

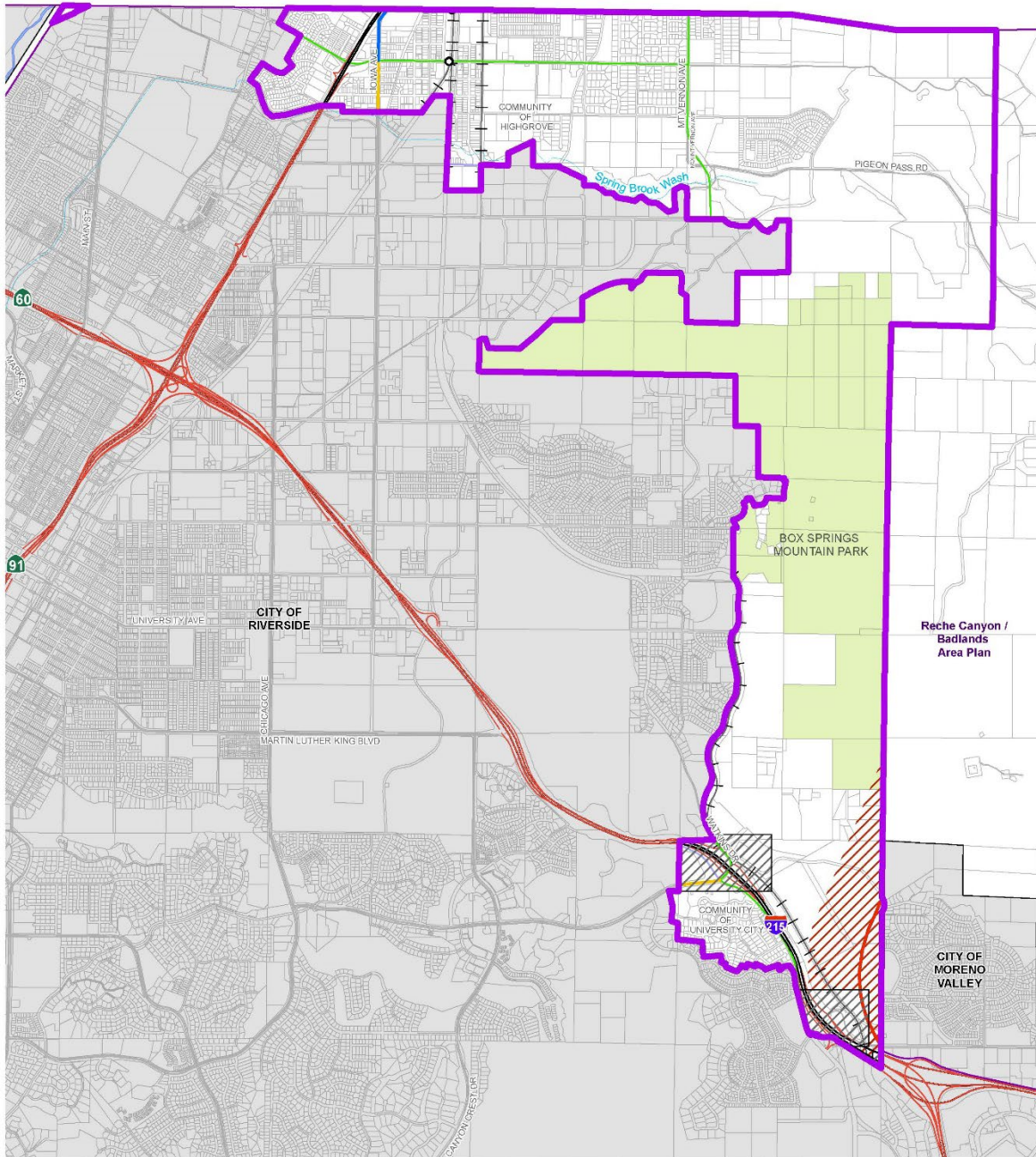
EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



1	Stephens Av. & Center St.	5	Iowa Av. & Citrus St. E	9	Iowa Av. & Spruce St.				
2	Highgrove Pl. & Center St.	2U	6	Iowa Av. & Palmyrita Av.	4D	10	Garfield Av. & Center St.		
3	Iowa Av. & Center St.	2U	2U	2U	4D	3D	4U	4U	2U
4	Iowa Av. & Citrus St. W	4D	4D	4D	4D	4D	4D	4D	2U
7	Iowa Av. & Columbia Av.	4D	4D	4D	4D	4D	4D	4D	2U
8	Iowa Av. & Marlborough Av.	4D	4D	4D	4D	4D	4D	4D	2U
11	Garfield Av. & Spring St.	4D	4D	4D	4D	4D	4D	4D	2U

- = Traffic Signal
- = All Way Stop
- = Stop Sign
- 4 = Number of Lanes
- D = Divided
- U = Undivided
- DEF = Defacto Right Turn
- = Speed Limit (MPH)

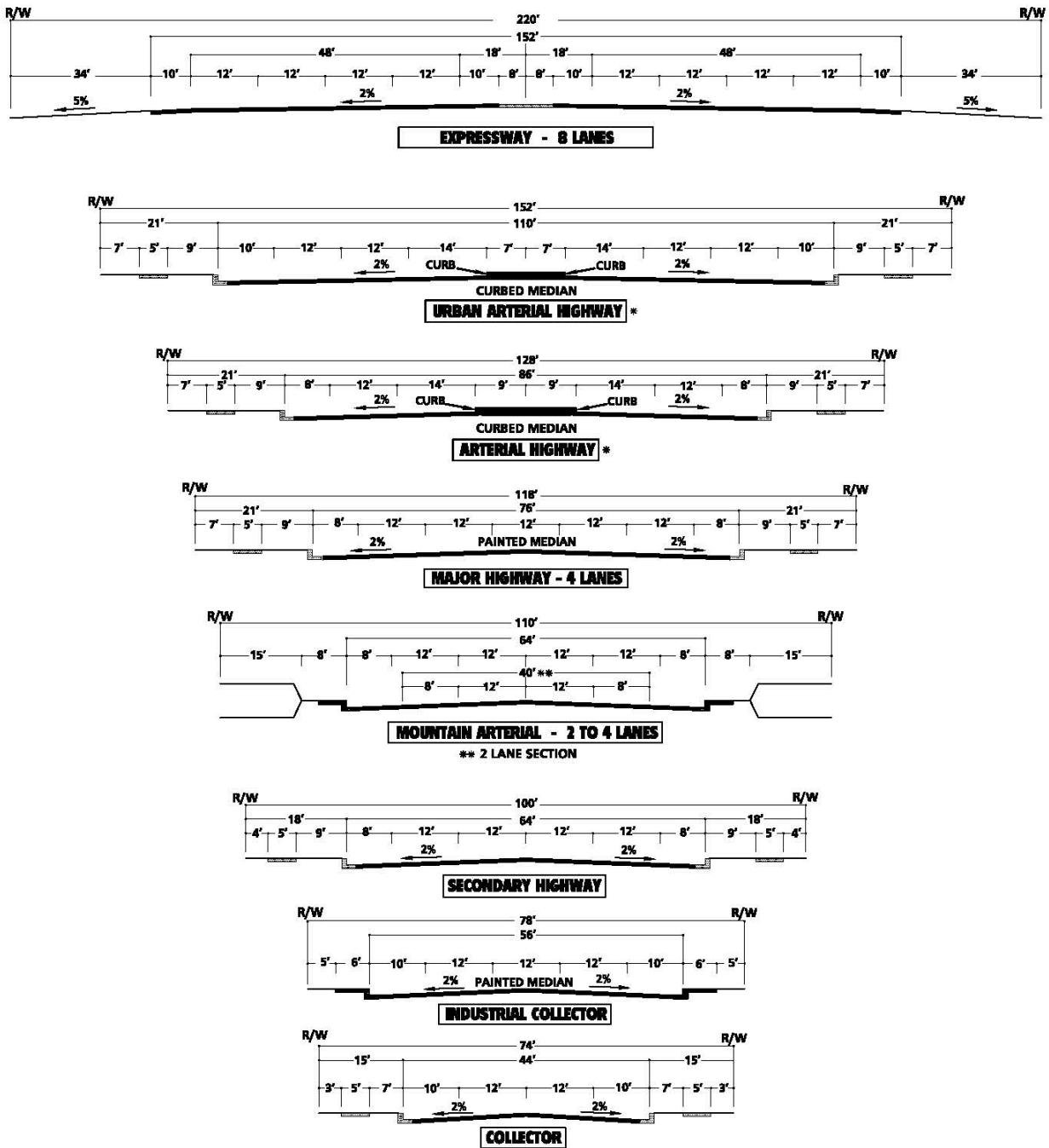
EXHIBIT 3-2: COUNTY OF RIVERSIDE GENERAL PLAN CIRCULATION ELEMENT



Data Source: Riverside County Transportation

- | | | |
|-------------------------------|---------------------------------------|--------------------|
| Freeway (Variable ROW) | Existing Interchange | Highways |
| Expressway (128' to 220' ROW) | Moreno Valley to San Bernardino CETAP | Area Plan Boundary |
| Arterial (128' ROW) | Proposed Bridge | City Boundary |
| Major (118' ROW) | | Waterbodies |
| Secondary (100' ROW) | | |
| Collector (74' ROW) | | |
| Railroads Amended | | |

EXHIBIT 3-3: COUNTY OF RIVERSIDE GENERAL PLAN ROADWAY CROSS-SECTIONS

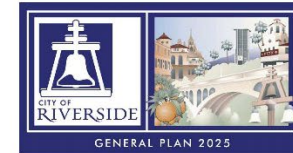
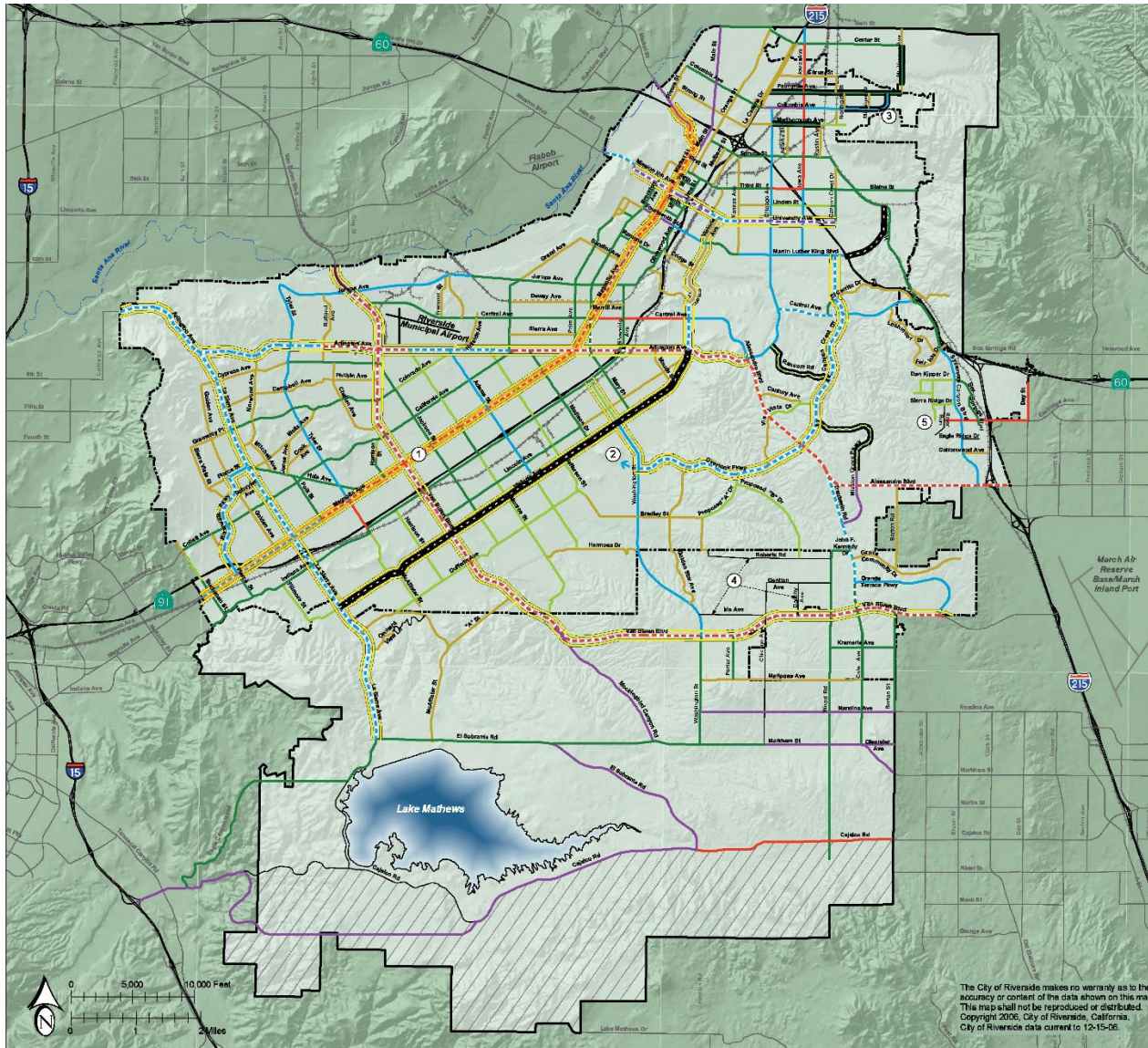


* IMPROVEMENTS MAY BE RECONFIGURED TO ACCOMMODATE EXCLUSIVE TRANSIT LANES OR ALTERNATIVE LANE ARRANGEMENTS. ADDITIONAL RIGHT OF WAY MAY BE REQUIRED AT INTERSECTIONS TO ACCOMMODATE ULTIMATE IMPROVEMENTS FOR STATE HIGHWAYS. SHALL CONFORM TO CALTRANS DESIGN STANDARDS.

NOT TO SCALE

SOURCE: COUNTY OF RIVERSIDE

EXHIBIT 3-4: CITY OF RIVERSIDE GENERAL PLAN CIRCULATION ELEMENT



LEGEND

- 66 FT LOCAL 2 LANES *
- 66 FT COLLECTOR 2 LANES
- 80 FT COLLECTOR 2 LANES
- 88 FT ARTERIAL 4 LANES
- 100 FT ARTERIAL 4 LANES
- 110 FT ARTERIAL 4 LANES
- 120 FT ARTERIAL 6 LANES
- 144 FT ARTERIAL 8 LANES
- - - SCENIC BOULEVARD
REQUIRES SPECIAL LANDSCAPING.
ADDITIONAL RIGHT-OF-WAY MAY BE REQUIRED.
- == SPECIAL BOULEVARD
TWO-LANE DIVIDED ROADWAY OF
VARIABLE GEOMETRIC DESIGN
- == SPECIAL BOULEVARD
VARIABLE WIDTHS AND DESIGN, CONTACT PUBLIC WORKS
FOR DETAIL. SEE OBJECTIVE CCM-3 AND POLICIES CCM-3.1
THROUGH CCM-3.5.
- == PARKWAYS
FOR INFORMATION ON PARKWAYS SEE
LAND USE ELEMENT.
- ▨ CETAP CORRIDOR AREA
CORRIDOR OPTIONS SUBJECT TO SPECIAL STUDY.
- - - RIVERSIDE CITY BOUNDARY
- RIVERSIDE PROPOSED SPHERE
OF INFLUENCE

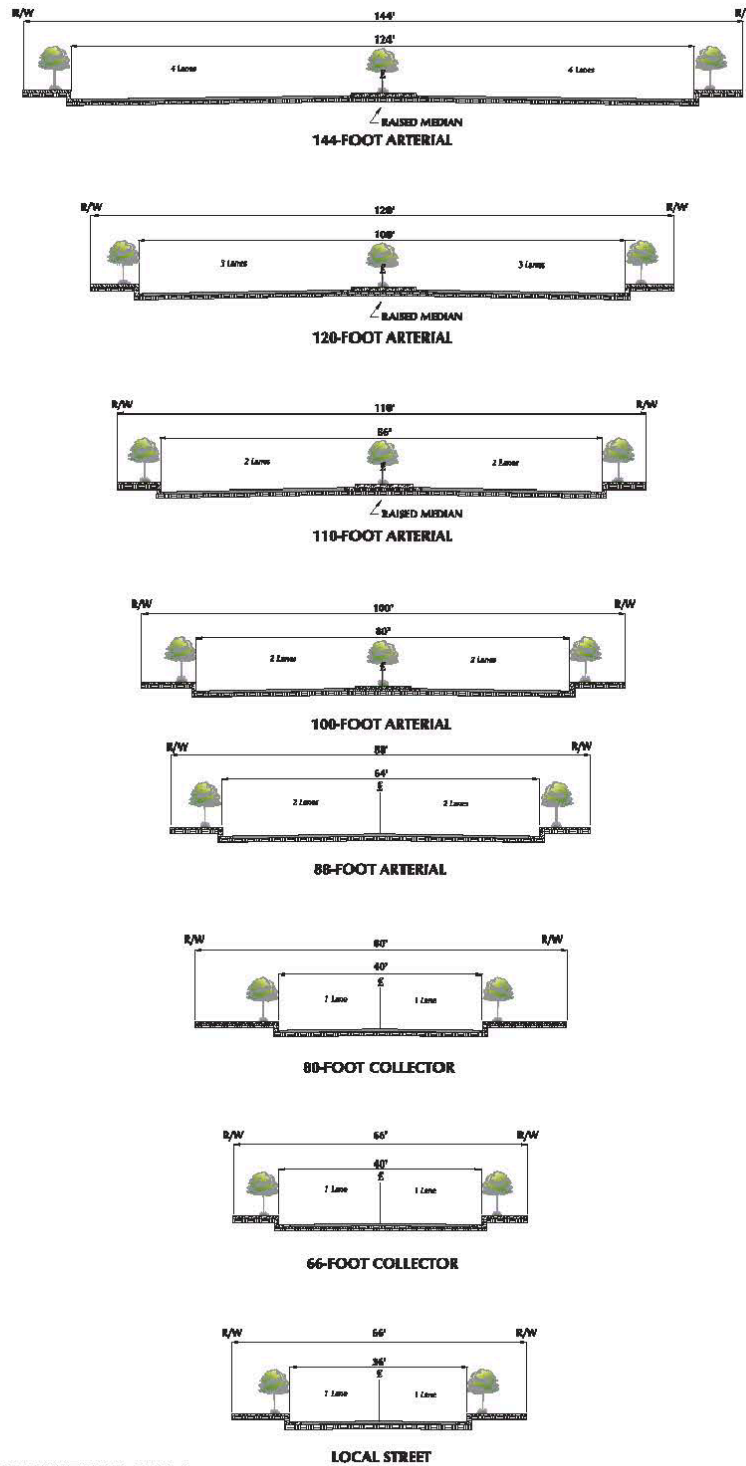
NOTE:

- * LOCAL STREETS ARE NOT SHOWN ON THIS
PLAN EXCEPT WHERE NEEDED FOR CLARITY.
- ① MAGNOLIA AVENUE SHALL BE A SPECIAL BLVD, WITH
4 LANES EASTERLY OF HARRISON STREET.
- ② OVERLOOK PARKWAY SHALL BE A 2-LANE
110-FOOT ARTERIAL WITH A WIDE MEDIAN PARKWAY.
THE ALIGNMENT OF OVERLOOK PARKWAY WESTERLY
OF WASHINGTON IS NOT YET DETERMINED PENDING
PREPARATION OF SPECIFIC PLAN LEVEL STUDY.
- ③ COLUMBIA AVENUE IS SHOWN BY HUNTER BUSINESS
PARK SPECIFIC PLAN AS A 134-FOOT ARTERIAL.
ACTUAL STREET WIDTH, DUE TO RAILROAD
OVERCROSSINGS, WILL BE DETERMINED BY
PUBLIC WORKS.
- ④ THESE STREETS SHALL BE 66-FOOT LOCAL
ROADWAYS SERVING AS ALTERNATE ROUTES.
- ⑤ THE STREETS IN SYCAMORE CANYON
BUSINESS PARK SPECIFIC PLAN VARY IN SIZE.
SEE THE SPECIFIC PLAN FOR DETAILS.

SOURCE: CITY OF RIVERSIDE

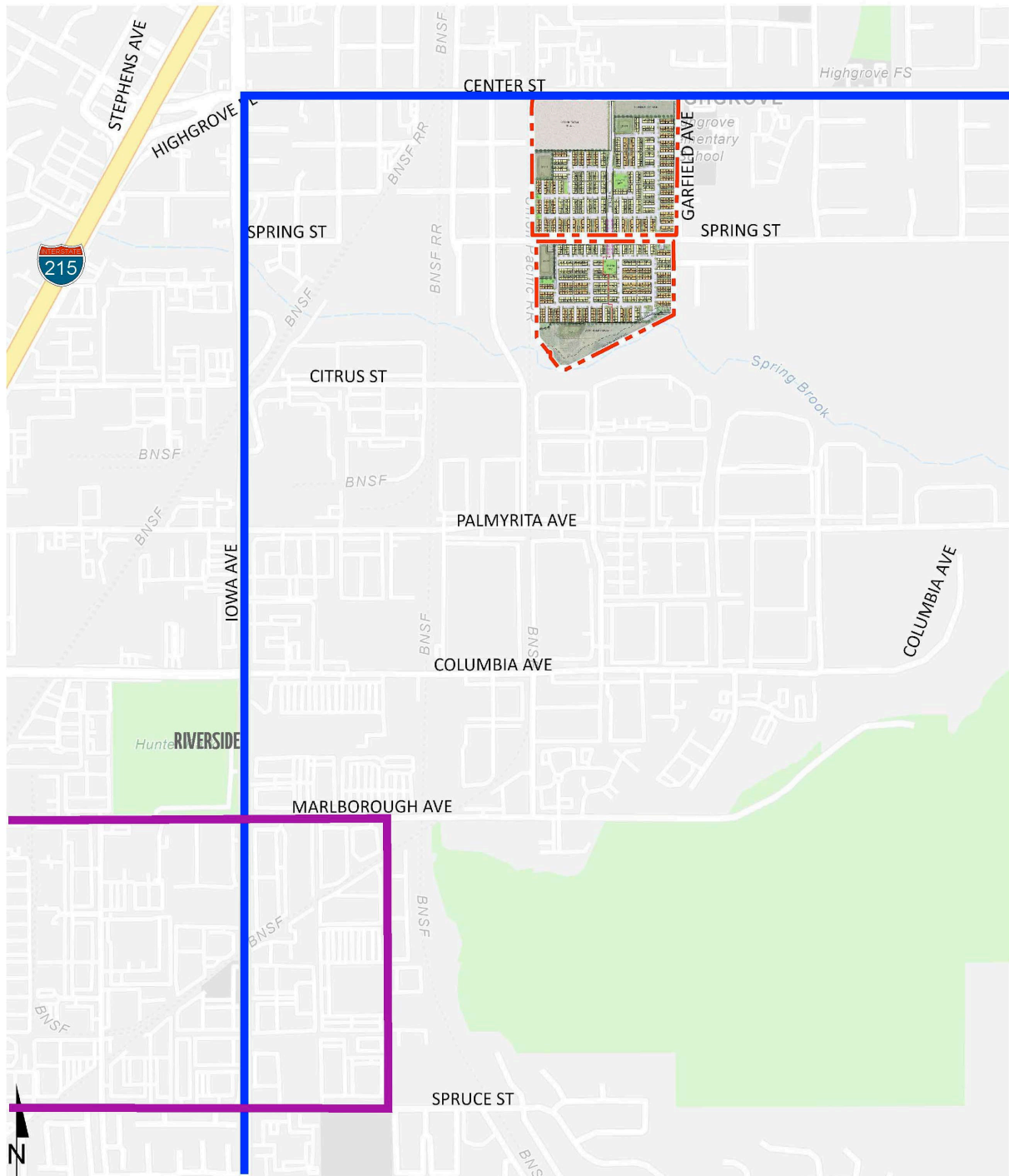
Figure CCM-4
**MASTER PLAN
OF ROADWAYS**

EXHIBIT 3-5: CITY OF RIVERSIDE GENERAL PLAN ROADWAY CROSS-SECTIONS



SOURCE: CITY OF RIVERSIDE, 2004

EXHIBIT 3-6: EXISTING TRANSIT FACILITIES



-  = RTA ROUTE 13
-  = RTA ROUTE 14

3.4 BICYCLE & PEDESTRIAN FACILITIES

In an effort to promote alternative modes of transportation, the County of Riverside also includes a trails and bikeway system. The trails and bikeway system, shown on Exhibit 3-7, shows the proposed trails connected with major features within the County. A regional trail is shown along Center Street in close proximity to the Project in addition to along Spring Street (south of the Project). The regional trail is located on the south side of Spring Street and is proposed to run down the east side of the Project boundary and along the southern Project boundary within the Springbrook Community Park. Exhibit 3-8 illustrates the existing pedestrian facilities, including sidewalks and crosswalks. The Project is proposing to implement internal trail connections between the 2.1-acre park site on Central Street, north recreation center, south recreation center, and the Springbrook Community Park located along the southern boundary of the Project. Public park trail connections are also proposed throughout the 2.1-acre park site on Central Street and the Springbrook Community Park.

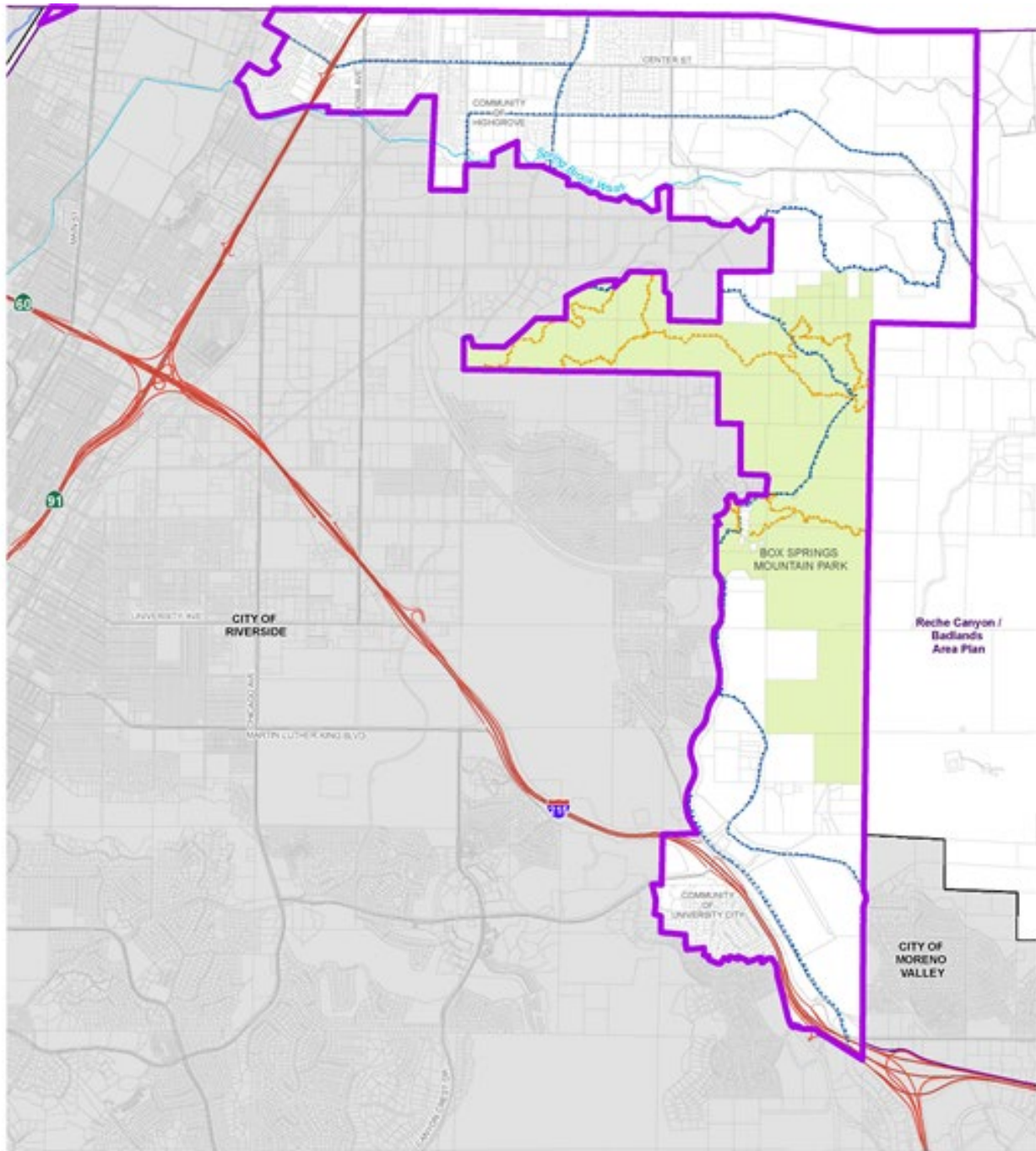
3.5 EXISTING TRAFFIC COUNTS

Traffic counts utilized for the purposes of this TA were collected in February 2020 prior to the shutdowns related to the currently ongoing COVID-19 pandemic. As such, no adjustments have been made to the February 2020 traffic counts other than those made to maintain flow of traffic between closely spaced intersections. The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1. These raw turning volumes have been flow conserved between intersections with limited access, no access, and where there are currently no uses generating traffic. Existing weekday AM and weekday PM peak hour intersection volumes are also shown on Exhibit 3-9.

EXHIBIT 3-7: COUNTY OF RIVERSIDE TRAILS AND BIKEWAY SYSTEM



Data Source: Riverside County Parks

- Regional Trail: Urban/Suburban
- Regional Trail: Open Space
- Highways
- Area Plan Boundary
- City Boundary
- Waterbodies

EXHIBIT 3-8: EXISTING PEDESTRIAN FACILITIES

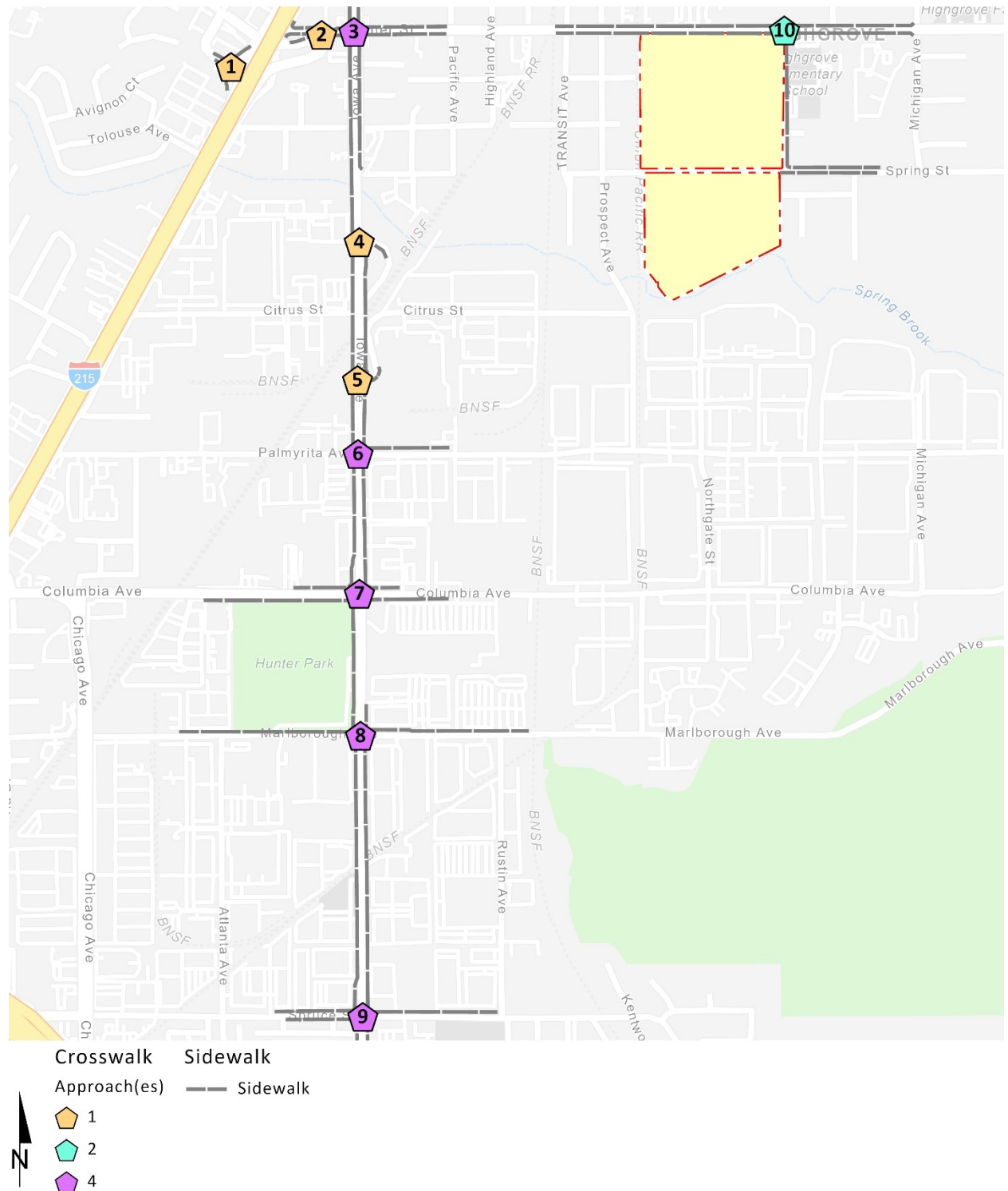
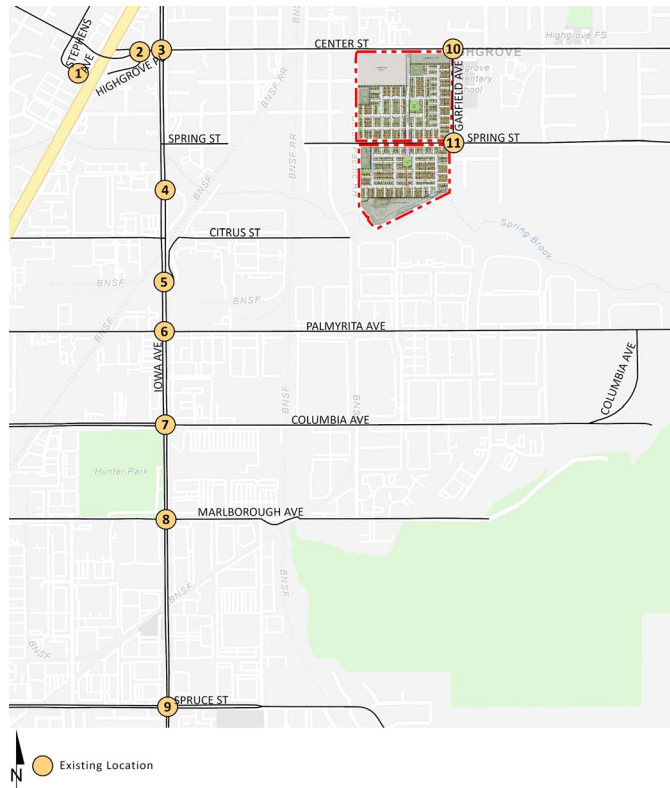


EXHIBIT 3-9: EXISTING (2020) TRAFFIC VOLUMES



1	2	3	4	5																																																																
1 Stephens Av. & Center St.	2 Highgrove Pl. & Center St.	3 Iowa Av. & Center St.	4 Iowa Av. & W. Citrus St.	5 Iowa Av. & E. Citrus St.																																																																
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11 Garfield Av. & Spring St.	<p>##(##) AM(PM) Peak Hour Intersection Volumes</p> <table border="1"> <tr> <td>← 50(14)</td> <td>42(16)</td> </tr> <tr> <td>6(7)</td> <td>100(36)</td> </tr> <tr> <td>81(20)</td> <td></td> </tr> <tr> <td>23(53) →</td> <td></td> </tr> </table>				← 50(14)	42(16)	6(7)	100(36)	81(20)		23(53) →																																																									
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3.6 EXISTING (2020) INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1 which indicates that all of the study area intersections are currently operating at an acceptable LOS during the peak hours (i.e., LOS D or better). The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2020) CONDITIONS

# Intersection	Traffic Control ¹	Delay ² (secs.)		Level of Service	
		AM	PM	AM	PM
1 Stephens Av. & Center St.	TS	7.6	7.1	A	A
2 Highgrove Pl. & Center St.	CSS	19.9	18.1	C	C
3 Iowa Av. & Center St.	TS	37.8	34.9	D	C
4 Iowa Av. & W. Citrus St.	TS	2.9	3.5	A	A
5 Iowa Av. & E. Citrus St.	TS	4.5	5.5	A	A
6 Iowa Av. & Palmyrita Av.	TS	29.5	30.4	C	C
7 Iowa Av. & Columbia Av.	TS	23.9	24.4	C	C
8 Iowa Av. & Marlborough Av.	TS	26.4	24.3	C	C
9 Iowa Av. & Spruce St.	TS	32.5	43.9	C	D
10 Garfield Av. & Center St.	AWS	11.5	9.0	B	A
11 Garfield Av. & Spring St.	CSS	10.3	8.9	B	A

¹ CSS = Cross-street Stop; AWS = All-Way Stop Control; TS = Traffic Signal

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

3.7 EXISTING (2020) TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. The unsignalized study area intersection of Temescal Canyon Road and Lawson Road does not currently warrant a traffic signal for Existing (2020) traffic conditions. Existing conditions traffic signal warrant analysis worksheets are provided in Appendix 3.3.

4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project's trip assignment onto the study area roadway network. As shown on Exhibit 1-2, the proposed Project currently includes the development of 846 multifamily residential dwelling units (townhomes). However, for the purposes of this TA, a previous plan (which is more conservative) has been evaluated, which consists of the development of 836 multifamily residential dwelling units (townhomes or apartments) and 44 cluster single family detached residential dwelling units. The Project opening year is 2027. Regional access to the Project site is available from the I-215 Freeway via Center Street.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic that is attracted and produced by a development and is based upon the specific land uses planned for a given project. Trip generation rates for the Project are shown in Table 4-1. The daily and peak hour trip generation summary for the Project is also shown in Table 4-1. These estimates are based on the trip-generation statistics published in the ITE Trip Generation Manual, (10th Edition, 2017). (3) For purposes of this analysis, the following ITE land use codes have been utilized:

- Single family detached residential (ITE 210)
- Multifamily (low-rise) residential (ITE 220)

The Project is estimated to generate a total of 6,536 two-way trips per day on a typical weekday, with 417 AM peak hour trips and 512 PM peak hour trips (see Table 4-1).

TABLE 4-1: PROJECT TRIP GENERATION SUMMARY

Land Use	Units ²	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Trip Generation Rates:¹									
Single Family Detached Residential	DU	210	0.19	0.56	0.74	0.62	0.37	0.99	9.44
Multifamily Housing (Low-Rise)	DU	220	0.11	0.35	0.46	0.35	0.21	0.56	7.32

Land Use	Quantity Units ²	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Project Trip Generation Summary:								
Single Family Detached Residential	44 DU	8	24	33	27	16	44	416
Multifamily Housing (Low-Rise)	836 DU	92	293	385	293	176	469	6,120
Project Total		100	317	417	320	192	512	6,536

¹ Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

² DU = Dwelling Units

4.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of identifying the probable destinations, directions, or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered to identify the route where the Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site. The Project trip distribution patterns were developed based on an understanding of existing travel patterns in the area, the geographical location of the site, and the site's proximity to the regional arterial and state highway system. For the purposes of this assessment, the trip distribution pattern from the 2014 Traffic Study was utilized. The Project trip distribution pattern is graphically depicted on Exhibit 4-1.

4.3 MODAL SPLIT

The traffic reducing potential of public transit, walking, or bicycling have not been considered in this TA. Essentially, the traffic projections are "conservative" in that these alternative travel modes might be able to reduce the forecasted traffic volumes.

4.4 PROJECT TRIP ASSIGNMENT

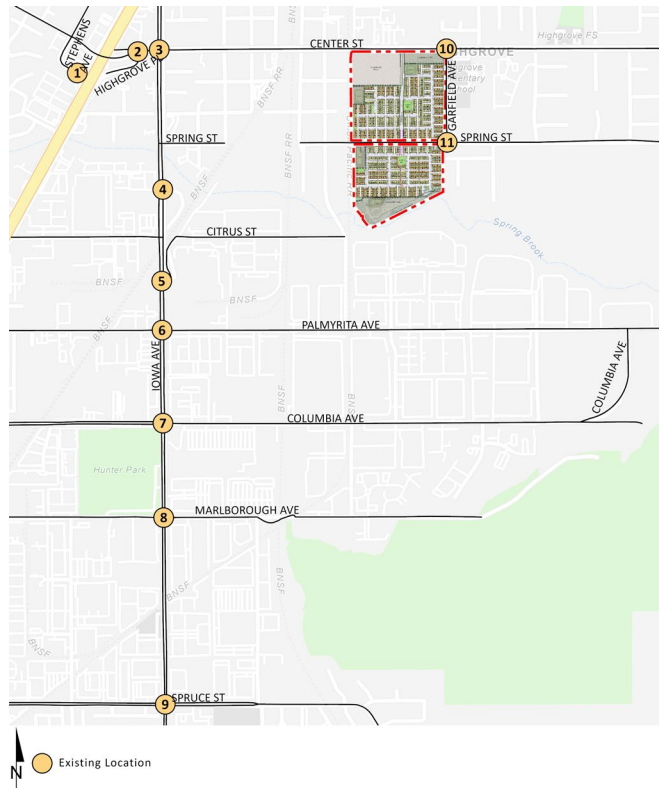
The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-2.

4.5 BACKGROUND TRAFFIC

Future year traffic forecasts have been based upon a background (ambient) growth factor of 2% per year for 2027 traffic conditions. The ambient growth factor is intended to approximate traffic growth. The total ambient growth is 14.87% for 2027 traffic conditions (compounded growth of 2 percent per year over 7 years). This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects.

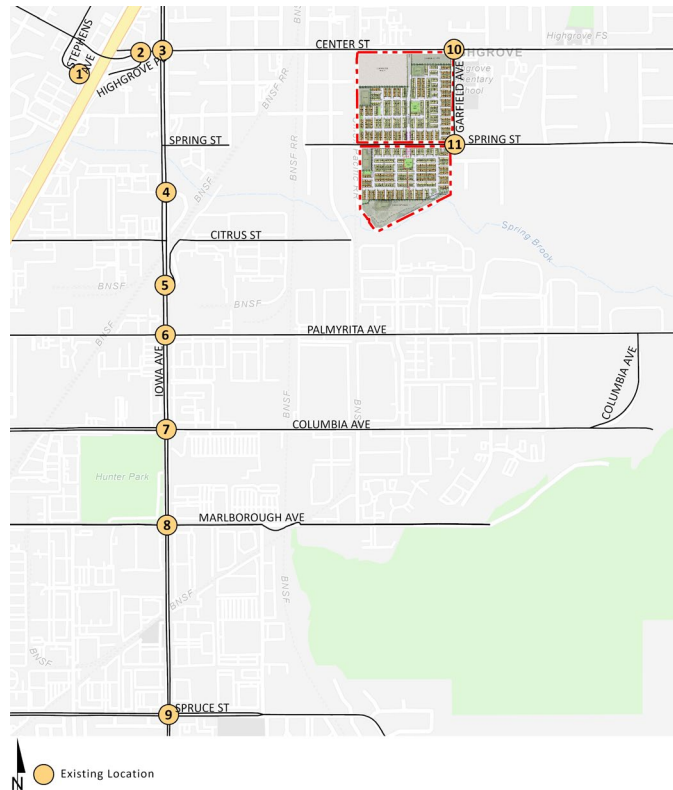
Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies.

EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION



1	2	3	4	5																
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EXHIBIT 4-2: PROJECT TRAFFIC VOLUMES



1	Stephens Av. & Center St.	2	Highgrove Pl. & Center St.	3	Iowa Av. & Center St.	4	Iowa Av. & W. Citrus St.	5	Iowa Av. & E. Citrus St.																												
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The currently adopted Southern California Association of Governments (SCAG) 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (May 2020) growth forecasts for the County of Riverside identifies projected growth in population of 370,500 in 2016 to 525,600 in 2045, or a 41.9 percent increase over the 29-year period. (7) The change in population equates to roughly a 1.21 percent growth rate, compounded annually. Similarly, growth over the same 29-year period in households is projected to increase by 59.2 percent, or 1.62 percent annual growth rate. Finally, growth in employment over the same 29-year period is projected to increase by 83.4 percent, or a 2.11 percent annual growth rate.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

The cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to the study area intersections. Where applicable, cumulative projects anticipated to contribute measurable traffic (i.e., 50 or more peak hour trips) to study area intersections have been manually added to the study area network to generate EAPC forecasts. In other words, this list of cumulative development projects has been reviewed to determine which projects would likely contribute measurable traffic through the study area intersections (e.g., those cumulative projects in close proximity to the proposed Project). For the purposes of this analysis, the cumulative projects that were determined to affect one or more of the study area intersections are shown on Exhibit 4-3, listed in Table 4-2, and have been considered for inclusion.

Although it is unlikely that all of these cumulative projects would be fully built and occupied by Year 2027, they have been included in an effort to conduct a conservative analysis and overstate as opposed to understate potential traffic deficiencies. Any other cumulative projects located beyond the cumulative study area that are not expected to contribute measurable traffic to study area intersections have not been included since the traffic would dissipate due to the distance from the Project site and study area intersections. Any additional traffic generated by other projects not on the cumulative projects list is accounted for through background ambient growth factors that have been applied to the peak hour volumes at study area intersections as discussed in Section 4.5 *Background Traffic*. Cumulative ADT and peak hour intersection turning movement volumes are shown Exhibit 4-4.

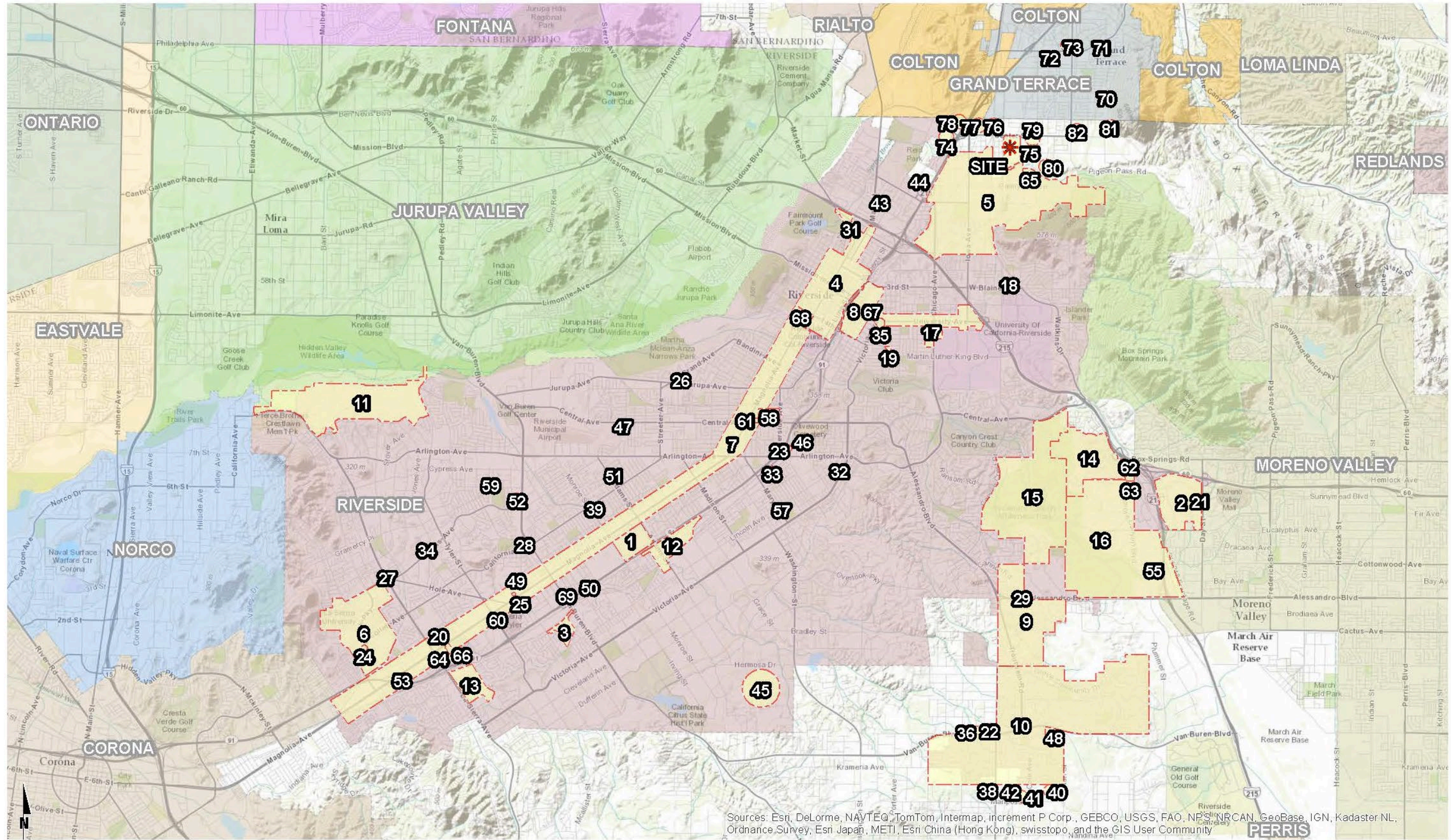
4.7 NEAR-TERM TRAFFIC CONDITIONS

The “buildup” approach combines existing traffic counts with a background ambient growth factor to forecast EAP (2027) and EAPC (2027) traffic conditions. An ambient growth factor of 14.87% accounts for background (area-wide) traffic increases that occur over time up to the year 2027 from the year 2020 (2.0 percent per year growth rate, compounded over a 7-year period). Traffic volumes generated by the Project are then added to assess the near-term traffic conditions. The 2027 roadway network is similar to the Existing conditions roadway network, with the exception of future driveways proposed to be developed by the Project.

The near-term traffic analysis includes the following traffic conditions, with the various traffic components:

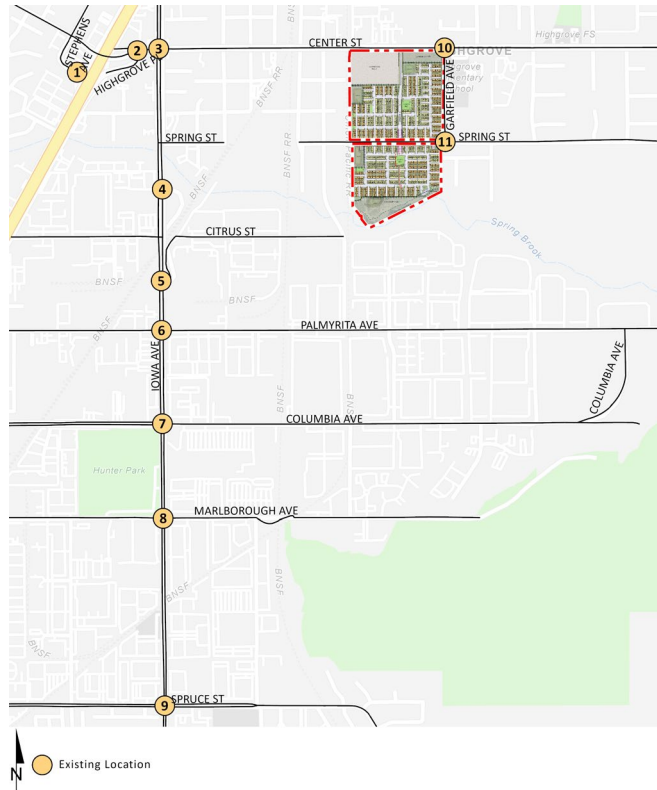
- Existing Plus Ambient Growth Plus Project (2027)
 - Existing 2020 counts
 - Ambient growth traffic (14.87%)
 - Project traffic
- Existing Plus Ambient Growth Plus Project Plus Cumulative (2027)
 - Existing 2020 counts
 - Ambient growth traffic (14.87%)
 - Cumulative Development traffic
 - Project traffic

EXHIBIT 4-3: CUMULATIVE DEVELOPMENT PROJECTS LOCATION MAP



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EXHIBIT 4-4: CUMULATIVE DEVELOPMENT TRAFFIC VOLUMES



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Stephens Av. & Center St.	Highgrove Pl. & Center St.	Iowa Av. & Center St.	Iowa Av. & W. Citrus St.	Iowa Av. & E. Citrus St.																																
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TABLE 4-2: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

No.	Project Name / Location	Land Use	Quantity ¹
City of Riverside:			
1	California Baptist University Specific Plan	University	157 AC
2	Canyon Springs Specific Plan	Commercial, Office, Entertainment, Recreational	318 AC
3	Citrus Business Park Specific Plan	Industrial Business Park	49 AC
4	Downtown Specific Plan	Residential	5,000 DU
5	Hunter Business Park	Industrial	1,300 AC
6	La Sierra University Specific Plan	Mixed-Use	531.00 AC
7	Magnolia Avenue Specific Plan	Mixed-Use/Very High Residential	1,473 AC
8	Marketplace Specific Plan	Commercial Retail/Office	200 AC
9	Mission Grove Specific Plan	Business/Office Park	56.79 AC
		Commercial Retail	68.12 AC
		High Density Residential	53.77 AC
		Low Density Residential	78.38 AC
		Medium Density Residential	155.31 AC
10	Orangecrest Specific Plan	Rural Residential	2.13 AC
		Business/Office Park	2.70 AC
		Commercial Retail	138.96 AC
		High Density Residential	13.70 AC
		Low Density Residential	540.76 AC
		Medium Density Residential	1,217.80 AC
		Public Facilities/Institutions	121.59 AC
Public Park	59.51 AC		
11	Rancho La Sierra Specific Plan	SFDR	598 DU
12	Riverside Auto Center Specific Plan	Auto Center	55.0 AC
13	Riverwalk Vista Specific Plan	Residential	402 DU
14	Sycamore Canyon Specific Plan	Hillside Residential	41.83 AC
		Low Density Residential	97.28 AC
		Medium Density Residential	14.84 AC
		Very Low Density Residential	884.22 AC
		Public Park	27.85 AC
15	Sycamore Canyon Business Park Specific Plan	Business/Office Park	847.15 AC
		Commercial Retail	10.32 AC
16	Sycamore-Highlands Specific Plan	Commercial Retail	14.63 AC
		High Density Residential	52.18 AC
		Medium Density Residential	99.11 AC
		Public Facilities	1.56 AC
		Public Park	144.17 AC
		Very Low Density Residential	49.09 AC

No.	Project Name / Location	Land Use	Quantity ¹
City of Riverside:			
17	University Avenue Specific Plan	Mixed-Use	41.00 AC
18	807 Blaine Street (P09-0717; P09-0718)	Apartments	55 DU
19	2340 Fourteenth Street (P09-0808; P08-0809)	Senior Housing	134 BEDS
20	10938 Magnolia Avenue (P10-0083)	Pharmacy	14.064 TSF
21	6287 Day Street (P10-0090; P10-0091)	Gas Station	2 VFP
22	N. of Van Buren Boulevard; W. of Wood Street (P10-0808; P10-0708)	Fast Food w/Drive Thru	2.361 TSF
23	3439 Arlington Avenue (P12-0234)	Fitness Club	9.600 TSF
24	NWC of Riverwalk Parkway and Flat Rock Drive (P12-0019; P12-0156; P12-0158)	Convenience Store	2.400 TSF
		Coffee Shop	3.946 TSF
25	3875 Dawes Street (P10-0438; Magnolia Garden Condominiums)	Condo/Townhomes	62 DU
26	5938-5944 Grand Avenue (P12-0266; P12-0267; P12-0268)	Senior Housing	37 DU
27	4901 La Sierra Avenue (P11-0627; P11-0628; P11-0777; P11-0778)	Gas Station	4.100 TSF
28	4250 Van Buren Boulevard (P12-0605; P12-0606)	Gas Station	1.776 TSF
29	360 Alessandro Boulevard (P12-0419; P12-0557; P12-0558; P12-0559)	Bank	3.858 TSF
30	2831 Mary Street (P12-0761; P12-0442 P12-0443; P12-0444)	Pharmacy	56.101 TSF
31	2450 Market Street (P13-0087; P13-0262)	Apartments	77 DU
32	6091 Victoria Avenue (P13-0432)	Day Care	1.831 TSF
33	6692 Indiana Avenue (P13-0159; P13-0160)	Gas Station	2.958 TSF
34	4824 Jones Avenue (P13-0181; P13-0182)	Church	23.124 TSF
35	2586 University avenue (P13-0650; P13-0651)	Bed and Breakfast	3.618 TSF
36	18580 Van Buren Boulevard (P08-0402; P13-0822)	Auto Repair Shop	8.142 TSF
37	4247 Van Buren Boulevard (P13-0785; P13-0787)	Church Expansion	12.166 TSF
38	SWC of Lurin Avenue and Wood Road (P06-0900; P08-0269; P08-0270; TTM 32301)	SFDR	20 DU
39	8616 California Avenue (P08-0084; PM 35852)	Condo/Townhomes	21 DU
40	19811 Lurin Avenue (P06-1355; TM 33480)	SFDR	32 DU
41	APN:266140029, 030 (P06-1396; Mariposa Avenue; TM 33481)	SFDR	25 DU

No.	Project Name / Location	Land Use	Quantity ¹
City of Riverside:			
42	APN:266140002, 021, 022 (P06-1404; Lurin Avenue; TM 33482)	SFDR	29 DU
43	3719 Strong Street (P05-0269; P08-0416; TM 33550)	SFDR	9 DU
44	1006 & 1008 Clark Street (P06-0782; TM 34908)	SFDR	15 DU
45	E. of Gratton St., W. of Corsica Av., N. of Van Buren Bl. (P05-1528; P09-0087; TM 34509)	SFDR	50 DU
46	NWC of Dominion Avenue and Division Street (P08-0396; P08-0397; P08-0398; P08-0399; TM 35620)	Condo/Townhomes	36 DU
47	6639 Hillside Avenue (P08-0727; PM 35901)	Industrial	5 LOTS
48	19985 Van Buren Boulevard (P10-0118; Gless Ranch)	Commercial Retail	425.447 TSF
49	3990 Reynolds Road (P12-0021; P12-0022; P12-0074; PM 36442)	Condo/Townhomes	102 DU
50	NEC of Martha Way & Everest Avenue (P13-0389; TM 36579)	SFDR	5 DU
51	4325, 4335, 4345, 4355, 4375 Adams Street (P13-0723; P13-0724; P13-0725; TM 36654)	SFDR	62 DU
52	5200 Van Buren Boulevard (P09-0600; P09-0601; Walmart Expansion)	Free Standing Discount Store	22.272 TSF
53	11500 Magnolia Avenue (P10-0406; P10-0407; P10-0408)	Apartments	168 DU
54	9241 & 9265 Audrey Avenue (P12-0184; P12-0185; P12-0187; Azar Plaza)	Commercial Retail	6.150 TSF
55	2325 Cottonwood Avenue (P12-0507; P12-0508; P12-0509; P12-0510)	High-Cube Warehouse	235.741 TSF
56	1710 Main Street (P12-0717)	Family Dollar Store	8.039 TSF
57	2861 Mary Street (P12-0442; P12-0443; P12-0444)	Shopping Center	56.101 TSF
58	3545 Central Avenue (P12-0741; P12-0743)	Riverside Plaza Renovations	35 AC
59	5731, 5741, 5761 & 5797 Pickler Street (P13-0198; P13-0199; P13-0200; P13-0201)	Apartments	30 DU
60	3705 Tyler Street (P13-0501; P13-0502)	Restaurant	6.000 TSF
61	6570 Magnolia Avenue; 3739 & 3747 Central Avenue (P13-0196; P13-0197)	Fast Food w/Drive Thru	3.795 TSF

No.	Project Name / Location	Land Use	Quantity ¹
City of Riverside:			
62	5940-5980 Sycamore Canyon Boulevard (P13-0553; P13-0554; P13-0583; P14-0065)	Apartments	275 DU
63	SEC Sycamore Canyon Boulevard & Box Springs Road (P13-0607 P13-06008; P0609; P13-0854)	Industrial Building	171.616 TSF
64	3742 Park Sierra Avenue (P13-0912; P13-0913)	Fitness Club	45.000 TSF
65	474 Palmyrita Avenue (P13-0956; P13-0959; P13-0960; P13-0963; P13-0964; P13-0965; P13-0966)	High-Cube Warehouse	1,461.449 TSF
66	Park Sierra Avenue (P14-0026; P14-0027)	Fast Food w/Drive Thru	3.500 TSF
67	E. of Commerce St., between Mission Inn Av. and Ninth St. (P14-0045; P14-0046; P14-0047; P14-0048; P14-0049)	Apartments	208 DU
68	4445 Magnolia Avenue (P13-0207; P13-0208; P13-0209; P13-0210; P13-0211)	Hospital Bed Tower	251.500 TSF
		Mixed Use Building	100.000 TSF
		Replacement Bed Tower	600.000 TSF
69	SR-91/Van Buren Commercial Development	Pharmacy with Drive-Thru	11.970 TSF
		High-Turnover (Sit-Down) Restaurant	3.845 TSF
		Speciality Retail	3.000 TSF
		Fast Food w/Drive Thru	4.750 TSF
City of Grand Terrace:			
70	Tentative Tract 18071 (Karger Pico Tract)	SFDR	18 DU
71	Conditional Use Permit 12-04	Condo/Townhomes	12 DU
72	Grand Terrace Square Master Development Plan	Shopping Center	165.611 TSF
73	Barton Plaza Commercial Center (Phase 2)	Shopping Center	16.251 TSF
County of Riverside:			
74	Heating/AC Business (PP24554)	General Office	1.720 TSF
75	Apartments (PP24554)	Apartments	120 DU
	TR28957	SFDR	36 DU
76	Two-Story Building (PP24798)	General Office	3.405 TSF
		Laundromat	2.961 TSF
		Retail	2.400 TSF
77	2 Buildings (PP25482)	General Office	2.632 TSF
78	Truck Sales Lot w/ Office (PP25505)	Automobile Sales	8.852 TSF
79	Two-Story Apartments (PP24778)	Apartments	89 DU
80	Springbrook Estates (SP-00330)	SFDR	650 DU
81	TR32291	SFDR	69 DU
82	TR32989	SFDR	29 DU

¹ TSF = Thousand Square Feet; DU = Dwelling Unit; AC = Acres; STU = Students; VFP = Vehicle Fueling Positions

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5 E+P TRAFFIC CONDITIONS

This section discusses the traffic forecasts for Existing Plus Project (E+P) conditions and the resulting intersection operations and traffic signal warrant analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for E+P conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for E+P conditions only (e.g., intersection and roadway improvements at the Project's frontage and driveways).

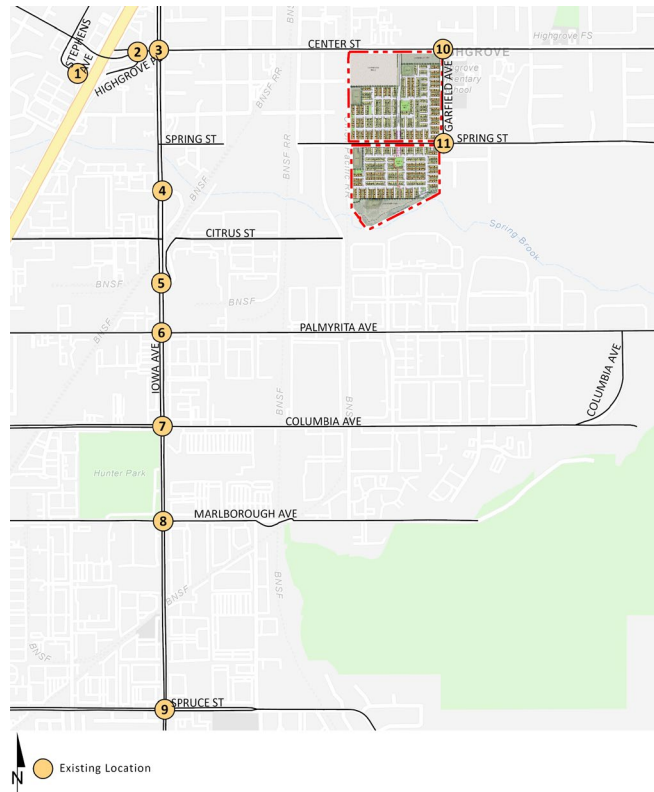
5.2 E+P TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes plus Project traffic. The ADT and peak hour intersection turning movement volumes, which can be expected for E+P traffic conditions are shown on Exhibit 5-1.

5.3 INTERSECTION OPERATIONS ANALYSIS

E+P peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2 *Methodologies* of this TA. The intersection analysis results are summarized in Table 5-1, which indicates that the study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours, consistent with Existing (2020) traffic conditions. The intersection operations analysis worksheets are included in Appendix 5.1 of this TA.

EXHIBIT 5-1: E+P TRAFFIC VOLUMES



1	2	3	4	5																																																																
1 Stephens Av. & Center St. <table border="1"> <tr> <td>← 4(3)</td> <td>5(5)</td> </tr> <tr> <td>8(4)</td> <td>226(162)</td> </tr> <tr> <td>4(4)</td> <td>461(298)</td> </tr> <tr> <td>0(5)</td> <td>→</td> </tr> <tr> <td>160(325)</td> <td>55(68)</td> </tr> <tr> <td>66(137)</td> <td>4(5)</td> </tr> <tr> <td></td> <td>68(82)</td> </tr> </table>	← 4(3)	5(5)	8(4)	226(162)	4(4)	461(298)	0(5)	→	160(325)	55(68)	66(137)	4(5)		68(82)	2 Highgrove Pl. & Center St. <table border="1"> <tr> <td>← 27(33)</td> <td>7(4)</td> </tr> <tr> <td>0(7)</td> <td>629(387)</td> </tr> <tr> <td></td> <td>12(5)</td> </tr> <tr> <td>0(2)</td> <td>→</td> </tr> <tr> <td>213(378)</td> <td>36(45)</td> </tr> <tr> <td>19(31)</td> <td>0(1)</td> </tr> <tr> <td></td> <td>177(317)</td> </tr> </table>	← 27(33)	7(4)	0(7)	629(387)		12(5)	0(2)	→	213(378)	36(45)	19(31)	0(1)		177(317)	3 Iowa Av. & Center St. <table border="1"> <tr> <td>← 435(60)</td> <td>114(63)</td> </tr> <tr> <td>660(523)</td> <td>424(215)</td> </tr> <tr> <td>49(95)</td> <td>207(128)</td> </tr> <tr> <td>83(199)</td> <td>→</td> </tr> <tr> <td>207(428)</td> <td>106(139)</td> </tr> <tr> <td>78(103)</td> <td>463(681)</td> </tr> <tr> <td></td> <td>92(165)</td> </tr> </table>	← 435(60)	114(63)	660(523)	424(215)	49(95)	207(128)	83(199)	→	207(428)	106(139)	78(103)	463(681)		92(165)	4 Iowa Av. & W. Citrus St. <table border="1"> <tr> <td>← 971(729)</td> <td>12(24)</td> </tr> <tr> <td>14(8)</td> <td>→</td> </tr> <tr> <td></td> <td>5(13)</td> </tr> <tr> <td>0(1)</td> <td>616(919)</td> </tr> <tr> <td></td> <td>24(6)</td> </tr> </table>	← 971(729)	12(24)	14(8)	→		5(13)	0(1)	616(919)		24(6)	5 Iowa Av. & E. Citrus St. <table border="1"> <tr> <td>← 921(721)</td> <td>28(50)</td> </tr> <tr> <td>58(21)</td> <td>→</td> </tr> <tr> <td></td> <td>45(87)</td> </tr> <tr> <td></td> <td>612(876)</td> </tr> <tr> <td></td> <td>51(35)</td> </tr> </table>	← 921(721)	28(50)	58(21)	→		45(87)		612(876)		51(35)		
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TABLE 5-1: INTERSECTION ANALYSIS FOR E+P CONDITIONS

# Intersection	Traffic Control ¹	Existing				Existing + Project			
		Delay ² (secs.)		Level of Service		Delay ² (secs.)		Level of Service	
		AM	PM	AM	PM	AM	PM	AM	PM
1 Stephens Av. & Center St.	TS	7.6	7.1	A	A	11.2	7.8	B	A
2 Highgrove Pl. & Center St.	CSS	19.9	18.1	C	C	24.2	21	C	C
3 Iowa Av. & Center St.	TS	37.8	34.9	D	C	46.7	44.2	D	D
4 Iowa Av. & W. Citrus St.	TS	2.9	3.5	A	A	2.9	3.6	A	A
5 Iowa Av. & E. Citrus St.	TS	4.5	5.5	A	A	4.5	5.5	A	A
6 Iowa Av. & Palmyrita Av.	TS	29.5	30.4	C	C	33.8	34.5	C	C
7 Iowa Av. & Columbia Av.	TS	23.9	24.4	C	C	24.1	25.1	C	C
8 Iowa Av. & Marlborough Av.	TS	26.4	24.3	C	C	26.7	24.7	C	C
9 Iowa Av. & Spruce St.	TS	32.5	43.9	C	D	34.1	47.4	C	D
10 Garfield Av. & Center St.	AWS	11.5	9.0	B	A	12.7	9.3	B	A
11 Garfield Av. & Spring St.	CSS	10.3	8.9	B	A	10.8	8.9	B	A

¹ CSS = Cross-street Stop; AWS = All-Way Stop Control; TS = Traffic Signal

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

5.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

Highgrove Place and Center Street is anticipated to meet peak hour volume-based traffic signal warrants under E+P traffic conditions (see Appendix 5.2).

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6 EAP (2027) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAP (2027) traffic forecasts, and the resulting intersection operations and traffic signal warrant analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAP (2027) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAP conditions only (e.g., intersection and roadway improvements at the Project's frontage and driveways).

6.2 EAP (2027) TRAFFIC VOLUME FORECASTS

This scenario includes adjusted Existing (2020) traffic volumes plus an ambient growth factor of 14.87% and the addition of Project traffic. The weekday ADT volumes and peak hour volumes which can be expected for EAP (2027) traffic conditions are shown on Exhibit 6-1.

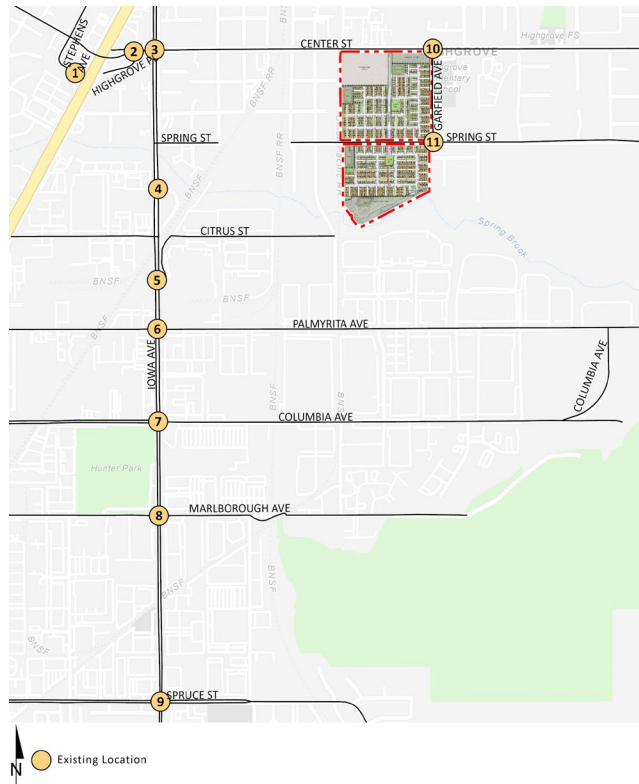
6.3 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under EAP conditions with roadway and intersection geometrics consistent with Section 6.1 *Roadway Improvements*. As shown in Table 6-1, all study area intersections are anticipated to operate at an acceptable LOS during the peak hours for EAP (2027) traffic conditions with the exception of the following intersections:

- Iowa Avenue & Center Street (#3) – LOS E AM and PM peak hours
- Iowa Avenue & Spruce Street (#9) – LOS E PM peak hour only

The intersection operations analysis worksheets for EAP (2023) traffic conditions are included in Appendix 6.1.

EXHIBIT 6-1: EAP (2027) TRAFFIC VOLUMES



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<p>Stephens Av. & Center St.</p> <table border="1"> <tr> <td>← 5(3)</td> <td>6(6)</td> </tr> <tr> <td>← 9(5)</td> <td>255(183)</td> </tr> <tr> <td>5(6)</td> <td>518(335)</td> </tr> <tr> <td>0(6)</td> <td></td> </tr> <tr> <td>182(369) →</td> <td>63(78)</td> </tr> <tr> <td>76(157)</td> <td>5(6)</td> </tr> <tr> <td></td> <td>78(94)</td> </tr> </table>	← 5(3)	6(6)	← 9(5)	255(183)	5(6)	518(335)	0(6)		182(369) →	63(78)	76(157)	5(6)		78(94)	<p>Highgrove Pl. & Center St.</p> <table border="1"> <tr> <td>← 31(38)</td> <td>8(5)</td> </tr> <tr> <td>0(6)</td> <td>706(435)</td> </tr> <tr> <td></td> <td>14(6)</td> </tr> <tr> <td>0(2)</td> <td></td> </tr> <tr> <td>243(429) →</td> <td>41(52)</td> </tr> <tr> <td>22(36)</td> <td>0(1)</td> </tr> <tr> <td></td> <td>200(352)</td> </tr> </table>	← 31(38)	8(5)	0(6)	706(435)		14(6)	0(2)		243(429) →	41(52)	22(36)	0(1)		200(352)	<p>Iowa Av. & Center St.</p> <table border="1"> <tr> <td>← 455(69)</td> <td>122(67)</td> </tr> <tr> <td>← 758(601)</td> <td>471(237)</td> </tr> <tr> <td>5(100)</td> <td>226(140)</td> </tr> <tr> <td>95(229)</td> <td></td> </tr> <tr> <td>233(475) →</td> <td>122(160)</td> </tr> <tr> <td>90(118)</td> <td>532(782)</td> </tr> <tr> <td></td> <td>102(178)</td> </tr> </table>	← 455(69)	122(67)	← 758(601)	471(237)	5(100)	226(140)	95(229)		233(475) →	122(160)	90(118)	532(782)		102(178)	<p>Iowa Av. & W. Citrus St.</p> <table border="1"> <tr> <td>← 1104(830)</td> <td>14(28)</td> </tr> <tr> <td>1(9)</td> <td>6(15)</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td>0(1)</td> <td></td> </tr> <tr> <td>704(1044) →</td> <td>28(7)</td> </tr> </table>	← 1104(830)	14(28)	1(9)	6(15)			0(1)		704(1044) →	28(7)	<p>Iowa Av. & E. Citrus St.</p> <table border="1"> <tr> <td>← 1046(821)</td> <td>32(57)</td> </tr> <tr> <td>6(24)</td> <td>52(100)</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td>699(994)</td> </tr> <tr> <td></td> <td>59(40)</td> </tr> </table>	← 1046(821)	32(57)	6(24)	52(100)				699(994)		59(40)				
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TABLE 6-1: INTERSECTION ANALYSIS FOR EAP (2027) CONDITIONS

# Intersection	Traffic Control ¹	Existing				EAP (2027)			
		Delay ² (secs.)		Level of Service		Delay ² (secs.)		Level of Service	
		AM	PM	AM	PM	AM	PM	AM	PM
1 Stephens Av. & Center St.	TS	7.6	7.1	A	A	20.7	10.7	C	B
2 Highgrove Pl. & Center St.	CSS	19.9	18.1	C	C	30.7	25.9	D	D
3 Iowa Av. & Center St.	TS	37.8	34.9	D	C	63.3	55.9	E	E
4 Iowa Av. & W. Citrus St.	TS	2.9	3.5	A	A	3.2	4.1	A	A
5 Iowa Av. & E. Citrus St.	TS	4.5	5.5	A	A	4.8	6	A	A
6 Iowa Av. & Palmyrita Av.	TS	29.5	30.4	C	C	40.6	43.8	D	D
7 Iowa Av. & Columbia Av.	TS	23.9	24.4	C	C	27.6	29.3	C	C
8 Iowa Av. & Marlborough Av.	TS	26.4	24.3	C	C	32.4	30.8	C	C
9 Iowa Av. & Spruce St.	TS	32.5	43.9	C	D	42.1	69.4	D	E
10 Garfield Av. & Center St.	AWS	11.5	9.0	B	A	14.7	9.8	B	A
11 Garfield Av. & Spring St.	CSS	10.3	8.9	B	A	11.4	9	B	A

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

¹ CSS = Cross-street Stop; AWS = All-Way Stop Control; TS = Traffic Signal

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

6.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed for EAP (2027) traffic conditions based on peak hour volumes for study area intersections. There are no study area intersections anticipated to meet peak hour volume-based traffic signal warrants under EAP (2027) traffic conditions in addition to the location warranted under E+P traffic conditions (see Appendix 6.2).

6.5 RECOMMENDED IMPROVEMENTS

This section provides a summary of deficiencies and recommended improvements for EAP (2027) traffic conditions. Based on the deficiency criteria discussed in Section 2.5 *Deficiency Criteria*, the following intersections were found to be deficient. The effectiveness of the recommended improvement strategies to address EAP (2027) traffic deficiencies are presented in Table 6-2. The deficiencies identified for EAP (2027) traffic conditions are attributable to the 7 years of background growth (14.87%) as the addition of Project onto Existing conditions is not anticipated to result in any deficiencies (see previous Table 5-1). The intersection operations analysis worksheets for EAP (2027) traffic conditions, with improvements, are included in Appendix 6.3.

TABLE 6-2: INTERSECTION ANALYSIS FOR EAP (2027) CONDITIONS WITH IMPROVEMENTS

# Intersection	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service	
		Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM
		L	T	R	L	T	R	L	T	R	L	T	R				
3 Iowa Av. & Center St. - Without Improvements	TS	1	2	0	1	2	0	1	2	0	1	1	1	63.3	55.9	E	E
	TS	1	2	0	1	2	0	1	2	0	1	1	1	45.7	36.3	D	D
9 Iowa Av. & Spruce St. - Without Improvements	TS	1	2	d	1	2	1	1	1	1	1	2	0	42.1	69.4	D	E
	TS	1	2	d	<u>2</u>	2	1	1	1	1	1	2	0	47.2	54.8	D	D

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = defacto Right Turn Lane; 1 = Improvement

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ TS = Traffic Signal

⁴ Improvement consists of modifying the traffic signal to protect the eastbound and westbound left turns.

7 EAPC (2027) TRAFFIC CONDITIONS

This section discusses the methods used to develop EAPC (2027) traffic forecasts, and the resulting intersection operations and traffic signal warrant analyses.

7.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for EAPC (2027) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for EAPC conditions only (e.g., intersection and roadway improvements along the Project's frontage and driveways).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for EAPC (2027) conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages).

7.2 EAPC (2027) TRAFFIC VOLUME FORECASTS

To account for background traffic, other known cumulative development projects in the study area were included in addition to 14.87% of ambient growth for EAPC (2027) traffic conditions in conjunction with traffic associated with the proposed Project. The weekday ADT volumes and peak hour volumes which can be expected for EAPC (2027) traffic conditions are shown on Exhibit 7-1.

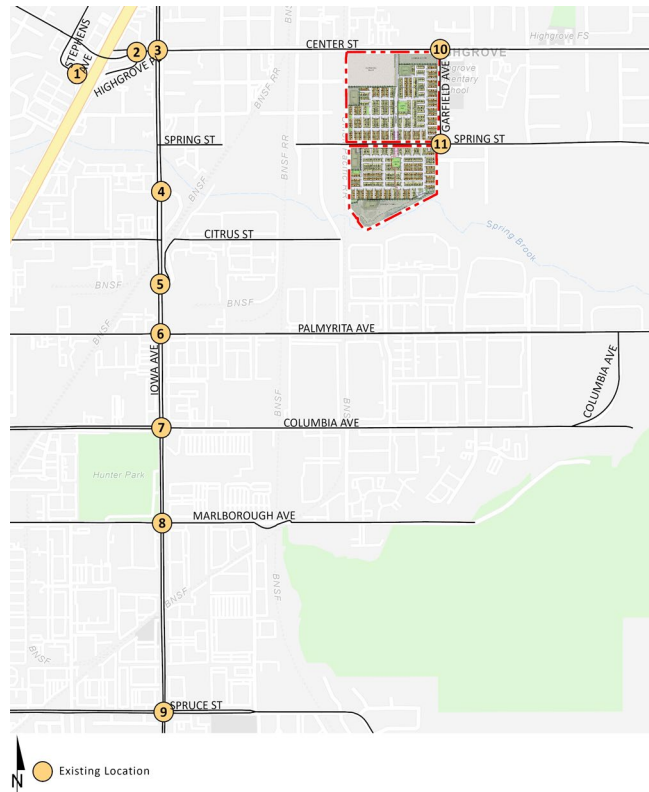
7.3 INTERSECTION OPERATIONS ANALYSIS

LOS calculations were conducted for the study intersections to evaluate their operations under EAPC (2027) conditions with roadway and intersection geometrics consistent with Section 7.1 *Roadway Improvements*. As shown in Table 7-1, the following study area intersections are anticipated to operate at an unacceptable LOS (i.e., LOS E or worse) during the peak hours under EAPC (2027) traffic conditions:

- Highgrove Place & Center Street (#2) – LOS F AM and PM peak hours
- Iowa Avenue & Center Street (#3) – LOS F AM and PM peak hours
- Iowa Avenue & Palmyrita Avenue (#6) – LOS E AM peak hour; LOS F PM peak hour
- Iowa Avenue & Spruce Street (#9) – LOS F PM peak hour only
- Garfield Avenue & Center Street (#10) – LOS F AM peak hour only

The intersection operations analysis worksheets for EAPC (2027) traffic conditions are included in Appendix 7.1.

EXHIBIT 7-1: EAPC (2027) TRAFFIC VOLUMES



1	2	3	4	5																																																														
Stephens Av. & Center St.	Highgrove Pl. & Center St.	Iowa Av. & Center St.	Iowa Av. & W. Citrus St.	Iowa Av. & E. Citrus St.																																																														
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TABLE 7-1: INTERSECTION ANALYSIS FOR EAPC (2027) CONDITIONS

# Intersection	Traffic Control ¹	Delay ² (secs.)		Level of Service	
		AM	PM	AM	PM
1 Stephens Av. & Center St.	TS	47.4	42.1	D	D
2 Highgrove Pl. & Center St.	CSS	59.2	90.3	F	F
3 Iowa Av. & Center St.	TS	101.5	95.3	F	F
4 Iowa Av. & W. Citrus St.	TS	3.2	4.1	A	A
5 Iowa Av. & E. Citrus St.	TS	4.8	6.0	A	A
6 Iowa Av. & Palmyrita Av.	TS	76.9	88.1	E	F
7 Iowa Av. & Columbia Av.	TS	31.0	40.6	C	D
8 Iowa Av. & Marlborough Av.	TS	36.0	36.4	D	D
9 Iowa Av. & Spruce St.	TS	49.0	95.6	D	F
10 Garfield Av. & Center St.	AWS	50.9	17.0	F	C
11 Garfield Av. & Spring St.	CSS	16.1	10.5	C	B

* **BOLD** = Level of Service (LOS) does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

¹ CSS = Cross-street Stop; AWS = All-Way Stop Control; TS = Traffic Signal

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

7.4 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed for EAPC (2027) traffic conditions based on peak hour volumes for the study area intersections. The intersection of Garfield Avenue and Center Street is anticipated to meet peak hour volume-based traffic signal warrants under EAPC (2027) traffic conditions (see Appendix 7.2).

7.5 DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of deficiencies and recommended improvements for EAPC (2027) traffic conditions. Based on the deficiency criteria discussed in Section 2.5 *Deficiency Criteria*, the following intersections were found to be deficient. The effectiveness of the recommended improvement strategies to address EAPC (2027) traffic deficiencies are presented in Table 7-2. The intersection operations analysis worksheets for EAPC (2027) traffic conditions, with improvements, are included in Appendix 7.3.

TABLE 7-2: INTERSECTION ANALYSIS FOR EAPC (2027) CONDITIONS WITH IMPROVEMENTS

# Intersection	Traffic Control ³	Intersection Approach Lanes ¹												Delay ² (secs.)		Level of Service	
		Northbound			Southbound			Eastbound			Westbound			AM	PM	AM	PM
		L	T	R	L	T	R	L	T	R	L	T	R				
2 Highgrove Pl. & Center St. - Without Improvements - With Improvements ⁴ - With Alternate Improvements ⁵	CSS	0	1	1	0	1	0	0	1	1	0	1	0	59.2	90.3	F	F
	TS	0	1	1	0	1	0	<u>1</u>	1	1	<u>1</u>	1	0	15.7	23.5	B	C
	CSS	0	<u>0</u>	1	0	<u>0</u>	<u>1</u>	0	<u>2</u>	1	0	<u>2</u>	0	13.2	25.9	B	D
3 Iowa Av. & Center St. - Without Improvements - With Improvements ⁶	TS	1	2	0	1	2	0	1	2	0	1	1	1	101.5	95.3	F	F
	TS	1	2	0	1	2	0	1	2	0	1	<u>2</u>	<u>0</u>	48.8	48.7	D	D
6 Iowa Av. & Palmyrita Av. - Without Improvements - With Improvements	TS	1	2	0	1	2	1	1	1	0	1	1	1	76.9	88.1	E	F
	TS	1	2	<u>1></u>	1	2	1	1	1	0	1	1	1	53.5	43.2	D	D
9 Iowa Av. & Spruce St. - Without Improvements - With Improvements	TS	1	2	d	1	2	1	1	1	1	1	2	0	49.0	95.6	D	F
	TS	1	2	d	<u>2</u>	2	1	1	<u>2</u>	<u>0</u>	1	2	0	49.9	53.4	D	D
10 Garfield Av. & Center St. - Without Improvements - With Improvements ⁴	AWS	0	1	0	0	0	0	0	2	0	0	2	0	50.9	17.0	F	C
	TS	0	1	0	0	0	0	0	2	0	<u>1</u>	2	0	11.1	5.8	B	A

¹ When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; d = defacto Right Turn Lane; > = Right Turn Overlap Phasing; 1 = Improvement

² Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

³ CSS = Cross-street Stop; AWS = All-Way Stop Control; TS = Traffic Signal; TS = Improvement

⁴ The intersection is anticipated to meet a traffic signal warrant for EAPC (2027) traffic conditions.

⁵ Alternative Improvements at this intersection include restricting the NB and SB access to right-in/right-out only. The eliminated left turns could still be accommodated via La Cadena Drive.

⁶ Improvement includes modifying the traffic signal to protect the eastbound and westbound left turns.

It should be noted, with the exception of the intersection of Highgrove Place and Center Street (#2), all recommended improvements can be accommodated through signal modification or restriping of existing pavement. At the intersection of Highgrove Place and Center Street (#2), the recommended improvements are consistent with the proposed interchange improvement plans.

8 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the County of Riverside are funded through a combination of improvements constructed by the Project, development impact fee programs or fair share contributions. Fee programs applicable to the Project are described below.

8.1 RIVERSIDE COUNTY TRANSPORTATION UNIFORM MITIGATION FEE (TUMF)

The TUMF program is administered by the WRCOG based upon a regional Nexus Study most recently updated in 2016 to address major changes in right of way acquisition and improvement cost factors. (8) This regional program was put into place to ensure that development pays its fair share, and that funding is in place for construction of facilities needed to maintain the requisite level of service and critical to mobility in the region. TUMF is a truly regional mitigation fee program and is imposed and implemented in every jurisdiction in Western Riverside County.

8.2 COUNTY OF RIVERSIDE DEVELOPMENT IMPACT FEE (DIF) PROGRAM

The Project is located within the County's Temescal Canyon Area Plan and therefore will be subject to County of Riverside DIF in an effort by the County to address development throughout its unincorporated area. The DIF program consists of two separate transportation components: the Roads, Bridges and Major Improvements component and the Traffic Signals component. Eligible facilities for funding by the County DIF program are identified on the County's Public Needs List, which currently extends through the year 2020. (9) A comprehensive review of the DIF program is now planned in order to update the nexus study. This will result in development of a revised "needs list" extending the program time horizon from 2010 to 2030.

The cost of signaling DIF network intersections is identified under the Traffic Signals component of the DIF program. County staff generally defines DIF eligible intersections as those consisting of two intersecting general plan roadways. If the intersection meets this requirement, it is potentially eligible for up to \$235,000 of credit, which is subject to negotiations with the County.

8.3 MEASURE A

Measure A, Riverside County's half-cent sales tax for transportation, was adopted by voters in 1988 and extended in 2002. It will continue to fund transportation improvements through 2039. Measure A funds a wide variety of transportation projects and services throughout the County. RCTC is responsible for administering the program. Measure A dollars are spent in accordance with a voter-approved expenditure plan that was adopted as part of the 1988 election.

8.4 FAIR SHARE CONTRIBUTION

The Project's mitigation will include fee payments to TUMF and construction of specific improvements to facilitate site access. Improvements constructed by development may be eligible for a fee credit or reimbursement through the program where appropriate (to be determined at the County's discretion). In the event a particular facility is not included in a pre-existing fee program, fair share percentages have been calculated in Table 8-1.

TABLE 8-1: PROJECT FAIR SHARE CALCULATIONS

#	Intersection	Existing	Project	Horizon Year With Project ¹	Net New Traffic	Project % of New Traffic	
3	Iowa Av. & Center St.	AM:	2,285	333	3,370	1,085	30.7%
		PM:	2,390	409	4,112	1,722	23.8%
6	Iowa Av. & Palmyrita Av.	AM:	2,165	175	3,547	1,382	12.7%
		PM:	2,274	215	3,499	1,225	17.6%
9	Iowa Av. & Spruce St.	AM:	3,011	133	3,616	605	22.0%
		PM:	3,385	163	5,278	1,893	8.6%
10	Garfield Av. & Center St.	AM:	828	71	1,457	629	11.3%
		PM:	593	87	1,283	690	12.6%

BOLD = Denotes highest fair share percentage.

¹ Horizon Year With Project volumes are based on the volumes obtained from the 2014 Traffic Study.

9 REFERENCES

1. **County of Riverside Transportation Department.** *Transportation Analysis Guidelines for Level of Service Vehicle Miles Traveled.* County of Riverside : s.n., December 2020.
2. **Urban Crossroads, Inc.** *Bixby-Highgrove Residential (TTM No. 36668) Traffic Impact Analysis.* July 21, 2014.
3. **Institute of Transportation Engineers (ITE).** *Trip Generation Manual.* 10th Edition. 2017.
4. **Riverside County Transportation Commission.** *2011 Riverside County Congestion Management Program.* County of Riverside : RCTC, December 14, 2011.
5. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.
6. **California Department of Transportation.** *California Manual on Uniform Traffic Control Devices (MUTCD).* [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2017.
7. **Southern California Association of Governments.** *2020 Regional Transportation Plan / Sustainable Communities Strategy.* May 2020 (to be adopted September 2020).
8. **Western Riverside Council of Governments.** *TUMF Nexus Study, 2016 Program Update.* July 2017.
9. **Willdan Financial Services.** *County of Riverside Development Impact Fee Study Update.* County of Riverside : s.n., 2013.

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APPENDIX 3.1:

EXISTING TRAFFIC COUNTS

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Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N.S. Stephens Avenue
 E/W Center Street
 Weather: Clear

File Name : 01_RIV_Stephens_Center AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Stephens Avenue Southbound					Center Street Westbound					Stephens Avenue Northbound					Center Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	1	2	1	0	4	76	39	1	1	116	19	0	20	14	39	1	40	9	5	50	20	209	229
07:15 AM	2	1	0	0	3	75	45	0	0	120	14	2	17	11	33	0	42	14	2	56	13	212	225
07:30 AM	1	5	1	1	7	115	41	1	0	157	12	0	13	9	25	0	32	22	8	54	18	243	261
07:45 AM	1	2	0	0	3	109	59	1	0	169	13	1	16	14	30	0	34	17	1	51	15	253	268
Total	5	10	2	1	17	375	184	3	1	562	58	3	66	48	127	1	148	62	16	211	66	917	983
08:00 AM	0	0	3	3	3	83	49	3	1	135	16	1	15	12	32	0	27	13	3	40	19	210	229
08:15 AM	0	1	0	0	1	75	54	0	0	129	18	0	12	10	30	1	30	15	1	46	11	206	217
08:30 AM	1	1	1	0	3	73	46	1	0	120	31	0	12	6	43	0	15	24	5	39	11	205	216
08:45 AM	0	1	1	1	2	68	29	1	0	98	18	0	14	9	32	0	37	17	4	54	14	186	200
Total	1	3	5	4	9	299	178	5	1	482	83	1	53	37	137	1	109	69	13	179	55	807	862
Grand Total	6	13	7	5	26	674	362	8	2	1044	141	4	119	85	264	2	257	131	29	390	121	1724	1845
Approch %	23.1	50	26.9		1.5	64.6	34.7	0.8		60.6	53.4	1.5	45.1		15.3	0.5	65.9	33.6		22.6	6.6	93.4	
Total %	0.3	0.8	0.4			39.1	21	0.5			8.2	0.2	6.9			0.1	14.9	7.6					

Start Time	Stephens Avenue Southbound					Center Street Westbound					Stephens Avenue Northbound					Center Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:15 AM	2	1	0	0	3	75	45	0	0	120	14	2	17	13	33	0	42	14	5	56			212
07:30 AM	1	5	1	1	7	115	41	1	1	157	12	0	13	9	25	0	32	22	8	54			243
07:45 AM	1	2	0	0	3	109	59	1	0	169	13	1	16	14	30	0	34	17	1	51			253
08:00 AM	0	0	0	0	0	83	49	3	0	135	16	1	15	12	32	0	27	13	3	40			210
Total Volume	4	8	4	4	16	382	194	5	1	581	55	4	61	48	120	0	135	66	16	201			918
% App. Total	25	50	25		0.9	65.7	33.4	0.9		60.6	45.8	3.3	50.8		15.3	0	67.2	32.8		22.6			93.4
PHF	.500	.400	.333		.571	.830	.822	.417		.859	.859	.500	.897		.909	.000	.804	.750		.897			.907

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

07/26/21

ADMINISTRATIVE APPROVAL

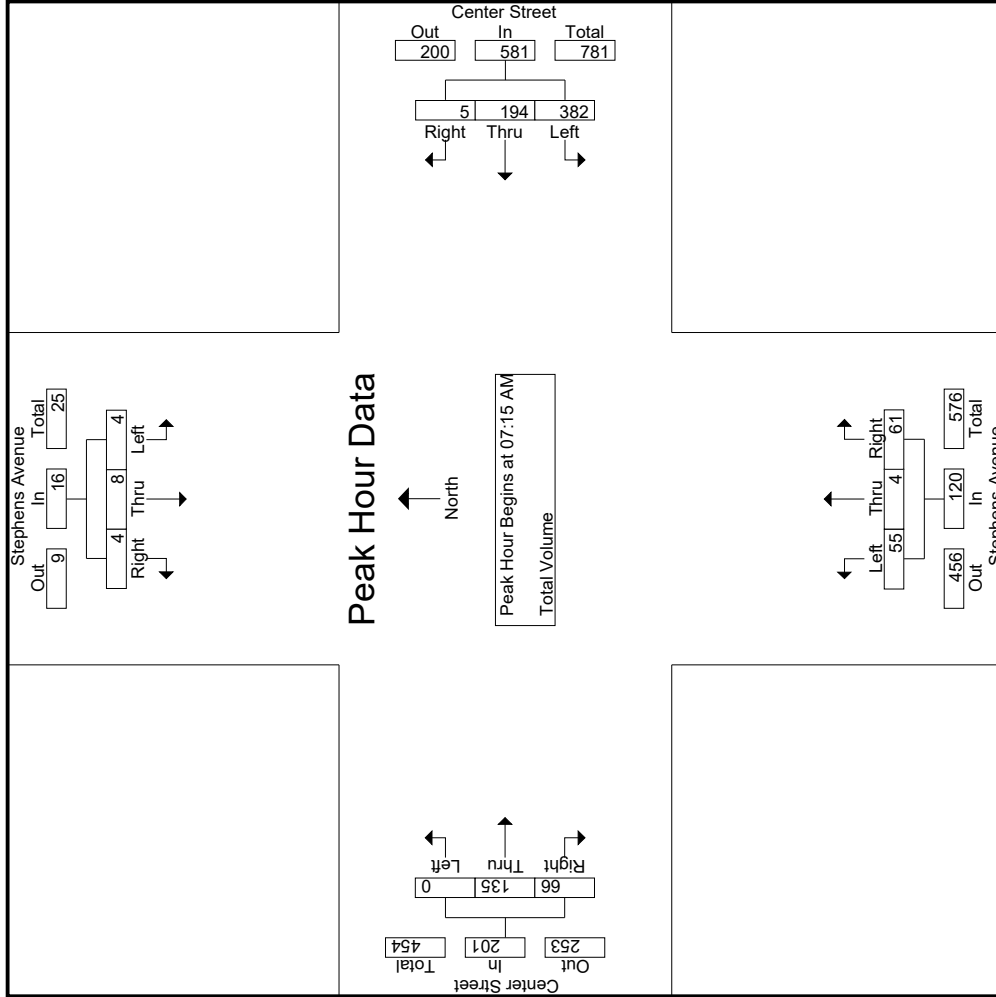
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 150 S. Stephens Avenue
 E/W Center Street
 Weather: Clear

File Name : 01_RIV_Stephens_Center AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N.S. Stephens Avenue
 E.W. Center Street
 Weather: Clear

File Name : 01_RIV_Stephens_Center AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Stephens Avenue Southbound				Center Street Westbound				Stephens Avenue Northbound				Center Street Eastbound			
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total
	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	1	2	1	4	115	41	1	157	16	1	15	32	1	40	9	50
+0 mins.	2	1	0	3	109	59	1	169	18	0	12	30	0	42	14	56
+15 mins.	1	5	1	7	83	49	3	135	31	0	12	43	0	32	22	54
+30 mins.	1	2	0	3	75	54	0	129	18	0	14	32	0	34	17	51
+45 mins.	5	10	2	17	382	203	5	590	83	1	53	137	1	148	62	211
Total Volume	29.4	58.8	11.8	64.7	64.7	34.4	0.8	60.6	60.6	0.7	38.7	137	0.5	70.1	29.4	211
% App. Total	.625	.500	.500	.607	.830	.860	.417	.873	.669	.250	.883	.797	.250	.881	.705	.942
PHF																

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N.S. Stephens Avenue
 E.W. Center Street
 Weather: Clear

File Name : 01_RIV_Stephens_Center_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Stephens Avenue Southbound					Center Street Westbound					Stephens Avenue Northbound					Center Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	4	1	0	0	5	65	43	1	1	109	21	2	21	12	44	2	80	35	12	117	25	275	300
04:15 PM	0	1	0	0	1	48	26	1	1	75	18	2	19	12	39	1	73	35	17	109	30	224	254
04:30 PM	0	1	3	2	4	78	37	0	0	115	19	0	16	5	35	1	58	32	13	91	20	245	265
04:45 PM	0	1	0	0	1	59	37	3	1	99	10	1	24	16	35	1	74	35	7	110	24	245	269
Total	4	4	3	2	11	250	143	5	3	398	68	5	80	45	153	5	285	137	49	427	99	989	1088
05:00 PM	3	1	0	0	4	54	22	1	1	77	13	0	18	12	31	1	71	46	7	118	20	230	250
05:15 PM	0	1	2	1	3	59	29	1	1	89	16	1	16	13	33	1	58	36	4	95	19	220	239
05:30 PM	0	1	1	0	2	59	29	3	0	91	23	1	11	5	35	1	65	24	5	90	10	218	228
05:45 PM	0	1	0	0	1	46	32	1	0	79	10	0	10	2	20	1	52	23	1	76	3	176	179
Total	3	4	3	1	10	218	112	6	2	336	62	2	55	32	119	4	246	129	17	379	52	844	896
Grand Total	7	8	6	3	21	468	255	11	5	734	130	7	135	77	272	9	531	266	66	806	151	1833	1984
Approch %	33.3	38.1	28.6			63.8	34.7	1.5		40	47.8	2.6	49.6		14.8	1.1	65.9	33		44	7.6	92.4	
Total %	0.4	0.4	0.3		1.1	25.5	13.9	0.6			7.1	0.4	7.4			0.5	29	14.5					

Start Time	Stephens Avenue Southbound					Center Street Westbound					Stephens Avenue Northbound					Center Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	4	1	0	0	5	65	43	1	1	109	21	2	21	12	44	2	80	35	12	117	25	275	300
04:15 PM	0	1	0	0	1	48	26	1	1	75	18	2	19	12	39	1	73	35	17	109	30	224	254
04:30 PM	0	1	3	2	4	78	37	0	0	115	19	0	16	5	35	1	58	32	13	91	20	245	265
04:45 PM	0	1	0	0	1	59	37	3	1	99	10	1	24	16	35	1	74	35	7	110	24	245	269
Total Volume	4	4	3	2	11	250	143	5	3	398	68	5	80	45	153	5	285	137	49	427	99	989	1088
% App. Total	36.4	36.4	27.3		1.3	62.8	35.9	1.3		40	47.8	2.6	49.6		14.8	1.1	65.9	33		44	7.6	92.4	
PHF	.250	1.00	.250		.550	.801	.831	.417		.865	.810	.625	.833		.869	.625	.891	.979		.912		.899	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 04:00 PM

ADMINISTRATIVE APPROVAL

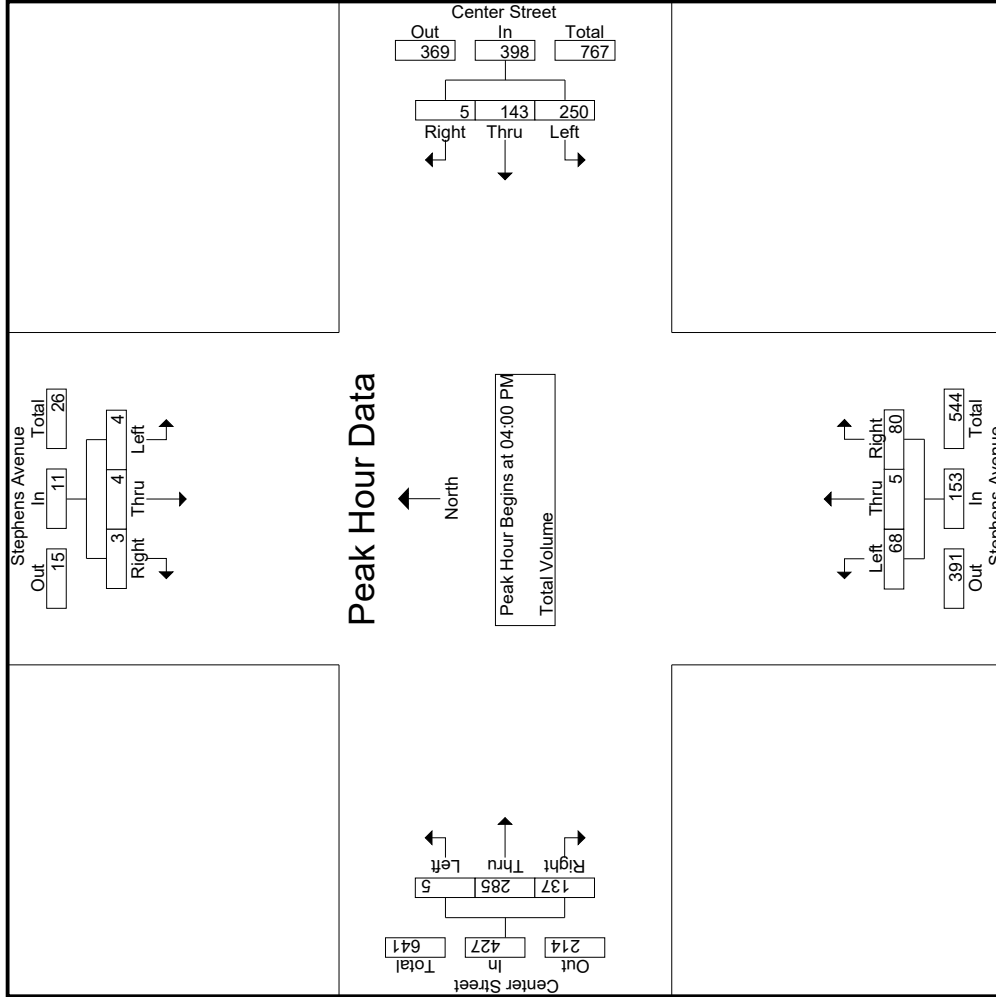
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 150 Stephens Avenue
 E/W Center Street
 Weather: Clear

File Name : 01_RIV_Stephens_Center_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

Counts Unlimited
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 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S Stephens Avenue
 E/W Center Street
 Weather: Clear

File Name : 01_RIV_Stephens_Center_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

07/26/21

ADMINISTRATIVE APPROVAL

Page 142 of 430

Start Time	Stephens Avenue Southbound			Center Street Westbound			Stephens Avenue Northbound			Center Street Eastbound					
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right			
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1															
Peak Hour for Each Approach Begins at:															
	04:30 PM			04:00 PM			04:00 PM			04:15 PM					
+0 mins.	0	1	3	4	65	43	1	109	21	2	21	1	73	35	109
+15 mins.	0	1	0	1	48	26	1	75	18	2	19	1	58	32	91
+30 mins.	3	1	0	4	78	37	0	115	19	0	16	1	74	35	110
+45 mins.	0	1	2	3	59	37	3	99	10	1	24	1	71	46	118
Total Volume	3	4	5	12	250	143	5	398	68	5	80	4	276	148	428
% App. Total	25	33.3	41.7	62.8	35.9	1.3	44.4	3.3	52.3	0.9	64.5	1.000	932	804	.907
PHF	.250	1.000	.417	.750	.801	.831	.417	.865	.810	.625	.833	1.000	.932	.804	.907

Location: Riverside
 N/S: Stephens Avenue
 E/W: Center Street



Date: 2/25/2020
 Day: Tuesday

PEDESTRIANS

	North Leg Stephens Avenue Pedestrians	East Leg Center Street Pedestrians	South Leg Stephens Avenue Pedestrians	West Leg Center Street Pedestrians	
7:00 AM	2	0	0	0	2
7:15 AM	0	1	1	0	2
7:30 AM	1	0	0	0	1
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	1	0	0	0	1
8:30 AM	0	0	0	0	0
8:45 AM	1	0	0	0	1
TOTAL VOLUMES:	5	1	1	0	7

	North Leg Stephens Avenue Pedestrians	East Leg Center Street Pedestrians	South Leg Stephens Avenue Pedestrians	West Leg Center Street Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	3	2	0	0	5
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	1	0	2	0	3
5:15 PM	0	0	0	0	0
5:30 PM	0	0	1	0	1
5:45 PM	1	0	0	0	1
TOTAL VOLUMES:	5	2	3	0	10

Location: Riverside
 N/S: Stephens Avenue
 E/W: Center Street



Date: 2/25/2020
 Day: Tuesday

BICYCLES

	Southbound Stephens Avenue			Westbound Center Street			Northbound Stephens Avenue			Eastbound Center Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	1	0	0	0	0	0	0	0	1	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	1	0	0	1	0	0	0	0	2	0	0	0	4

	Southbound Stephens Avenue			Westbound Center Street			Northbound Stephens Avenue			Eastbound Center Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	2
TOTAL VOLUMES:	0	0	0	0	1	1	0	0	1	0	0	2	5

Counts Unlimited
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City of Riverside
 N/S: Highgrove Place
 E/W: Center Street
 Weather: Clear

File Name : 02_RIV_Highgrove_Center AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

Groups Printed- Total Volume

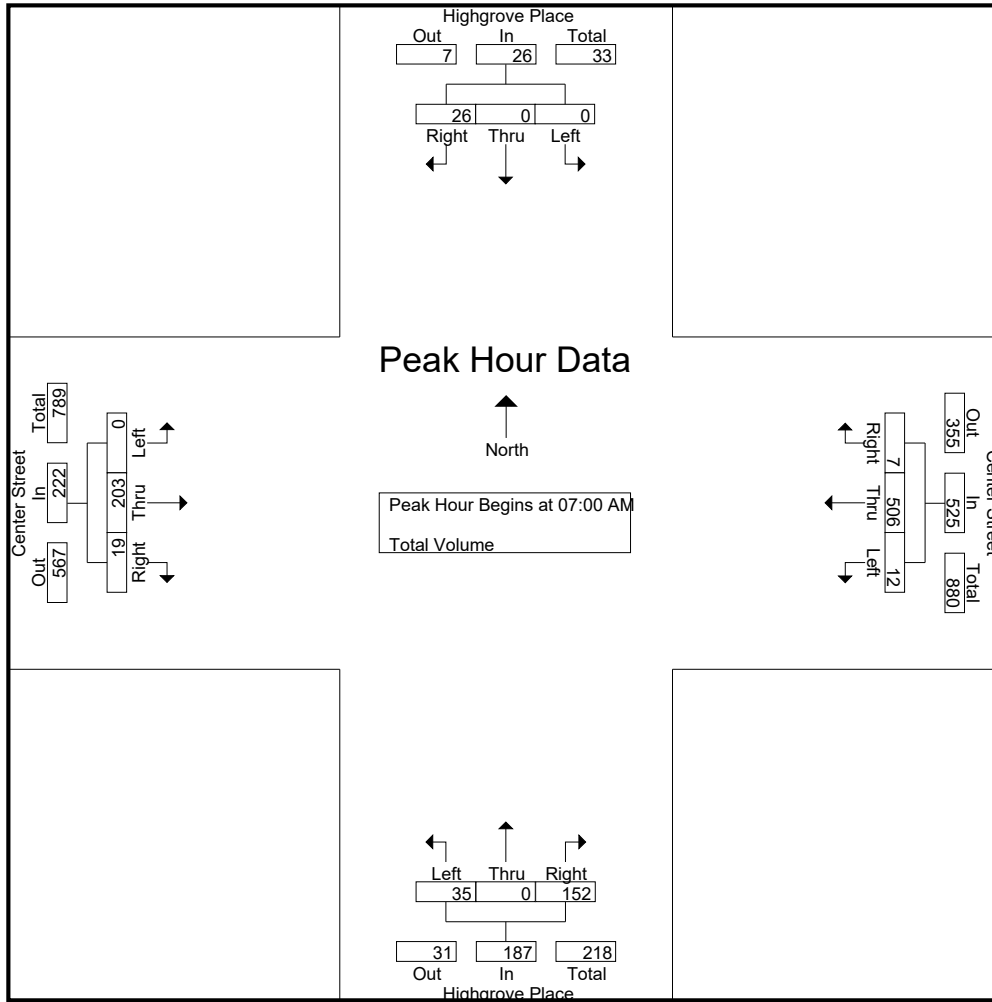
Start Time	Highgrove Place Southbound				Center Street Westbound				Highgrove Place Northbound				Center Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:00 AM	0	0	10	10	2	98	2	102	6	0	39	45	0	53	3	56	213
07:15 AM	0	0	4	4	3	128	2	133	3	0	37	40	0	61	5	66	243
07:30 AM	0	0	5	5	5	143	1	149	12	0	43	55	0	38	3	41	250
07:45 AM	0	0	7	7	2	137	2	141	14	0	33	47	0	51	8	59	254
Total	0	0	26	26	12	506	7	525	35	0	152	187	0	203	19	222	960
08:00 AM	0	0	10	10	0	102	1	103	21	0	35	56	0	37	7	44	213
08:15 AM	0	0	7	7	1	88	2	91	32	0	25	57	0	37	4	41	196
08:30 AM	0	0	5	5	1	88	1	90	23	1	32	56	0	26	4	30	181
08:45 AM	0	0	8	8	1	73	0	74	19	0	34	53	0	47	3	50	185
Total	0	0	30	30	3	351	4	358	95	1	126	222	0	147	18	165	775
Grand Total	0	0	56	56	15	857	11	883	130	1	278	409	0	350	37	387	1735
Apprch %	0	0	100		1.7	97.1	1.2		31.8	0.2	68		0	90.4	9.6		
Total %	0	0	3.2	3.2	0.9	49.4	0.6	50.9	7.5	0.1	16	23.6	0	20.2	2.1	22.3	

Start Time	Highgrove Place Southbound				Center Street Westbound				Highgrove Place Northbound				Center Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. 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	0	10	10	2	98	2	102	6	0	39	45	0	53	3	56	213
07:15 AM	0	0	4	4	3	128	2	133	3	0	37	40	0	61	5	66	243
07:30 AM	0	0	5	5	5	143	1	149	12	0	43	55	0	38	3	41	250
07:45 AM	0	0	7	7	2	137	2	141	14	0	33	47	0	51	8	59	254
Total Volume	0	0	26	26	12	506	7	525	35	0	152	187	0	203	19	222	960
% App. Total	0	0	100		2.3	96.4	1.3		18.7	0	81.3		0	91.4	8.6		
PHF	.000	.000	.650	.650	.600	.885	.875	.881	.625	.000	.884	.850	.000	.832	.594	.841	.945

Counts Unlimited
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City of Riverside
 N/S: Highgrove Place
 E/W: Center Street
 Weather: Clear

File Name : 02_RIV_Highgrove_Center AM
 Site Code : 05120123
 Start Date : 2/25/2020
 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:

	08:00 AM				07:15 AM				08:00 AM				07:00 AM			
+0 mins.	0	0	10	10	3	128	2	133	21	0	35	56	0	53	3	56
+15 mins.	0	0	7	7	5	143	1	149	32	0	25	57	0	61	5	66
+30 mins.	0	0	5	5	2	137	2	141	23	1	32	56	0	38	3	41
+45 mins.	0	0	8	8	0	102	1	103	19	0	34	53	0	51	8	59
Total Volume	0	0	30	30	10	510	6	526	95	1	126	222	0	203	19	222
% App. Total	0	0	100		1.9	97	1.1		42.8	0.5	56.8		0	91.4	8.6	
PHF	.000	.000	.750	.750	.500	.892	.750	.883	.742	.250	.900	.974	.000	.832	.594	.841

Counts Unlimited
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City of Riverside
 N/S: Highgrove Place
 E/W: Center Street
 Weather: Clear

File Name : 02_RIV_Highgrove_Center PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

Groups Printed- Total Volume

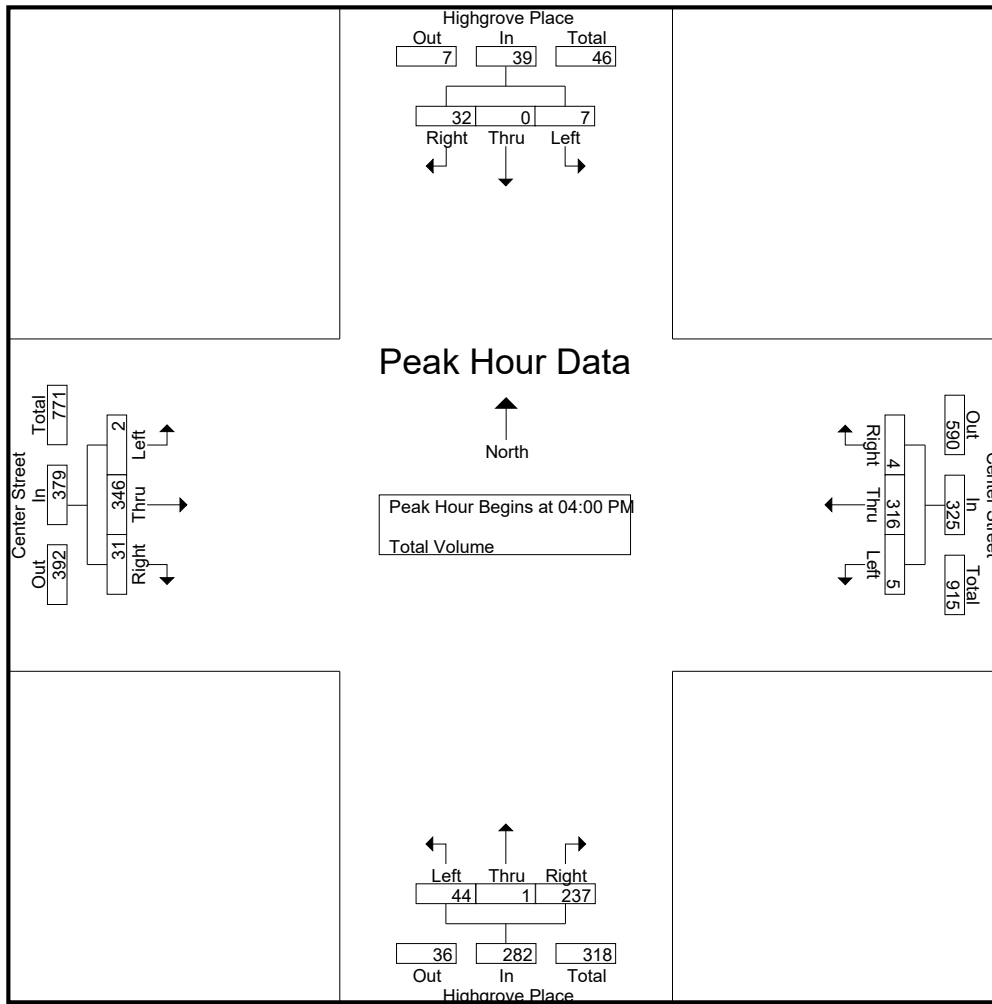
Start Time	Highgrove Place Southbound				Center Street Westbound				Highgrove Place Northbound				Center Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
04:00 PM	2	0	14	16	1	81	1	83	13	0	54	67	0	90	12	102	268
04:15 PM	0	0	8	8	3	68	0	71	9	0	62	71	2	84	8	94	244
04:30 PM	0	0	4	4	0	84	0	84	11	0	73	84	0	78	6	84	256
04:45 PM	5	0	6	11	1	83	3	87	11	1	48	60	0	94	5	99	257
Total	7	0	32	39	5	316	4	325	44	1	237	282	2	346	31	379	1025
05:00 PM	0	0	8	8	0	60	3	63	6	2	75	83	0	89	6	95	249
05:15 PM	2	0	9	11	0	76	0	76	7	1	64	72	0	70	3	73	232
05:30 PM	0	0	8	8	0	69	1	70	13	0	58	71	1	74	7	82	231
05:45 PM	0	0	8	8	0	66	2	68	9	0	57	66	1	55	6	62	204
Total	2	0	33	35	0	271	6	277	35	3	254	292	2	288	22	312	916
Grand Total	9	0	65	74	5	587	10	602	79	4	491	574	4	634	53	691	1941
Apprch %	12.2	0	87.8		0.8	97.5	1.7		13.8	0.7	85.5		0.6	91.8	7.7		
Total %	0.5	0	3.3	3.8	0.3	30.2	0.5	31	4.1	0.2	25.3	29.6	0.2	32.7	2.7	35.6	

Start Time	Highgrove Place Southbound				Center Street Westbound				Highgrove Place Northbound				Center Street Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	2	0	14	16	1	81	1	83	13	0	54	67	0	90	12	102	268
04:15 PM	0	0	8	8	3	68	0	71	9	0	62	71	2	84	8	94	244
04:30 PM	0	0	4	4	0	84	0	84	11	0	73	84	0	78	6	84	256
04:45 PM	5	0	6	11	1	83	3	87	11	1	48	60	0	94	5	99	257
Total Volume	7	0	32	39	5	316	4	325	44	1	237	282	2	346	31	379	1025
% App. Total	17.9	0	82.1		1.5	97.2	1.2		15.6	0.4	84		0.5	91.3	8.2		
PHF	.350	.000	.571	.609	.417	.940	.333	.934	.846	.250	.812	.839	.250	.920	.646	.929	.956

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City of Riverside
 N/S: Highgrove Place
 E/W: Center Street
 Weather: Clear

File Name : 02_RIV_Highgrove_Center PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:30 PM				04:00 PM			
+0 mins.	2	0	14	16	1	81	1	83	11	0	73	84	0	90	12	102
+15 mins.	0	0	8	8	3	68	0	71	11	1	48	60	2	84	8	94
+30 mins.	0	0	4	4	0	84	0	84	6	2	75	83	0	78	6	84
+45 mins.	5	0	6	11	1	83	3	87	7	1	64	72	0	94	5	99
Total Volume	7	0	32	39	5	316	4	325	35	4	260	299	2	346	31	379
% App. Total	17.9	0	82.1		1.5	97.2	1.2		11.7	1.3	87		0.5	91.3	8.2	
PHF	.350	.000	.571	.609	.417	.940	.333	.934	.795	.500	.867	.890	.250	.920	.646	.929

Location: Riverside
 N/S: Highgrove Place
 E/W: Center Street



Date: 2/25/2020
 Day: Tuesday

PEDESTRIANS

	North Leg Highgrove Place Pedestrians	East Leg Center Street Pedestrians	South Leg Highgrove Place Pedestrians	West Leg Center Street Pedestrians	
7:00 AM	2	1	0	0	3
7:15 AM	0	0	0	0	0
7:30 AM	1	0	0	0	1
7:45 AM	1	0	0	0	1
8:00 AM	0	0	0	0	0
8:15 AM	1	0	0	0	1
8:30 AM	0	0	0	0	0
8:45 AM	1	0	0	0	1
TOTAL VOLUMES:	6	1	0	0	7

	North Leg Highgrove Place Pedestrians	East Leg Center Street Pedestrians	South Leg Highgrove Place Pedestrians	West Leg Center Street Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	4	0	0	2	6
5:15 PM	2	0	0	1	3
5:30 PM	0	1	1	1	3
5:45 PM	4	0	0	1	5
TOTAL VOLUMES:	10	1	1	5	17

Location: Riverside
 N/S: Highgrove Place
 E/W: Center Street



Date: 2/25/2020
 Day: Tuesday

BICYCLES

	Southbound Highgrove Place			Westbound Center Street			Northbound Highgrove Place			Eastbound Center Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
7:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	3	0	0	0	0	0	3	0	6

	Southbound Highgrove Place			Westbound Center Street			Northbound Highgrove Place			Eastbound Center Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
TOTAL VOLUMES:	0	0	0	0	0	0	1	0	0	0	1	0	2

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
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City of Riverside
 N.S. Iowa Avenue
 E.W. Center Street
 Weather: Clear

File Name : 03_RIV_Iowa_Center AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound					Center Street Westbound					Iowa Avenue Northbound					Center Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	6	159	17	1	182	16	69	9	7	94	19	105	11	4	135	27	43	20	9	90	21	501	522
07:15 AM	8	126	25	14	159	34	89	18	12	141	26	95	23	10	144	25	58	19	4	102	40	546	586
07:30 AM	8	173	36	6	217	46	93	15	11	154	30	149	19	8	198	17	46	18	5	81	30	650	680
07:45 AM	6	195	42	7	243	32	77	10	7	119	29	94	10	3	133	29	34	19	9	82	26	577	603
Total	28	653	120	28	801	128	328	52	37	508	104	443	63	25	610	98	181	76	27	355	117	2274	2391
08:00 AM	7	166	32	9	205	16	54	8	8	78	21	125	15	7	161	12	34	22	8	68	32	512	544
08:15 AM	5	127	20	5	152	15	48	6	5	69	27	140	12	5	179	25	23	14	8	62	23	462	485
08:30 AM	5	134	20	7	159	16	51	7	4	74	33	169	17	4	219	23	21	11	5	55	20	507	527
08:45 AM	5	125	16	1	146	23	44	12	9	79	17	149	12	3	178	24	43	18	9	85	22	488	510
Total	22	552	88	22	662	70	197	33	26	300	98	563	56	19	737	84	121	65	30	270	97	1969	2066
Grand Total	50	1205	208	50	1463	198	525	85	63	808	202	1026	119	44	1347	182	302	141	57	625	214	4243	4457
Apprch %	3.4	82.4	14.2		34.5	24.5	65	10.5		19	4.8	24.2	2.8		31.7	29.1	48.3	22.6		14.7	4.8	95.2	
Total %	1.2	28.4	4.9			4.7	12.4	2			4.3	7.1	3.3										

Start Time	Iowa Avenue Southbound					Center Street Westbound					Iowa Avenue Northbound					Center Street Eastbound									
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total
07:15 AM	8	126	25		159	34	89	18		141	26	95	23		144	25	58	19		102					546
07:30 AM	8	173	36		217	46	93	15		154	30	149	19		198	17	46	18		81				650	
07:45 AM	6	195	42		243	32	77	10		119	29	94	10		133	29	34	19		82				577	
08:00 AM	7	166	32		205	16	54	8		78	21	125	15		161	12	34	22		68				512	
Total Volume	29	660	135		824	128	313	51		492	106	463	67		636	83	172	78		333				2285	
% App. Total	3.5	80.1	16.4		34.5	26	63.6	10.4		19	16.7	72.8	10.5		23.4	24.9	51.7	23.4		14.7				87.9	
PHF	.906	.846	.804		.848	.696	.841	.708		.799	.883	.777	.728		.803	.716	.741	.886		.816					

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

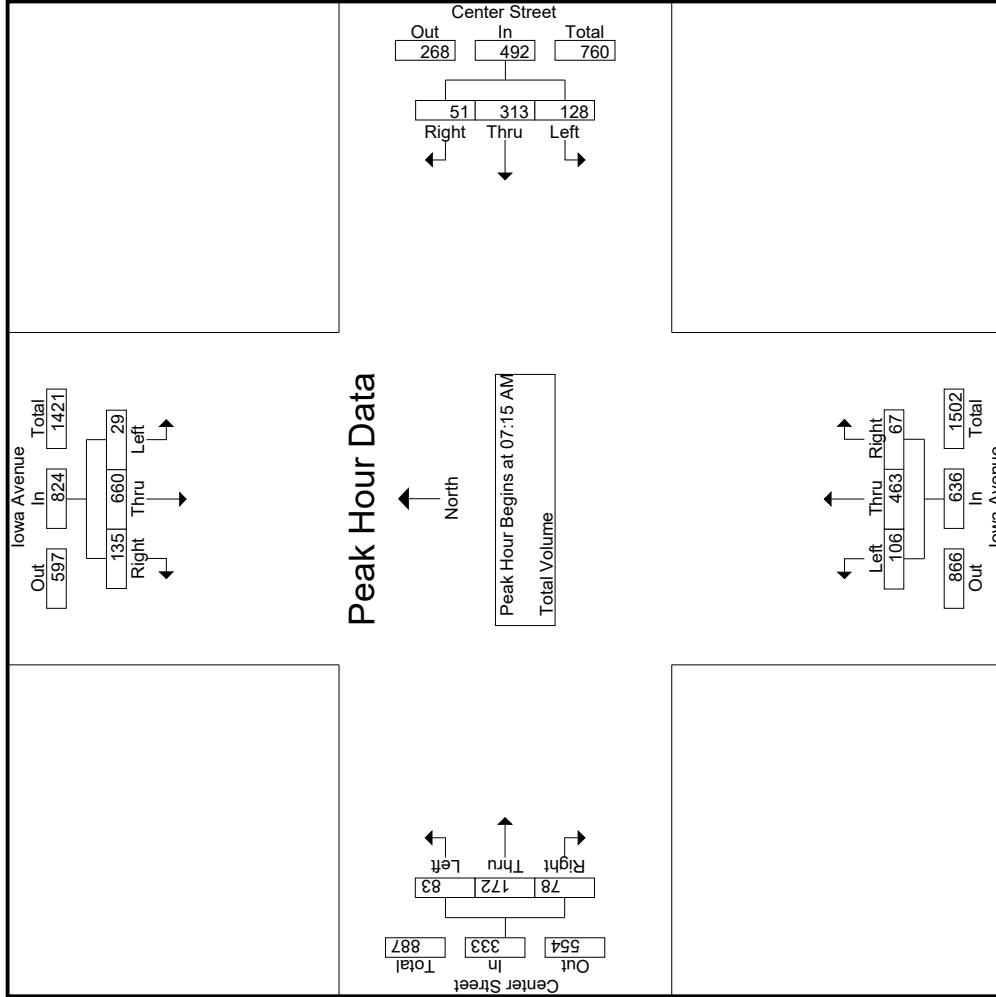
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 NS: Iowa Avenue
 EW: Center Street
 Weather: Clear

File Name : 03_RIV_Iowa_Center AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

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City of Riverside
 N/S Iowa Avenue
 E/W Center Street
 Weather: Clear

File Name : 03_RIV_Iowa_Center AM
 Site Code : 05120123
 Start Date : 2/25/2020
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ADMINISTRATIVE APPROVAL

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Start Time	Iowa Avenue Southbound			Center Street Westbound			Iowa Avenue Northbound			Center Street Eastbound						
	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 Each Approach Begins at:															
	07:15 AM															
+0 mins.	8	126	25	159	16	69	9	94	21	125	15	161	27	43	20	90
+15 mins.	8	173	36	217	34	89	18	141	27	140	12	179	25	58	19	102
+30 mins.	6	195	42	243	46	93	15	154	33	169	17	219	17	46	18	81
+45 mins.	7	166	32	205	32	77	10	119	17	149	12	178	29	34	19	82
Total Volume	29	660	135	824	128	328	52	508	98	583	56	737	98	181	76	355
% App. Total	3.5	80.1	16.4	25.2	64.6	10.2	13.3	79.1	7.6	79.1	7.6	27.6	27.6	51	21.4	82.4
PHF	.906	.846	.804	.848	.696	.882	.722	.825	.742	.862	.824	.841	.845	.780	.950	.870

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 (951) 268-6268

City of Riverside
 N.S. Iowa Avenue
 E.W. Center Street
 Weather: Clear

File Name : 03_RIV_Iowa_Center_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound					Center Street Westbound					Iowa Avenue Northbound					Center Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	3	129	13	6	145	16	47	13	8	76	33	154	12	6	199	51	60	32	8	143	28	563	591
04:15 PM	4	145	10	2	159	16	40	6	3	62	33	155	17	2	205	53	54	21	7	128	14	554	568
04:30 PM	5	133	13	2	151	21	39	4	2	64	43	161	24	7	228	46	90	35	8	171	19	614	633
04:45 PM	9	139	15	3	163	26	44	6	3	76	32	151	22	11	205	54	58	30	8	142	25	586	611
Total	21	546	51	13	618	79	170	29	16	278	141	621	75	26	837	204	262	118	31	584	86	2317	2403
05:00 PM	7	125	15	3	147	18	29	6	5	53	29	183	13	8	225	54	82	27	6	163	22	588	610
05:15 PM	10	126	17	10	153	15	36	9	3	60	35	186	26	12	247	45	86	11	3	142	28	602	630
05:30 PM	9	164	10	5	183	32	40	10	5	82	26	158	22	7	206	36	63	20	5	119	22	590	612
05:45 PM	5	116	17	4	138	28	38	9	7	75	24	106	16	3	146	28	70	17	7	115	21	474	495
Total	31	531	59	22	621	93	143	34	20	270	114	633	77	30	824	163	301	75	21	539	93	2254	2347
Grand Total	52	1077	110	35	1239	172	313	63	36	548	255	1254	152	56	1661	367	563	193	52	1123	179	4571	4750
Approch %	4.2	86.9	8.9		27.1	31.4	57.1	11.5		12	15.4	75.5	9.2		36.3	32.7	50.1	17.2		24.6	3.8	96.2	
Total %	1.1	23.6	2.4			3.8	6.8	1.4			5.6	27.4	3.3			8	12.3	4.2					

Start Time	Iowa Avenue Southbound					Center Street Westbound					Iowa Avenue Northbound					Center Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:30 PM	5	133	13		151	21	39	4		64	43	161	24		228	46	90	35		171			614
04:45 PM	9	139	15		163	26	44	6		76	32	151	22		205	54	58	30		142			586
05:00 PM	7	125	15		147	18	29	6		53	29	183	13		225	54	82	27		163			588
05:15 PM	10	126	17		153	28	38	9		75	35	186	26		247	45	86	11		142			602
Total Volume	31	523	60		614	80	148	25		253	139	681	85		905	199	316	103		618			2390
% App. Total	5	85.2	9.8		27.1	31.6	58.5	9.9		12	15.4	75.2	9.4		36.3	32.2	51.1	16.7		24.6			97.3
PHF	.775	.941	.882		.942	.769	.841	.694		.832	.808	.915	.817		.916	.921	.878	.736		.904			

07/26/21

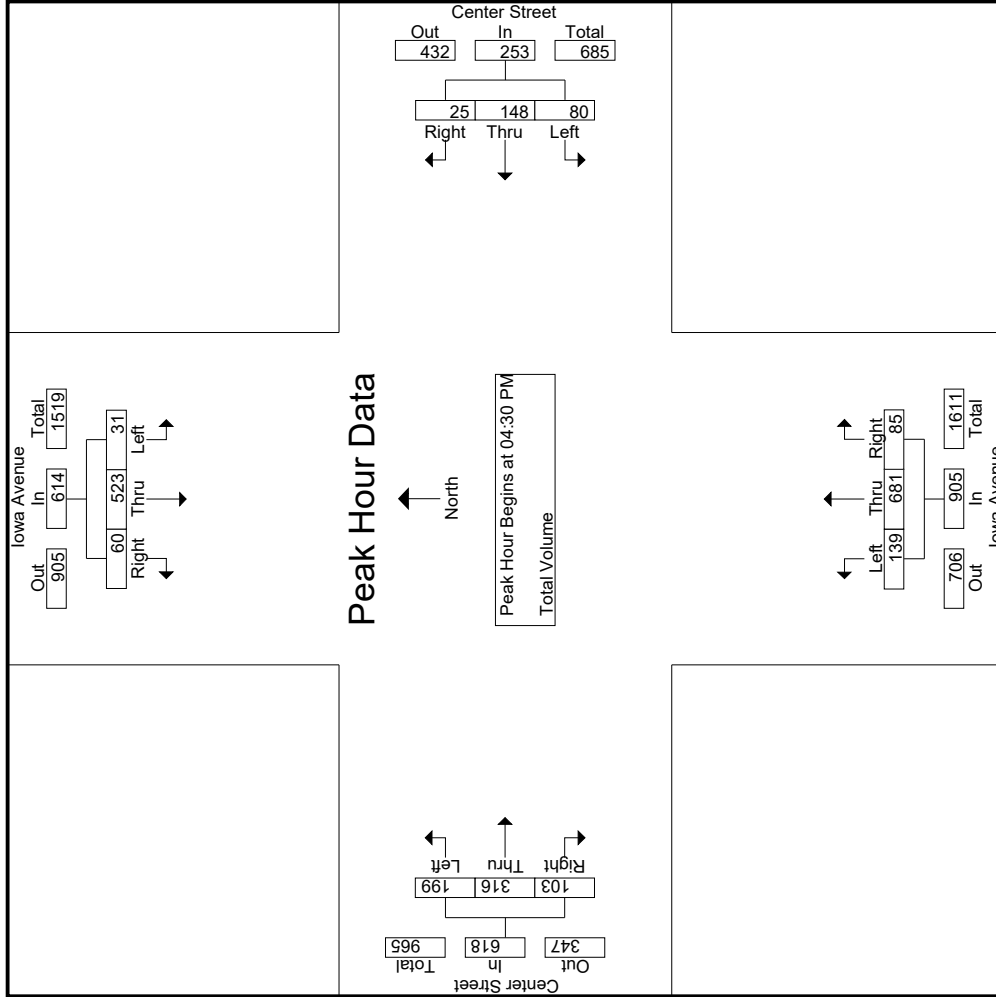
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 NS: Iowa Avenue
 EW: Center Street
 Weather: Clear

File Name : 03_RIV_Iowa_Center_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

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07/26/21



ADMINISTRATIVE APPROVAL

Page 155 of 430

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S Iowa Avenue
 E/W Center Street
 Weather: Clear

File Name : 03_RIV_Iowa_Center.PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Iowa Avenue Southbound			Center Street Westbound			Iowa Avenue Northbound			Center Street Eastbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
	App. Total			App. Total			App. Total			App. Total			
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Each Approach Begins at:													
	04:45 PM			04:00 PM			04:30 PM			04:30 PM			
+0 mins.	9	139	15	163	47	13	76	161	24	46	90	35	171
+15 mins.	7	125	15	147	40	6	62	151	22	54	58	30	142
+30 mins.	10	126	17	153	39	4	64	183	13	54	82	27	163
+45 mins.	9	164	10	183	44	6	76	186	26	45	86	11	142
Total Volume	35	554	57	646	170	29	278	681	85	199	316	103	618
% App. Total	5.4	85.8	8.8	88.3	61.2	10.4	91.4	75.2	9.4	32.2	51.1	16.7	90.4
PHF	.875	.845	.838	.883	.904	.558	.914	.915	.817	.921	.878	.736	.904

Location: Riverside
 N/S: Iowa Avenue
 E/W: Spring Street



Date: 2/25/2020
 Day: Tuesday

PEDESTRIANS

	North Leg Iowa Avenue	East Leg Spring Street	South Leg Iowa Avenue	West Leg Spring Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	2	4	0	6
7:15 AM	0	0	0	0	0
7:30 AM	0	0	6	0	6
7:45 AM	2	1	1	0	4
8:00 AM	0	2	0	1	3
8:15 AM	0	2	1	0	3
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	1	1
TOTAL VOLUMES:	2	7	12	2	23

	North Leg Iowa Avenue	East Leg Spring Street	South Leg Iowa Avenue	West Leg Spring Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	1	1	0	2
4:30 PM	0	0	0	0	0
4:45 PM	0	0	2	0	2
5:00 PM	0	0	2	0	2
5:15 PM	0	0	1	2	3
5:30 PM	0	1	0	0	1
5:45 PM	4	0	0	1	5
TOTAL VOLUMES:	4	2	6	3	15

Location: Riverside
 N/S: Iowa Avenue
 E/W: Spring Street



Date: 2/25/2020
 Day: Tuesday

BICYCLES

	Southbound Iowa Avenue			Westbound Spring Street			Northbound Iowa Avenue			Eastbound Spring Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	1	0	0	0	0	0	0	0	2

	Southbound Iowa Avenue			Westbound Spring Street			Northbound Iowa Avenue			Eastbound Spring Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	2
4:45 PM	0	0	0	2	0	0	0	1	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	1	0	0	0	1	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	3	0	0	0	2	0	0	2	0	8

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File Name : 04_RIV_Iowa_W Citrus AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

City of Riverside
 N/S Iowa Avenue
 E/W West Citrus Street
 Weather: Clear

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound					West Citrus Street Westbound					Iowa Avenue Northbound					West Citrus Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	3	173	0	0	176	0	0	4	3	4	0	118	2	0	120	0	0	0	0	0	3	300	303
07:15 AM	2	184	0	0	186	1	0	7	4	8	0	138	7	0	145	0	0	0	0	0	4	339	343
07:30 AM	5	242	0	0	247	2	0	2	2	4	0	150	6	0	156	0	0	0	0	0	2	407	409
07:45 AM	4	251	0	0	255	1	0	1	1	2	0	130	6	1	136	0	0	0	0	0	2	393	395
Total	14	850	0	0	864	4	0	14	10	18	0	536	21	1	557	0	0	0	0	0	11	1439	1450
08:00 AM	0	196	0	0	196	1	0	2	2	3	0	167	5	0	172	0	0	0	0	0	2	371	373
08:15 AM	0	144	0	0	144	2	0	3	2	5	0	165	0	0	165	0	0	0	0	0	2	314	316
08:30 AM	2	163	0	0	165	1	0	3	3	4	1	208	3	0	212	0	0	0	0	0	3	381	384
08:45 AM	7	164	0	0	171	4	0	3	3	7	2	167	1	0	170	0	0	0	0	0	3	348	351
Total	9	667	0	0	676	8	0	11	10	19	3	707	9	0	719	0	0	0	0	0	10	1414	1424
Grand Total	23	1517	0	0	1540	12	0	25	20	37	3	1243	30	1	1276	0	0	0	0	0	21	2853	2874
Apprch %	1.5	98.5	0	0		32.4	0	67.6			0.2	97.4	2.4			0	0	0					
Total %	0.8	53.2	0	0	54	0.4	0	0.9		1.3	0.1	43.6	1.1		44.7	0	0	0		0.7	0.7	99.3	

Start Time	Iowa Avenue Southbound					West Citrus Street Westbound					Iowa Avenue Northbound					West Citrus Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:15 AM	2	184	0	0	186	1	0	7	8	8	0	138	7	0	145	0	0	0	0	0	0	0	0
07:30 AM	5	242	0	0	247	2	0	2	4	4	0	150	6	0	156	0	0	0	0	0	0	0	0
07:45 AM	4	251	0	0	255	1	0	1	2	2	0	130	6	0	136	0	0	0	0	0	0	0	0
08:00 AM	0	196	0	0	196	1	0	2	3	3	0	167	5	0	172	0	0	0	0	0	0	0	0
Total Volume	11	873	0	0	884	5	0	12	17	17	0	585	24	0	609	0	0	0	0	0	0	0	0
% App. Total	1.2	98.8	0	0		29.4	0	70.6			0	96.1	3.9			0	0	0					
PHF	.550	.870	.000	.867	.625	.000	.429	.531	.531	.885	.000	.876	.857	.885	.000	.000	.000	.000	.000	.000	.000	.000	.928

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

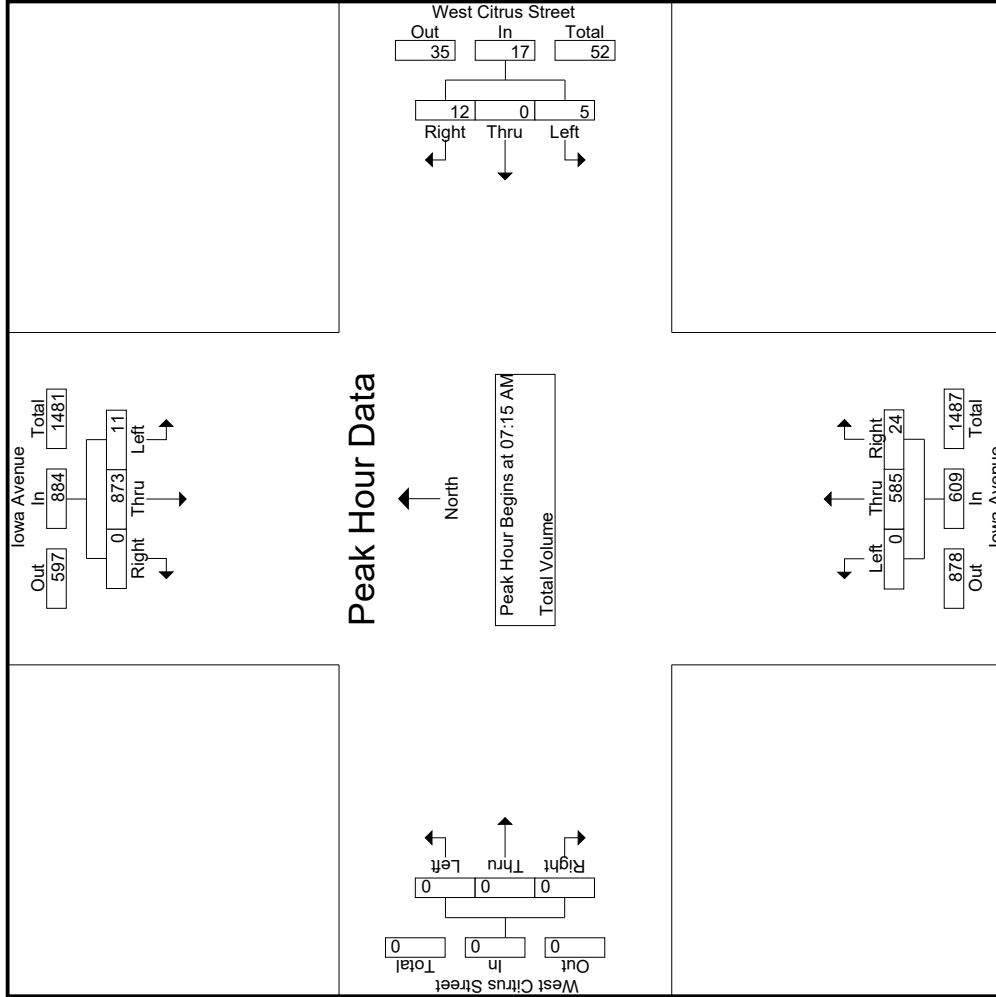
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 150 N. Iowa Avenue
 E. W. West Citrus Street
 Weather: Clear

File Name : 04_RIV_Iowa_W Citrus AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

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City of Riverside
 N/S Iowa Avenue
 E/W West Citrus Street
 Weather: Clear

File Name : 04_RIV_Iowa_W Citrus AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Iowa Avenue Southbound			West Citrus Street Westbound			Iowa Avenue Northbound			West Citrus Street Eastbound					
	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 Each Approach Begins at:															
	07:15 AM			08:00 AM			08:00 AM			08:00 AM			07:00 AM		
+0 mins.	2	184	0	186	1	0	2	3	0	167	5	172	0	0	0
+15 mins.	5	242	0	247	2	0	3	5	0	165	0	165	0	0	0
+30 mins.	4	251	0	255	1	0	3	4	1	208	3	212	0	0	0
+45 mins.	0	196	0	196	4	0	3	7	2	167	1	170	0	0	0
Total Volume	11	873	0	884	8	0	11	19	3	707	9	719	0	0	0
% App. Total	1.2	98.8	0	42.1	0	0	57.9	0.4	0.4	98.3	1.3	84.8	0	0	0
PHF	.550	.870	.000	.867	.500	.000	.917	.679	.375	.850	.450	.848	.000	.000	.000

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File Name : 04_RIV_Iowa_W Citrus PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

City of Riverside
 N/S Iowa Avenue
 E/W West Citrus Street
 Weather: Clear

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound					West Citrus Street Westbound					Iowa Avenue Northbound					West Citrus Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	3	171	0	0	174	10	0	9	9	19	1	190	5	0	196	0	0	0	0	0	9	389	398
04:15 PM	1	163	0	0	164	1	0	5	4	6	0	196	2	0	198	0	0	0	0	0	4	368	372
04:30 PM	3	181	0	0	184	7	0	7	5	14	0	186	1	0	187	0	0	0	0	0	5	385	390
04:45 PM	4	173	0	0	177	4	0	9	8	13	1	176	2	0	179	0	0	0	0	0	8	369	377
Total	11	688	0	0	699	22	0	30	26	52	2	748	10	0	760	0	0	0	0	0	26	1511	1537
05:00 PM	1	141	0	0	142	5	0	6	6	11	0	224	2	0	226	0	0	0	0	0	6	379	385
05:15 PM	1	157	0	0	158	3	0	5	2	8	0	223	2	1	225	0	0	0	0	0	3	391	394
05:30 PM	2	209	0	0	211	1	0	4	4	5	0	205	0	0	205	0	0	0	0	0	4	421	425
05:45 PM	0	185	0	0	185	3	0	3	3	6	0	133	3	3	136	0	0	0	0	0	6	327	333
Total	4	692	0	0	696	12	0	18	15	30	0	785	7	4	792	0	0	0	0	0	19	1518	1537
Grand Total	15	1380	0	0	1395	34	0	48	41	82	2	1533	17	4	1552	0	0	0	0	0	45	3029	3074
Apprch %	1.1	98.9	0	0	41.5	0	58.5	0	1.6	2.7	0.1	98.8	1.1		51.2	0	0	0	0	0	1.5	98.5	
Total %	0.5	45.6	0	0	46.1	1.1	0	1.6			0.1	50.6	0.6			0	0	0	0				

Start Time	Iowa Avenue Southbound					West Citrus Street Westbound					Iowa Avenue Northbound					West Citrus Street Eastbound								
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total	
04:45 PM	4	173	0	0	177	4	0	9	9	13	1	176	2	0	179	0	0	0	0	0	0	0	0	369
05:00 PM	1	141	0	0	142	5	0	6	6	11	0	224	2	0	226	0	0	0	0	0	0	0	0	379
05:15 PM	1	157	0	0	158	3	0	5	2	8	0	223	2	1	225	0	0	0	0	0	3	391	394	
05:30 PM	2	209	0	0	211	1	0	4	4	5	0	205	0	0	205	0	0	0	0	0	4	421	425	
05:45 PM	0	185	0	0	185	3	0	3	3	6	0	133	3	3	136	0	0	0	0	0	6	327	333	
Total	8	680	0	0	688	13	0	24	24	37	1	828	6	6	835	0	0	0	0	0	0	0	0	1560
% App. Total	1.2	98.8	0	0	41.5	0	58.5	0	1.6	2.7	0.1	98.8	1.1		51.2	0	0	0	0	0	1.5	98.5		
PHF	.500	.813	.000	.815	.667	.712	.250	.924	.750	.924	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.926	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 04:45 PM

07/26/21

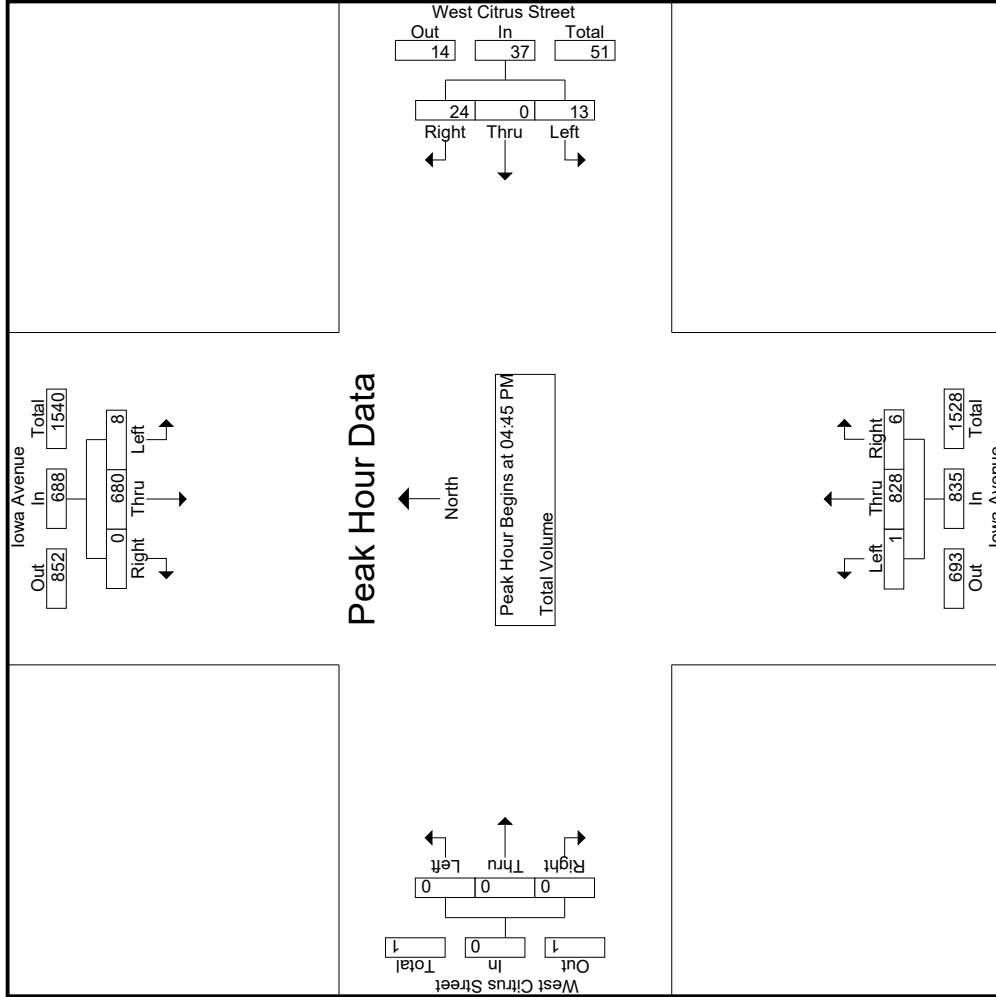
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 150 N. Iowa Avenue
 East West Citrus Street
 Weather: Clear

File Name : 04_RIV_Iowa_W Citrus PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

Page 163 of 430

Counts Unlimited
 PO Box 1178
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 (951) 268-6268

City of Riverside
 N/S Iowa Avenue
 E/W West Citrus Street
 Weather: Clear

File Name : 04_RIV_Iowa_W Citrus PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Iowa Avenue Southbound			West Citrus Street Westbound			Iowa Avenue Northbound			West Citrus Street Eastbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1	Peak Hour for Each Approach Begins at:											
04:00 PM	3	171	0	10	0	9	19	1	176	2	179	0
+0 mins.	1	163	0	1	0	5	6	0	224	2	226	0
+15 mins.	3	181	0	7	0	7	14	0	223	2	225	0
+30 mins.	4	173	0	4	0	9	13	0	205	0	205	0
+45 mins.	11	688	0	22	0	30	52	1	828	6	835	0
Total Volume	1.6	98.4	0	42.3	0	57.7	68.4	0.1	99.2	0.7	92.4	0
% App. Total	.688	.950	.000	.550	.000	.833	.684	.250	.924	.750	.924	.000
PHF												

Location: Riverside
 N/S: Iowa Avenue
 E/W: West Citrus Street



Date: 2/25/2020
 Day: Tuesday

PEDESTRIANS

	North Leg Iowa Avenue	East Leg West Citrus Street	South Leg Iowa Avenue	West Leg West Citrus Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	1	0	0	1
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	1	0	0	1
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	2	0	0	2

	North Leg Iowa Avenue	East Leg West Citrus Street	South Leg Iowa Avenue	West Leg West Citrus Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	2	2	0	0	4
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	3	0	0	3
TOTAL VOLUMES:	2	5	0	0	7

Location: Riverside
 N/S: Iowa Avenue
 E/W: West Citrus Street



Date: 2/25/2020
 Day: Tuesday

BICYCLES

	Southbound Iowa Avenue			Westbound West Citrus Street			Northbound Iowa Avenue			Eastbound West Citrus Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	1	1	0	0	0	0	0	0	0	0	0	0	2

	Southbound Iowa Avenue			Westbound West Citrus Street			Northbound Iowa Avenue			Eastbound West Citrus Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	2	0	0	0	0	0	1	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:15 PM	0	2	0	0	0	0	0	1	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	5	0	0	0	0	0	5	0	0	0	0	10

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 (951) 268-6268

City of Riverside
 N/S: Iowa Avenue
 E/W: East Citrus Street
 Weather: Clear

File Name : 05_RIV_Iowa_E Citrus AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

Groups Printed- Total Volume

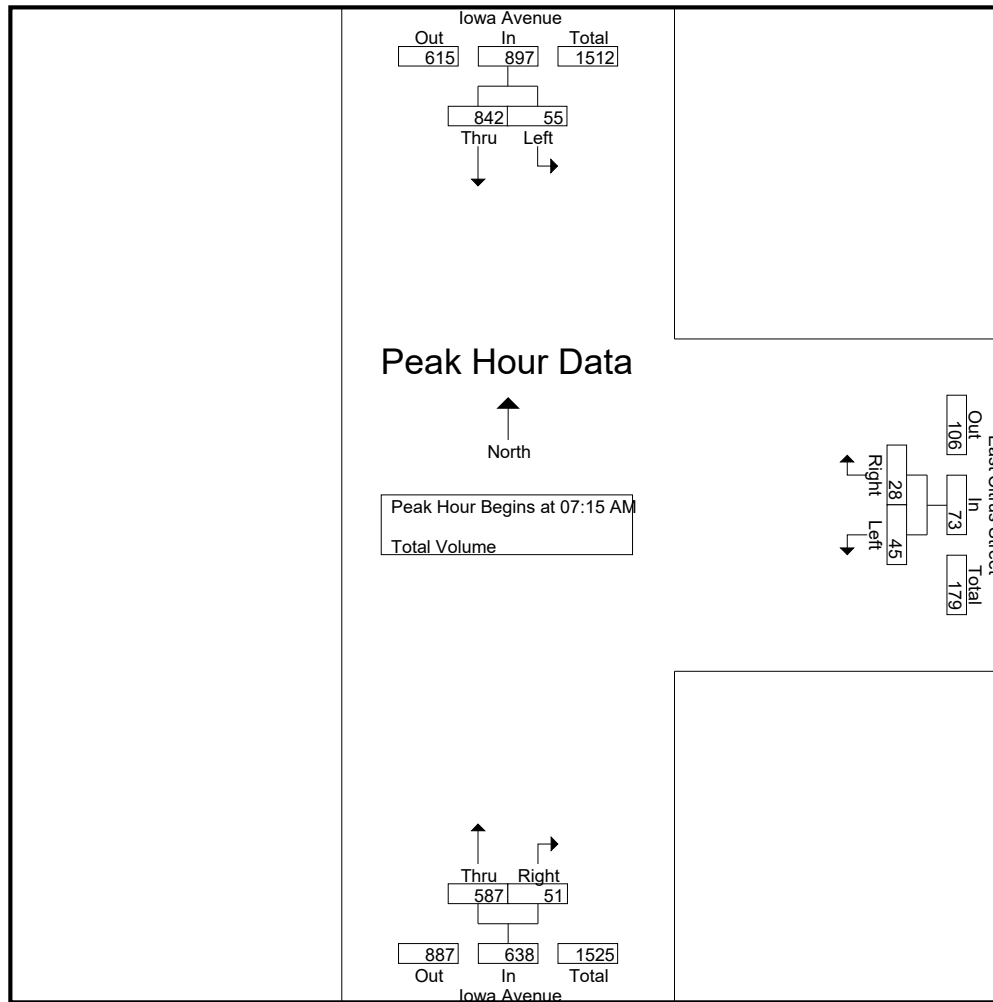
Start Time	Iowa Avenue Southbound				East Citrus Street Westbound				Iowa Avenue Northbound				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	RTOR	App. Total	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total			
07:00 AM	8	166	0	174	25	12	8	37	107	11	2	118	10	329	339
07:15 AM	14	173	0	187	16	10	6	26	147	13	1	160	7	373	380
07:30 AM	14	241	0	255	15	7	6	22	148	13	1	161	7	438	445
07:45 AM	20	234	0	254	9	5	5	14	137	13	2	150	7	418	425
Total	56	814	0	870	65	34	25	99	539	50	6	589	31	1558	1589
08:00 AM	7	194	0	201	5	6	6	11	155	12	0	167	6	379	385
08:15 AM	5	143	0	148	5	4	3	9	184	14	0	198	3	355	358
08:30 AM	5	165	0	170	6	5	4	11	196	7	2	203	6	384	390
08:45 AM	5	165	0	170	6	4	4	10	185	11	0	196	4	376	380
Total	22	667	0	689	22	19	17	41	720	44	2	764	19	1494	1513
Grand Total	78	1481	0	1559	87	53	42	140	1259	94	8	1353	50	3052	3102
Apprch %	5	95			62.1	37.9			93.1	6.9					
Total %	2.6	48.5		51.1	2.9	1.7		4.6	41.3	3.1		44.3	1.6	98.4	

Start Time	Iowa Avenue Southbound			East Citrus Street Westbound			Iowa Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. 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	14	173	187	16	10	26	147	13	160	373
07:30 AM	14	241	255	15	7	22	148	13	161	438
07:45 AM	20	234	254	9	5	14	137	13	150	418
08:00 AM	7	194	201	5	6	11	155	12	167	379
Total Volume	55	842	897	45	28	73	587	51	638	1608
% App. Total	6.1	93.9		61.6	38.4		92	8		
PHF	.688	.873	.879	.703	.700	.702	.947	.981	.955	.918

Counts Unlimited
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City of Riverside
 N/S: Iowa Avenue
 E/W: East Citrus Street
 Weather: Clear

File Name : 05_RIV_Iowa_E Citrus AM
 Site Code : 05120123
 Start Date : 2/25/2020
 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			08:00 AM		
+0 mins.	14	173	187	25	12	37	155	12	167
+15 mins.	14	241	255	16	10	26	184	14	198
+30 mins.	20	234	254	15	7	22	196	7	203
+45 mins.	7	194	201	9	5	14	185	11	196
Total Volume	55	842	897	65	34	99	720	44	764
% App. Total	6.1	93.9		65.7	34.3		94.2	5.8	
PHF	.688	.873	.879	.650	.708	.669	.918	.786	.941

Counts Unlimited
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 (951) 268-6268

City of Riverside
 N/S: Iowa Avenue
 E/W: East Citrus Street
 Weather: Clear

File Name : 05_RIV_Iowa_E Citrus PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

Groups Printed- Total Volume

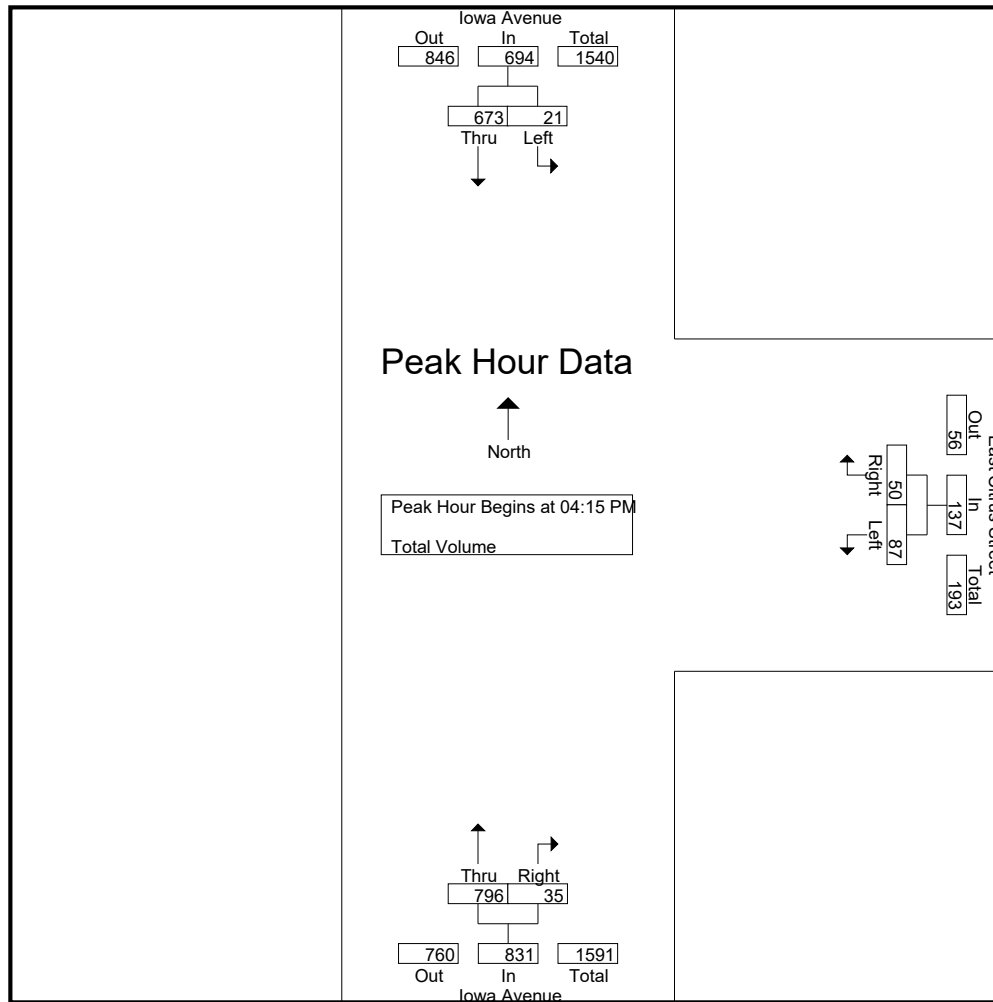
Start Time	Iowa Avenue Southbound				East Citrus Street Westbound				Iowa Avenue Northbound				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	RTOR	App. Total	Left	Right	RTOR	App. Total	Thru	Right	RTOR	App. Total			
04:00 PM	5	174	0	179	21	14	10	35	184	9	3	193	13	407	420
04:15 PM	7	160	0	167	20	6	6	26	199	13	0	212	6	405	411
04:30 PM	5	187	0	192	17	15	11	32	191	8	2	199	13	423	436
04:45 PM	4	178	0	182	30	15	10	45	159	2	0	161	10	388	398
Total	21	699	0	720	88	50	37	138	733	32	5	765	42	1623	1665
05:00 PM	5	148	0	153	20	14	10	34	247	12	4	259	14	446	460
05:15 PM	2	161	0	163	7	10	6	17	190	7	1	197	7	377	384
05:30 PM	2	204	0	206	8	7	5	15	202	4	0	206	5	427	432
05:45 PM	4	184	0	188	9	8	7	17	130	8	0	138	7	343	350
Total	13	697	0	710	44	39	28	83	769	31	5	800	33	1593	1626
Grand Total	34	1396	0	1430	132	89	65	221	1502	63	10	1565	75	3216	3291
Apprch %	2.4	97.6			59.7	40.3			96	4					
Total %	1.1	43.4		44.5	4.1	2.8		6.9	46.7	2		48.7	2.3	97.7	

Start Time	Iowa Avenue Southbound			East Citrus Street Westbound			Iowa Avenue Northbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	7	160	167	20	6	26	199	13	212	405
04:30 PM	5	187	192	17	15	32	191	8	199	423
04:45 PM	4	178	182	30	15	45	159	2	161	388
05:00 PM	5	148	153	20	14	34	247	12	259	446
Total Volume	21	673	694	87	50	137	796	35	831	1662
% App. Total	3	97		63.5	36.5		95.8	4.2		
PHF	.750	.900	.904	.725	.833	.761	.806	.673	.802	.932

Counts Unlimited
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City of Riverside
 N/S: Iowa Avenue
 E/W: East Citrus Street
 Weather: Clear

File Name : 05_RIV_Iowa_E Citrus PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:15 PM		
+0 mins.	5	174	179	21	14	35	199	13	212
+15 mins.	7	160	167	20	6	26	191	8	199
+30 mins.	5	187	192	17	15	32	159	2	161
+45 mins.	4	178	182	30	15	45	247	12	259
Total Volume	21	699	720	88	50	138	796	35	831
% App. Total	2.9	97.1		63.8	36.2		95.8	4.2	
PHF	.750	.934	.938	.733	.833	.767	.806	.673	.802

Location: Riverside
 N/S: Iowa Avenue
 E/W: East Citrus Street



Date: 2/25/2020
 Day: Tuesday

PEDESTRIANS

	North Leg Iowa Avenue	East Leg East Citrus Street	South Leg Iowa Avenue	West Leg Dead End	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	1	0	0	1
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	0	0
8:00 AM	0	1	0	0	1
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	2	0	0	2

	North Leg Iowa Avenue	East Leg East Citrus Street	South Leg Iowa Avenue	West Leg Dead End	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	2	0	0	2
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0
5:45 PM	0	3	0	0	3
TOTAL VOLUMES:	0	5	0	0	5

Location: Riverside
 N/S: Iowa Avenue
 E/W: East Citrus Street



Date: 2/25/2020
 Day: Tuesday

BICYCLES

	Southbound Iowa Avenue			Westbound East Citrus Street			Northbound Iowa Avenue			Eastbound Dead End			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	0	0	0	0	0	0	0	0	1

	Southbound Iowa Avenue			Westbound East Citrus Street			Northbound Iowa Avenue			Eastbound Dead End			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	2	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
4:30 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
4:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:15 PM	0	2	0	0	0	0	0	1	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	5	0	2	0	0	0	5	0	0	0	0	12

Counts Unlimited
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 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N.S. Iowa Avenue
 E.W. Palmyrita Avenue
 Weather: Clear

File Name : 06_RV_Iowa_Pal_AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound					Palmyrita Avenue Westbound					Iowa Avenue Northbound					Palmyrita Avenue Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	42	151	12	3	205	40	11	12	7	63	5	115	30	15	150	7	15	1	1	23	26	441	467
07:15 AM	22	161	6	2	189	86	9	14	9	109	5	131	46	19	182	5	15	4	1	24	31	504	535
07:30 AM	29	212	7	2	248	87	27	11	5	125	10	151	50	21	211	2	8	9	8	19	36	603	639
07:45 AM	31	214	4	4	249	70	18	9	6	97	7	140	55	24	202	3	19	7	3	29	37	577	614
Total	124	738	29	11	891	283	65	46	27	394	27	537	181	79	745	17	57	21	13	95	130	2125	2255
08:00 AM	33	151	8	1	192	57	8	11	6	76	5	145	44	14	194	3	13	3	1	19	22	481	503
08:15 AM	25	129	2	2	156	33	4	10	10	47	7	186	42	14	235	3	7	1	1	11	27	449	476
08:30 AM	24	139	6	3	169	52	7	20	10	79	5	180	37	17	222	3	15	4	4	22	34	492	526
08:45 AM	29	129	4	3	162	50	8	8	6	66	9	185	43	19	237	5	10	2	2	17	30	482	512
Total	111	548	20	9	679	192	27	49	32	268	26	696	166	64	888	14	45	10	8	69	113	1904	2017
Grand Total	235	1286	49	20	1570	475	92	95	59	662	53	1233	347	143	1633	31	102	31	21	164	243	4029	4272
Apprch %	15	81.9	3.1			71.8	13.9	14.4		16.4	3.2	75.5	21.2		18.9	62.2	18.9		4.1		5.7	94.3	
Total %	5.8	31.9	1.2		39	11.8	2.3	2.4			1.3	30.6	8.6		0.8	2.5	0.8						

Start Time	Iowa Avenue Southbound					Palmyrita Avenue Westbound					Iowa Avenue Northbound					Palmyrita Avenue Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:15 AM	22	161			6	189	86	9	14	109	5	131	46		182	5	15	4		24			504
07:30 AM	29	212	7		7	248	87	27	11	125	10	151	50		211	2	8	9		19			603
07:45 AM	31	214	4		4	249	70	18	9	97	7	140	55		202	3	19	7		29			577
08:00 AM	33	151	8		8	192	57	11	6	76	5	145	44		194	3	13	3		19			481
Total Volume	115	738	25		25	878	300	62	45	407	27	567	195		789	13	55	23		91			2165
% App. Total	13.1	84.1	2.8		2.8	73.7	15.2	11.1		11.1	3.4	71.9	24.7		14.3	60.4	25.3						
PHF	.871	.862	.781		.882	.862	.574	.804		.814	.675	.939	.886		.935	.650	.724	.639		.784			.898

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

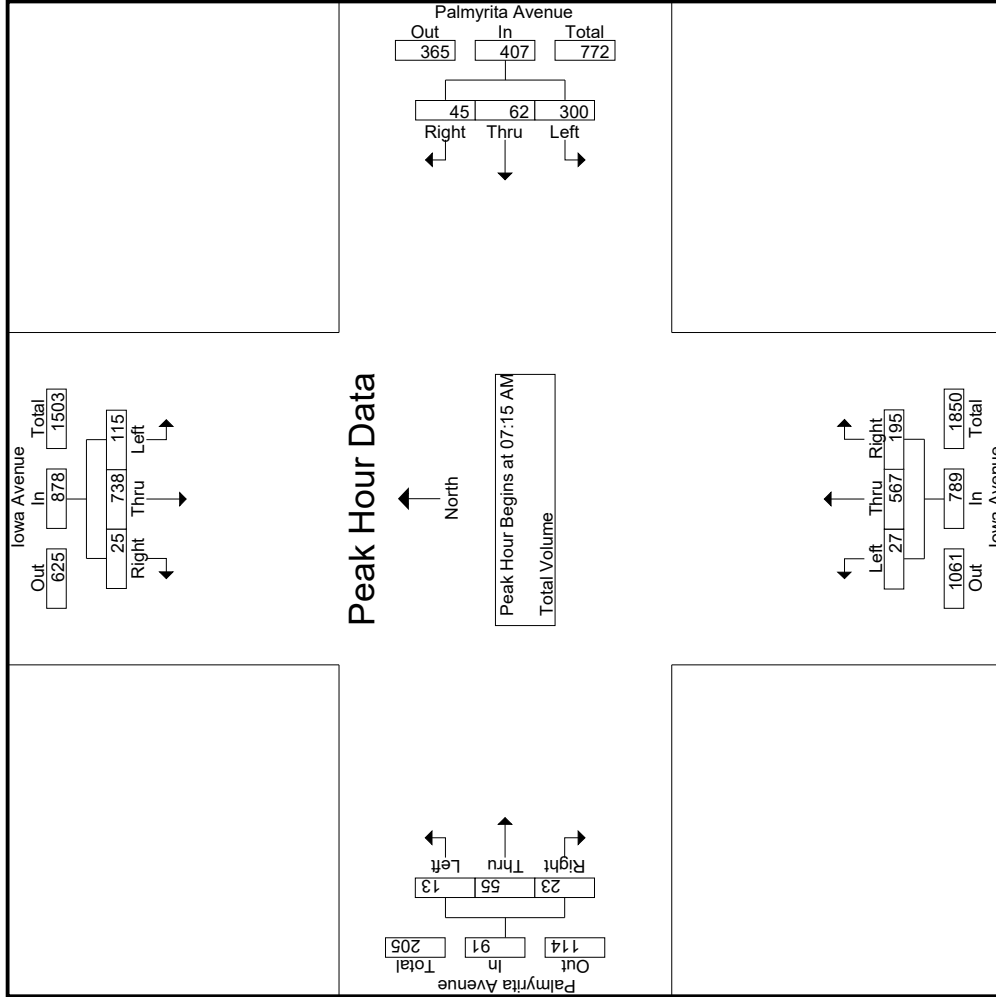
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S Iowa Avenue
 E/W Palmyrita Avenue
 Weather: Clear

File Name : 06_RV_Iowa_Pal_AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

Counts Unlimited
 PO Box 1178
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City of Riverside
 N/S Iowa Avenue
 E/W Palmyrita Avenue
 Weather: Clear

File Name : 06_RV_Iowa_Pal_AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Iowa Avenue Southbound			Palmyrita Avenue Westbound			Iowa Avenue Northbound			Palmyrita Avenue Eastbound			Int. Total		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		App. Total	App. Total
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			07:15 AM			08:00 AM			07:00 AM					
+0 mins.	42	151	12	86	9	14	109	5	145	44	194	7	15	1	23
+15 mins.	22	161	6	87	27	11	125	7	186	42	235	5	15	4	24
+30 mins.	29	212	7	70	18	9	97	5	180	37	222	2	8	9	19
+45 mins.	31	214	4	57	8	11	76	9	185	43	237	3	19	7	29
Total Volume	124	738	29	300	62	45	407	26	696	166	888	17	57	21	95
% App. Total	13.9	82.8	3.3	73.7	15.2	11.1	81.4	2.9	78.4	18.7	93.7	17.9	60	22.1	81.9
PHF	.738	.862	.604	.862	.574	.804	.814	.722	.935	.943	.937	.607	.750	.583	.819

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N.S. Iowa Avenue
 E.W. Palmyrita Avenue
 Weather: Clear

File Name : 06_RV_Iowa_Pal_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound					Palmyrita Avenue Westbound					Iowa Avenue Northbound					Palmyrita Avenue Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	10	200	6	2	216	81	19	28	10	128	17	149	49	22	215	4	2	11	8	17	42	576	618
04:15 PM	14	157	7	3	178	64	11	34	21	109	11	168	35	13	214	6	9	7	3	22	40	523	563
04:30 PM	12	186	8	3	206	81	17	39	21	137	15	154	47	17	216	3	6	5	1	14	42	573	615
04:45 PM	13	189	9	3	211	67	10	16	12	93	5	143	41	18	189	2	3	5	4	10	37	503	540
Total	49	732	30	11	811	293	57	117	64	467	48	614	172	70	834	15	20	28	16	63	161	2175	2336
05:00 PM	6	153	10	4	169	97	29	27	15	153	26	228	42	17	296	3	4	12	8	19	44	637	681
05:15 PM	15	160	3	3	178	64	9	17	14	90	6	178	61	24	245	7	5	5	4	17	45	530	575
05:30 PM	10	204	1	0	215	98	13	27	16	138	14	163	60	16	237	4	8	2	1	14	33	604	637
05:45 PM	11	186	2	0	199	45	2	10	10	57	8	127	61	20	196	4	9	2	2	15	32	467	499
Total	42	703	16	7	761	304	53	81	55	438	54	696	224	77	974	18	26	21	15	65	154	2238	2392
Grand Total	91	1435	46	18	1572	597	110	198	119	905	102	1310	396	147	1808	33	46	49	31	128	315	4413	4728
Apprch %	5.8	91.3	2.9			66	12.2	21.9		20.5	5.6	72.5	21.9		41	25.8	35.9	38.3		2.9	6.7	93.3	
Total %	2.1	32.5	1		35.6	13.5	2.5	4.5			2.3	29.7	9			0.7	1	1.1					

Start Time	Iowa Avenue Southbound					Palmyrita Avenue Westbound					Iowa Avenue Northbound					Palmyrita Avenue Eastbound									
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total
04:45 PM	13	189	9		211	67	10	16		93	5	143	41		189	2	3	5		10					503
05:00 PM	6	153	10		169	97	29	27		153	26	228	42		296	3	4	12		19					637
05:15 PM	15	160	3		178	64	9	17		90	6	178	61		245	7	5	5		17					530
05:30 PM	10	204	1		215	98	13	27		138	14	163	60		237	4	8	2		14					604
Total Volume	44	706	23		773	326	61	87		474	51	712	204		967	16	20	24		60					2274
% App. Total	5.7	91.3	3		35.6	68.8	12.9	18.4		20.5	5.3	73.6	21.1		41	26.7	33.3	40		2.9					.892
PHF	.733	.865	.575		.899	.832	.526	.806		.775	.490	.781	.836		.817	.571	.625	.500		.789					

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 04:45 PM

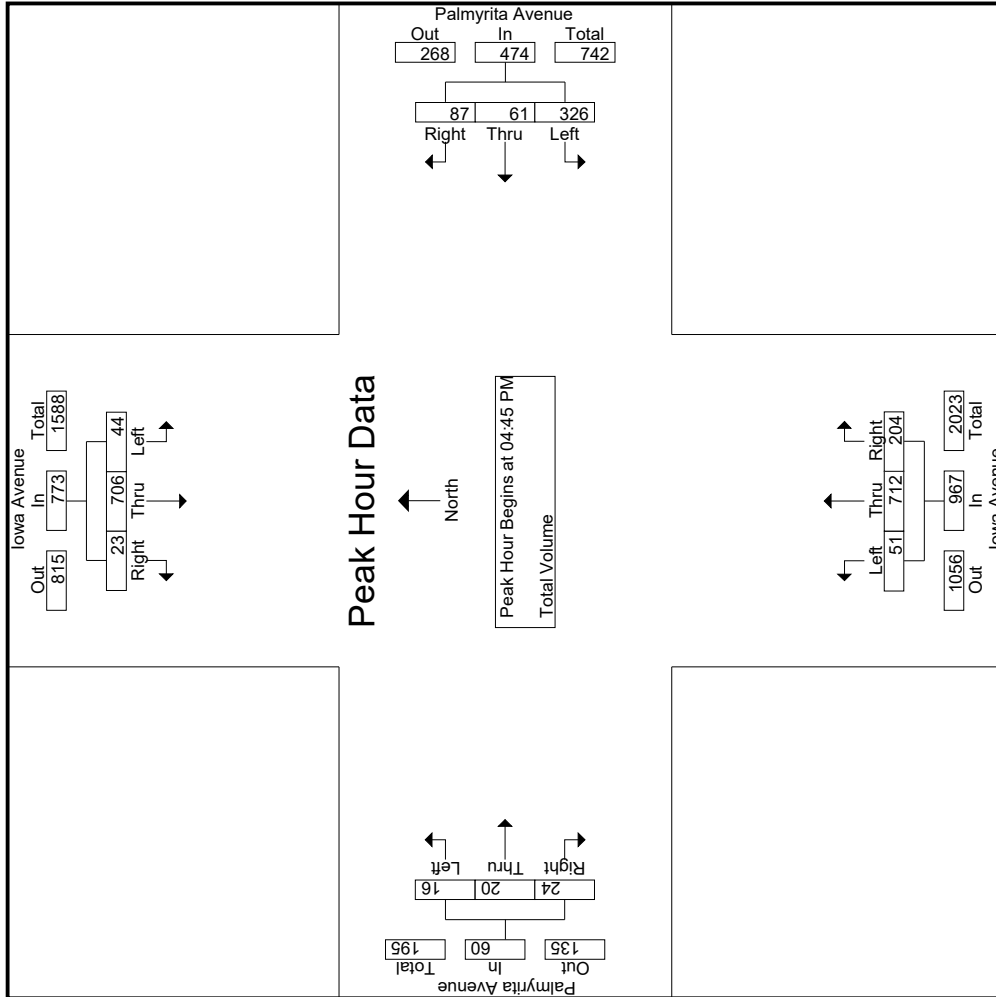
Counts Unlimited
 PO Box 1178
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City of Riverside
 N.S. Iowa Avenue
 E.W. Palmyrita Avenue
 Weather: Clear

File Name : 06_RV_Iowa_Pal_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

Counts Unlimited
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City of Riverside
 N/S Iowa Avenue
 E/W Palmyrita Avenue
 Weather: Clear

File Name : 06_RV_Iowa_Pal_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Iowa Avenue Southbound			Palmyrita Avenue Westbound			Iowa Avenue Northbound			Palmyrita Avenue Eastbound			Int. Total	
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		App. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1														
Peak Hour for Each Approach Begins at:														
	04:00 PM			04:15 PM			05:00 PM			04:15 PM				
+0 mins.	10	200	6	64	11	34	109	228	42	296	6	9	7	22
+15 mins.	14	157	7	81	17	39	137	178	61	245	3	6	5	14
+30 mins.	12	186	8	67	10	16	93	163	60	237	2	3	5	10
+45 mins.	13	189	9	97	29	27	153	127	61	196	3	4	12	19
Total Volume	49	732	30	309	67	116	492	696	224	974	14	22	29	65
% App. Total	6	90.3	3.7	62.8	13.6	23.6	80.4	71.5	23	21.5	33.8	44.6		
PHF	.875	.915	.833	.796	.578	.744	.804	.763	.918	.583	.611	.604		.739

Location: Riverside
 N/S: Iowa Avenue
 E/W: Palmyrita Avenue



Date: 2/25/2020
 Day: Tuesday

PEDESTRIANS

	North Leg Iowa Avenue	East Leg Palmyrita Avenue	South Leg Iowa Avenue	West Leg Palmyrita Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	1	0	0	1
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	1	1
7:45 AM	0	0	0	1	1
8:00 AM	0	1	0	0	1
8:15 AM	0	0	0	0	0
8:30 AM	0	0	1	2	3
8:45 AM	1	0	0	0	1
TOTAL VOLUMES:	1	2	1	4	8

	North Leg Iowa Avenue	East Leg Palmyrita Avenue	South Leg Iowa Avenue	West Leg Palmyrita Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	2	1	3
4:15 PM	1	0	0	1	2
4:30 PM	0	4	0	2	6
4:45 PM	0	4	0	2	6
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	2	2
5:45 PM	1	1	1	1	4
TOTAL VOLUMES:	2	9	3	9	23

Location: Riverside
 N/S: Iowa Avenue
 E/W: Palmyrita Avenue



Date: 2/25/2020
 Day: Tuesday

BICYCLES

	Southbound Iowa Avenue			Westbound Palmyrita Avenue			Northbound Iowa Avenue			Eastbound Palmyrita Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	0	1	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	1	0	0	0	0	0	1	0	0	0	0	2

	Southbound Iowa Avenue			Westbound Palmyrita Avenue			Northbound Iowa Avenue			Eastbound Palmyrita Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
4:45 PM	0	2	0	0	0	0	0	0	1	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:15 PM	0	2	0	0	0	0	0	1	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	6	0	0	0	1	0	4	1	0	0	0	12

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City of Riverside
 N.S. Iowa Avenue
 E.W. Columbia Avenue
 Weather: Clear

File Name : 07_RIV_Iowa_Col AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound					Columbia Avenue Westbound					Iowa Avenue Northbound					Columbia Avenue Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	11	135	46	23	192	13	32	5	5	50	40	145	21	8	206	31	46	50	27	127	63	575	638
07:15 AM	5	201	39	19	245	23	41	7	5	71	53	150	18	10	221	34	46	62	32	142	66	679	745
07:30 AM	15	237	33	19	285	20	34	9	5	63	41	176	15	8	232	38	48	60	27	146	59	726	785
07:45 AM	22	224	38	21	284	14	29	10	7	53	49	185	35	19	269	34	59	85	41	178	88	784	872
Total	53	797	156	82	1006	70	136	31	22	237	183	656	89	45	928	137	199	257	127	593	276	2764	3040
08:00 AM	18	160	41	12	219	23	24	6	3	53	68	185	32	16	285	38	46	43	17	127	48	684	732
08:15 AM	10	127	23	11	160	21	32	4	2	57	62	193	27	11	282	49	48	40	27	137	51	636	687
08:30 AM	23	138	35	14	196	8	30	8	8	46	70	217	24	9	311	19	36	59	33	114	64	667	731
08:45 AM	13	123	23	7	159	10	18	6	5	34	56	182	25	11	263	45	47	44	28	136	51	592	643
Total	64	548	122	44	734	62	104	24	18	190	256	777	108	47	1141	151	177	186	105	514	214	2579	2793
Grand Total	117	1345	278	126	1740	132	240	55	40	427	439	1433	197	92	2069	288	376	443	232	1107	490	5343	5833
Apprch %	6.7	77.3	16		32.6	30.9	56.2	12.9		8	21.2	69.3	9.5		38.7	26	34	40		20.7	8.4	91.6	
Total %	2.2	25.2	5.2			2.5	4.5	1			8.2	26.8	3.7			5.4	7	8.3					

Start Time	Iowa Avenue Southbound					Columbia Avenue Westbound					Iowa Avenue Northbound					Columbia Avenue Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:15 AM	5	201	39		245	23	41	7		71	53	150	18		221	34	46	62		142			679
07:30 AM	15	237	33		285	20	34	9		63	41	176	15		232	38	48	60		146			726
07:45 AM	22	224	38		284	14	29	10		53	49	185	35		269	34	59	85		178			784
08:00 AM	18	160	41		219	23	24	6		53	68	185	32		285	38	46	43		127			684
Total Volume	60	822	151		1033	80	128	32		240	211	696	100		1007	144	199	250		593			2873
% App. Total	5.8	79.6	14.6		32.6	33.3	53.3	13.3		8	21	69.1	9.9		33.6	24.3	33.6	42.2		20.7			
PHF	.682	.867	.921		.906	.870	.780	.800		.845	.776	.941	.714		.883	.947	.843	.735		.833			.916

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

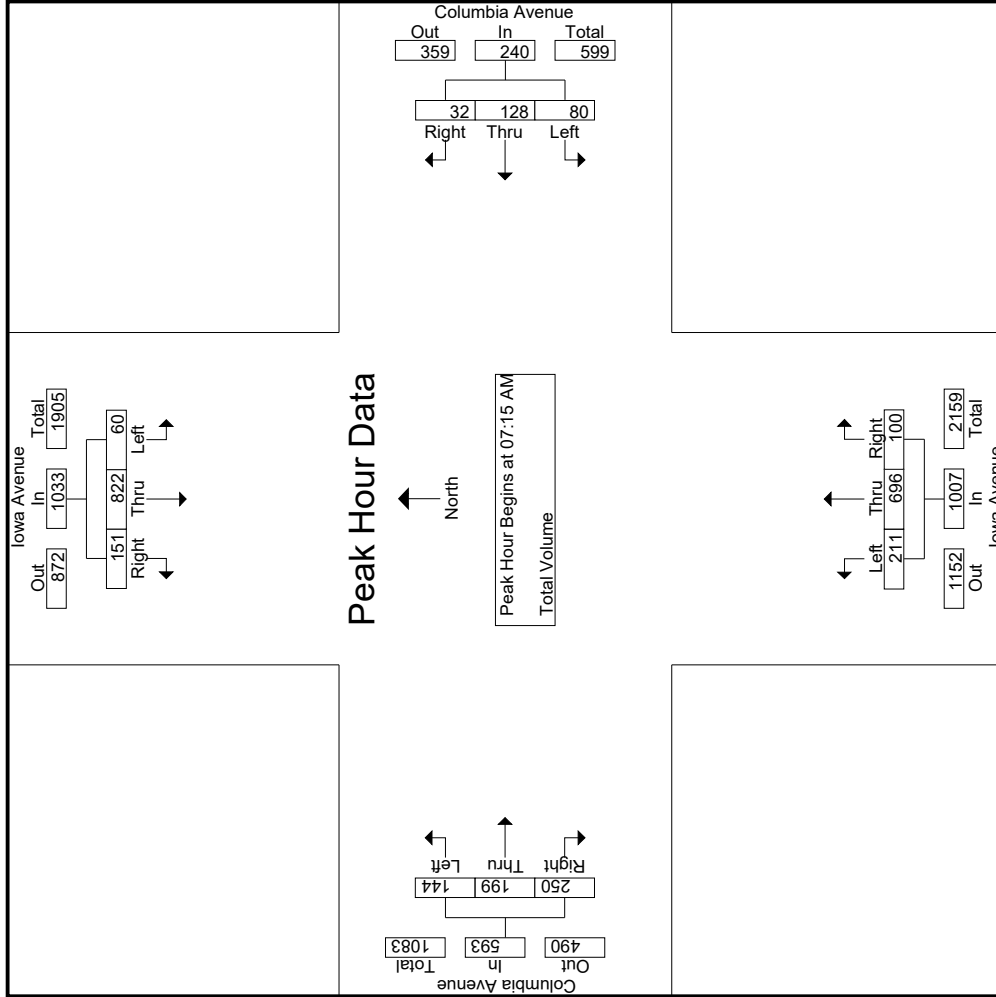
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N.S. Iowa Avenue
 E.W. Columbia Avenue
 Weather: Clear

File Name : 07_RIV_Iowa_Col AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S Iowa Avenue
 E/W Columbia Avenue
 Weather: Clear

File Name : 07_RIV_Iowa_Col AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Iowa Avenue Southbound			Columbia Avenue Westbound			Iowa Avenue Northbound			Columbia Avenue Eastbound			Int. Total		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		App. Total	
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			07:15 AM			07:45 AM			07:00 AM					
+0 mins.	5	201	39	23	41	7	71	49	185	35	269	31	46	50	127
+15 mins.	15	237	33	20	34	9	63	68	185	32	285	34	46	62	142
+30 mins.	22	224	38	14	29	10	53	62	193	27	282	38	48	60	146
+45 mins.	18	160	41	23	24	6	53	70	217	24	311	34	59	85	178
Total Volume	60	822	151	80	128	32	240	249	780	118	1147	137	199	257	593
% App. Total	5.8	79.6	14.6	33.3	53.3	13.3	84.5	21.7	68	10.3	92.2	23.1	33.6	43.3	83.3
PHF	.682	.867	.921	.870	.780	.800	.845	.889	.899	.843	.922	.901	.843	.756	.833

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City of Riverside
 N.S. Iowa Avenue
 E.W. Columbia Avenue
 Weather: Clear

File Name : 07_RIV_Iowa_Col_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound					Columbia Avenue Westbound					Iowa Avenue Northbound					Columbia Avenue Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	7	219	57	21	283	46	82	9	6	137	57	176	21	8	254	42	22	68	24	132	59	806	865
04:15 PM	9	177	34	18	220	41	45	12	7	98	43	152	17	9	212	27	24	51	30	102	64	632	696
04:30 PM	6	230	35	19	271	41	63	9	7	113	55	169	12	4	236	30	39	50	29	119	59	739	798
04:45 PM	9	211	39	18	259	30	46	6	4	82	47	156	26	11	229	27	23	62	37	112	70	682	752
Total	31	837	165	76	1033	158	236	36	24	430	202	653	76	32	931	126	108	231	120	465	252	2859	3111
05:00 PM	5	230	46	22	281	44	74	13	9	131	82	201	23	17	306	27	23	71	41	121	89	839	928
05:15 PM	2	193	32	16	227	30	37	6	3	73	67	192	22	12	281	39	35	44	23	118	54	699	753
05:30 PM	4	249	43	26	296	32	62	10	4	104	49	175	19	5	243	39	46	45	22	130	57	773	830
05:45 PM	7	192	28	11	227	21	36	10	8	67	37	145	13	5	195	35	28	59	35	122	59	611	670
Total	18	864	149	75	1031	127	209	39	24	375	235	713	77	39	1025	140	132	219	121	491	259	2922	3181
Grand Total	49	1701	314	151	2064	285	445	75	48	805	437	1366	153	71	1956	266	240	450	241	956	511	5781	6292
Apprch %	2.4	82.4	15.2		35.7	4.9	55.3	9.3		13.9	7.6	23.6	2.6		33.8	4.6	4.2	7.8		16.5	8.1	91.9	
Total %	0.8	29.4	5.4		35.7	4.9	7.7	1.3		13.9	7.6	23.6	2.6		33.8	4.6	4.2	7.8		16.5	8.1	91.9	

Start Time	Iowa Avenue Southbound					Columbia Avenue Westbound					Iowa Avenue Northbound					Columbia Avenue Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:45 PM	9	211	39		259	30	46	6		82	47	156	26		229	27	23	62		112			682
05:00 PM	5	230	46		281	44	74	13		131	82	201	23		306	27	23	71		121			839
05:15 PM	2	193	32		227	30	37	6		73	67	192	22		281	39	35	44		118			699
05:30 PM	4	249	43		296	32	62	10		104	49	175	19		243	39	46	45		130			773
Total Volume	20	883	160		1063	136	219	35		390	245	724	90		1059	132	127	222		481			2993
% App. Total	1.9	83.1	15.1		35.7	4.9	56.2	9		13.9	7.6	23.6	2.6		33.8	4.6	4.2	7.8		16.5	8.1	91.9	
PHF	.556	.887	.870		.898	.773	.740	.673		.744	.747	.900	.865		.865	.846	.690	.782		.925			.892

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 04:45 PM

07/26/21

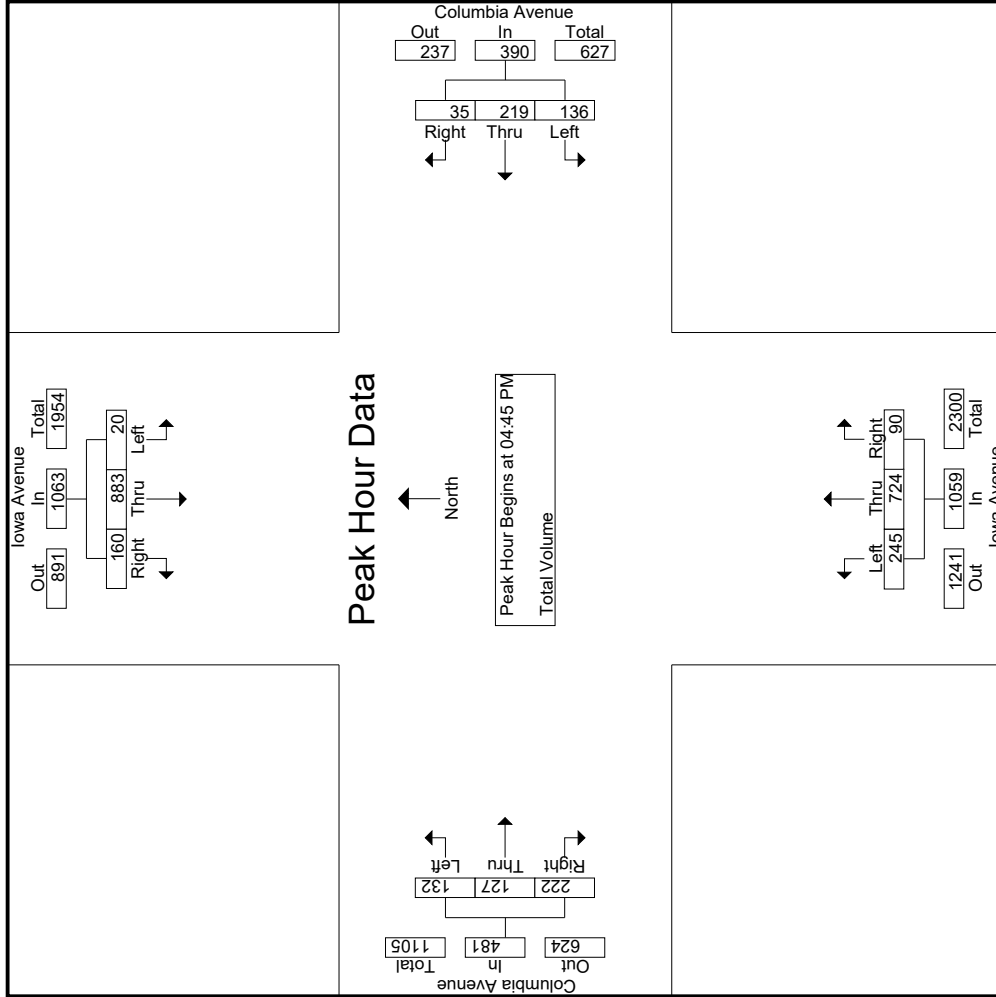
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N.S. Iowa Avenue
 E.W. Columbia Avenue
 Weather: Clear

File Name : 07_RIV_Iowa_Col_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

Page 185 of 430

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City of Riverside
 N/S Iowa Avenue
 E/W Columbia Avenue
 Weather: Clear

File Name : 07_RIV_Iowa_Col_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Iowa Avenue Southbound			Columbia Avenue Westbound			Iowa Avenue Northbound			Columbia Avenue Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Each Approach Begins at:													
04:45 PM	9	211	39	82	9	137	47	156	26	27	23	71	121
+0 mins.	5	230	46	45	12	98	82	201	23	39	35	44	118
+15 mins.	2	193	32	63	9	113	67	192	22	39	46	45	130
+30 mins.	4	249	43	46	6	82	49	175	19	35	28	59	122
+45 mins.	20	883	160	236	36	430	245	724	90	140	132	219	491
Total Volume	1.9	83.1	15.1	54.9	8.4	78.5	23.1	68.4	8.5	28.5	26.9	44.6	94.4
% App. Total	.556	.887	.870	.859	.750	.785	.747	.900	.865	.897	.717	.771	.944
PHF													

Location: Riverside
 N/S: Iowa Avenue
 E/W: Columbia Avenue



Date: 2/25/2020
 Day: Tuesday

PEDESTRIANS

	North Leg Iowa Avenue	East Leg Columbia Avenue	South Leg Iowa Avenue	West Leg Columbia Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	2	1	0	3
7:30 AM	0	0	0	0	0
7:45 AM	0	0	0	2	2
8:00 AM	0	2	0	0	2
8:15 AM	1	1	0	0	2
8:30 AM	0	0	0	0	0
8:45 AM	0	1	0	2	3
TOTAL VOLUMES:	1	6	1	4	12

	North Leg Iowa Avenue	East Leg Columbia Avenue	South Leg Iowa Avenue	West Leg Columbia Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	3	3
4:30 PM	0	0	0	1	1
4:45 PM	0	1	0	1	2
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	0	3	3
5:45 PM	0	2	0	0	2
TOTAL VOLUMES:	0	3	0	8	11

Location: Riverside
 N/S: Iowa Avenue
 E/W: Columbia Avenue



Date: 2/25/2020
 Day: Tuesday

BICYCLES

	Southbound Iowa Avenue			Westbound Columbia Avenue			Northbound Iowa Avenue			Eastbound Columbia Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	1	0	0	0	0	1

	Southbound Iowa Avenue			Westbound Columbia Avenue			Northbound Iowa Avenue			Eastbound Columbia Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	1	0	0	0	0	2	0	0	0	0	4
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	3	0	0	0	0	0	1	0	0	0	0	4
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	6	1	0	0	0	0	5	0	0	0	0	12

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N.S. Iowa Avenue
 E.W. Marlborough Avenue
 Weather: Clear

File Name : 08_RIV_Iowa_Marl AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound					Marlborough Avenue Westbound					Iowa Avenue Northbound					Marlborough Avenue Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	20	152	15	0	187	15	1	8	3	24	1	215	12	5	228	23	8	4	0	35	8	474	482
07:15 AM	48	218	21	5	287	19	3	15	12	37	5	210	13	7	228	31	5	4	2	40	26	592	618
07:30 AM	49	312	47	10	408	15	4	10	8	29	4	230	17	2	251	43	12	8	3	63	23	751	774
07:45 AM	59	261	38	11	358	20	3	12	8	35	9	253	37	11	299	36	11	7	3	54	33	746	779
Total	176	943	121	26	1240	69	11	45	31	125	19	908	79	25	1006	133	36	23	8	192	90	2563	2653
08:00 AM	54	184	28	12	266	23	2	15	9	40	9	242	28	6	279	24	11	7	3	42	30	627	657
08:15 AM	46	207	31	14	284	12	0	12	10	24	8	193	13	7	214	59	5	4	3	68	34	590	624
08:30 AM	47	187	44	12	278	7	4	13	12	24	11	161	18	4	190	52	7	12	6	71	34	563	597
08:45 AM	41	147	34	3	222	11	4	4	3	19	11	167	15	7	193	12	5	4	2	21	15	455	470
Total	188	725	137	41	1050	53	10	44	34	107	39	763	74	24	876	147	28	27	14	202	113	2235	2348
Grand Total	364	1668	258	67	2290	122	21	89	65	232	58	1671	153	49	1882	280	64	50	22	394	203	4798	5001
Approch %	15.9	72.8	11.3			52.6	9.1	38.4		4.8	3.1	88.8	8.1		71.1	16.2	12.7		8.2		4.1	95.9	
Total %	7.6	34.8	5.4		47.7	2.5	0.4	1.9			1.2	34.8	3.2		39.2	5.8	1.3	1					

Start Time	Iowa Avenue Southbound					Marlborough Avenue Westbound					Iowa Avenue Northbound					Marlborough Avenue Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
07:15 AM	48	218	21		287	19	3	15		37	5	210	13		228	31	5	4		40			592
07:30 AM	49	312	47		408	15	4	10		29	4	230	17		251	43	8			63			751
07:45 AM	59	261	38		358	20	3	12		35	9	253	37		299	36	11	7		54			746
08:00 AM	54	184	28		266	23	2	15		40	9	242	28		279	24	11	7		42			627
Total Volume	210	975	134		1319	77	12	52		141	27	935	95		1057	134	39	26		199			2716
% App. Total	15.9	73.9	10.2			54.6	8.5	36.9		4.8	2.6	88.5	9		67.3	19.6	13.1						
PHF	.890	.781	.713		.808	.837	.750	.867		.881	.750	.924	.642		.884	.779	.813			.790			.904

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

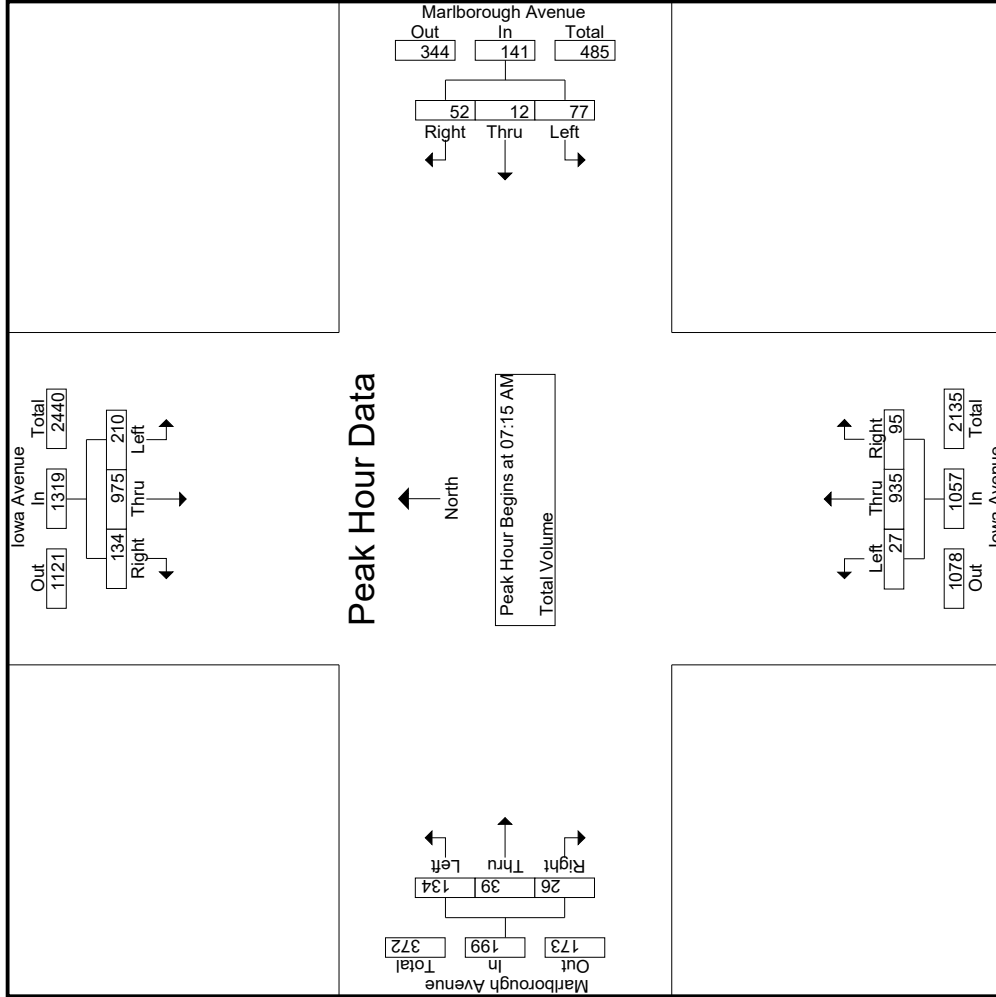
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 150 Iowa Avenue
 E.W. Marlborough Avenue
 Weather: Clear

File Name : 08_RIV_Iowa_Marl AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S Iowa Avenue
 E/W Marlborough Avenue
 Weather: Clear

File Name : 08_RIV_Iowa_Marl AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Iowa Avenue Southbound			Marlborough Avenue Westbound			Iowa Avenue Northbound			Marlborough Avenue Eastbound			Int. Total	
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		App. Total
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			07:15 AM			07:15 AM			07:15 AM			07:45 AM	
+0 mins.	48	218	21	3	15	37	5	210	13	228	11	7	54	
+15 mins.	49	312	47	4	10	29	4	230	17	251	11	7	42	
+30 mins.	59	261	38	3	12	35	9	253	37	299	5	4	68	
+45 mins.	54	184	28	2	15	40	9	242	28	279	7	12	71	
Total Volume	210	975	134	12	52	141	27	935	95	1057	34	30	235	
% App. Total	15.9	73.9	10.2	8.5	36.9	88.1	2.6	88.5	9	88.4	14.5	12.8	62.5	
PHF	.890	.781	.713	.837	.750	.867	.750	.924	.642	.884	.773	.625	.827	

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N.S. Iowa Avenue
 E.W. Marlborough Avenue
 Weather: Clear

File Name : 08_RIV_Iowa_Marl_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound					Marlborough Avenue Westbound					Iowa Avenue Northbound					Marlborough Avenue Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	8	341	19	3	368	46	7	22	15	75	6	173	3	1	182	27	1	9	5	37	24	662	686
04:15 PM	11	315	8	2	334	40	6	25	19	71	5	182	16	4	203	14	2	5	3	21	28	629	657
04:30 PM	7	343	18	6	368	63	5	23	20	91	2	167	8	2	177	22	6	3	2	31	30	667	697
04:45 PM	10	313	9	1	332	35	4	23	22	62	5	161	10	0	176	16	2	7	6	25	29	595	624
Total	36	1312	54	12	1402	184	22	93	76	299	18	683	37	7	738	79	11	24	16	114	111	2553	2664
05:00 PM	10	306	12	7	328	68	11	45	30	124	11	168	9	2	188	22	6	8	3	36	42	676	718
05:15 PM	4	325	15	3	344	56	11	22	17	89	10	215	8	0	233	17	5	8	7	30	27	696	723
05:30 PM	6	356	14	4	376	32	11	24	19	67	7	217	7	2	231	12	2	4	2	18	27	692	719
05:45 PM	6	331	16	5	353	24	5	11	10	40	4	170	9	1	183	10	4	5	5	19	21	595	616
Total	26	1318	57	19	1401	180	38	102	76	320	32	770	33	5	835	61	17	25	17	103	117	2659	2776
Grand Total	62	2630	111	31	2803	364	60	195	152	619	50	1453	70	12	1573	140	28	49	33	217	228	5212	5440
Approch %	2.2	93.8	4		53.8	58.8	9.7	31.5		11.9	3.2	92.4	4.5		30.2	64.5	12.9	22.6		4.2	4.2	95.8	
Total %	1.2	50.5	2.1			7	1.2	3.7			1	27.9	1.3			2.7	0.5	0.9					

Start Time	Iowa Avenue Southbound					Marlborough Avenue Westbound					Iowa Avenue Northbound					Marlborough Avenue Eastbound									
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total
04:45 PM	10	313	9		332	35	4	23		62	5	161	10		176	16	2	7		25	25				595
05:00 PM	10	306	12		328	68	11	45		124	11	168	9		188	22	6	8		36	36				676
05:15 PM	4	325	15		344	56	11	22		89	10	215	8		233	17	5	8		30	30				696
05:30 PM	6	356	14		376	32	11	24		67	7	217	7		231	12	2	4		18	18				692
Total Volume	30	1300	50		1380	191	37	114		342	33	761	34		828	67	15	27		109	109				2659
% App. Total	2.2	94.2	3.6		53.8	55.8	10.8	33.3		11.9	3.2	91.9	4.1		30.2	61.5	13.8	24.8		4.2	4.2				.955
PHF	.750	.913	.833		.918	.702	.841	.633		.690	.750	.877	.850		.888	.761	.625	.844		.757	.757				

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 04:45 PM

07/26/21

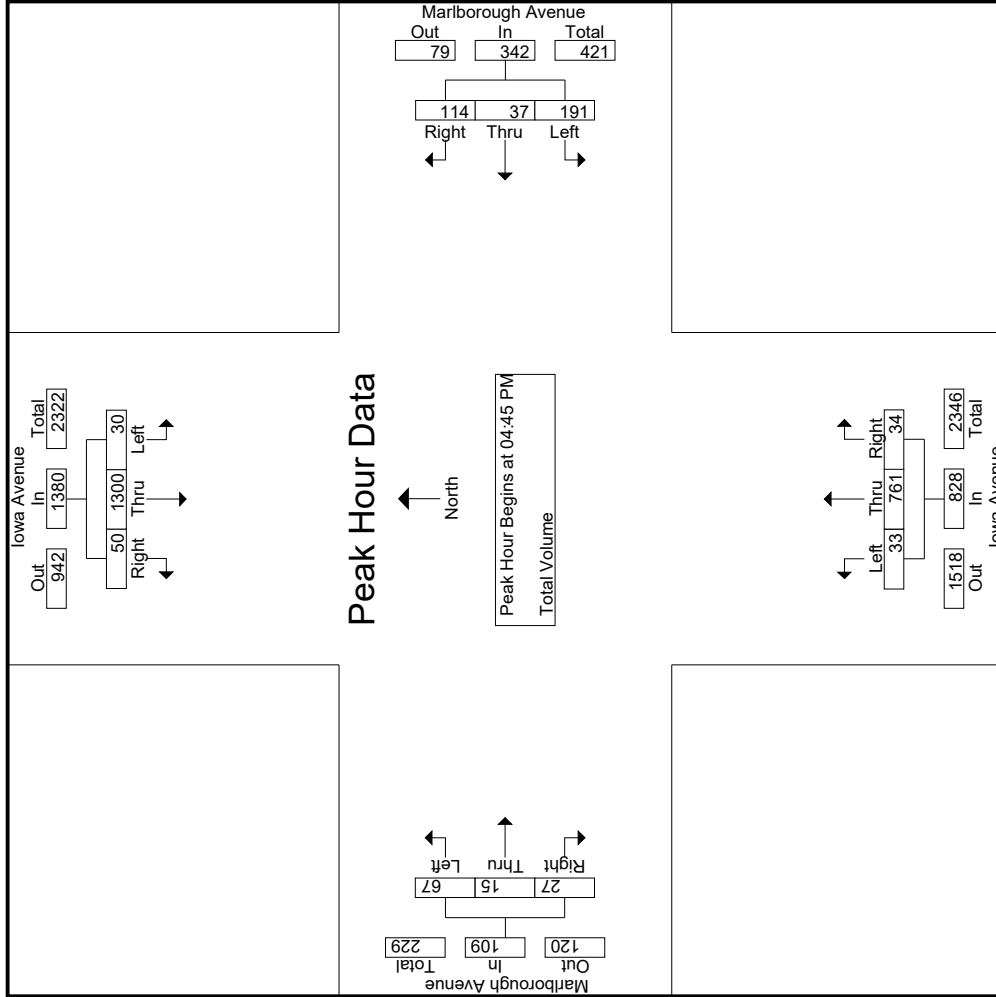
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 150 Iowa Avenue
 E. W. Marlborough Avenue
 Weather: Clear

File Name : 08_RIV_Iowa_Marl_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S Iowa Avenue
 E/W Marlborough Avenue
 Weather: Clear

File Name : 08_RIV_Iowa_Marl_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Iowa Avenue Southbound			Marlborough Avenue Westbound			Iowa Avenue Northbound			Marlborough Avenue Eastbound			Int. Total		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1															
Peak Hour for Each Approach Begins at:															
	04:00 PM			04:30 PM			05:00 PM			04:30 PM					
+0 mins.	8	341	19	63	5	23	91	11	168	9	188	22	6	3	31
+15 mins.	11	315	8	35	4	23	62	10	215	8	233	16	2	7	25
+30 mins.	7	343	18	68	11	45	124	7	217	7	231	22	6	8	36
+45 mins.	10	313	9	56	11	22	89	4	170	9	183	17	5	8	30
Total Volume	36	1312	54	222	31	113	366	32	770	33	835	77	19	26	122
% App. Total	2.6	93.6	3.9	60.7	8.5	30.9	7.38	3.8	92.2	4	8.96	63.1	15.6	21.3	8.47
PHF	.818	.956	.711	.816	.705	.628	.738	.727	.887	.917	.896	.875	.792	.813	.847

Location: Riverside
 N/S: Iowa Avenue
 E/W: Marlborough Avenue



Date: 2/25/2020
 Day: Tuesday

PEDESTRIANS

	North Leg Iowa Avenue	East Leg Marlborough Avenue	South Leg Iowa Avenue	West Leg Marlborough Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	0	0	0	0	0
7:45 AM	1	2	0	1	4
8:00 AM	1	0	0	0	1
8:15 AM	0	0	0	0	0
8:30 AM	1	1	0	0	2
8:45 AM	0	0	0	2	2
TOTAL VOLUMES:	3	3	0	3	9

	North Leg Iowa Avenue	East Leg Marlborough Avenue	South Leg Iowa Avenue	West Leg Marlborough Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	1	1
4:15 PM	0	0	0	3	3
4:30 PM	0	0	0	1	1
4:45 PM	1	1	1	2	5
5:00 PM	1	0	0	0	1
5:15 PM	1	0	0	1	2
5:30 PM	0	0	0	0	0
5:45 PM	0	0	0	1	1
TOTAL VOLUMES:	3	1	1	9	14

Location: Riverside
 N/S: Iowa Avenue
 E/W: Marlborough Avenue



Date: 2/25/2020
 Day: Tuesday

BICYCLES

	Southbound Iowa Avenue			Westbound Marlborough Avenue			Northbound Iowa Avenue			Eastbound Marlborough Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	0	0	0	0	0	0	1	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	2	0	0	0	0	0	0	0	0	0	1	3

	Southbound Iowa Avenue			Westbound Marlborough Avenue			Northbound Iowa Avenue			Eastbound Marlborough Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	2
5:00 PM	0	2	0	0	0	0	0	0	0	0	1	0	3
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	5	1	0	0	1	0	1	0	0	1	0	9

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S Iowa Avenue
 E/W Spruce Street
 Weather: Clear

File Name : 09_RIV_Iowa_Spruce AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound						Spruce Street Westbound						Iowa Avenue Northbound						Spruce Street Eastbound					
	Left	Thru	Right	RTOR	App. Total	Inclu. Total	Left	Thru	Right	RTOR	App. Total	Inclu. Total	Left	Thru	Right	RTOR	App. Total	Inclu. Total	Left	Thru	Right	RTOR	App. Total	Inclu. Total
07:00 AM	19	81	24	15	124	124	17	30	74	43	121	121	6	130	19	7	155	155	36	33	10	6	79	79
07:15 AM	20	176	32	9	228	228	21	41	44	24	106	106	18	193	24	5	235	235	32	35	13	4	80	80
07:30 AM	29	184	46	15	259	259	23	44	55	20	122	122	31	164	28	9	223	223	49	73	35	15	157	157
07:45 AM	36	166	47	25	249	249	28	56	54	13	138	138	37	232	38	22	307	307	73	67	27	19	167	167
Total	104	607	149	64	860	860	89	171	227	100	487	487	92	719	109	43	920	920	190	208	85	44	483	483
08:00 AM	35	96	28	12	159	159	19	43	56	24	118	118	30	250	44	13	324	324	43	47	22	16	112	112
08:15 AM	18	93	27	13	138	138	26	58	65	28	149	149	37	201	30	17	268	268	52	50	19	15	121	121
08:30 AM	15	90	30	21	135	135	22	48	74	36	144	144	20	195	14	9	229	229	65	27	21	16	113	113
08:45 AM	21	115	28	16	164	164	19	46	74	17	139	139	20	151	20	12	191	191	55	46	15	10	116	116
Total	89	394	113	62	596	596	86	195	269	105	550	550	107	797	108	51	1012	1012	215	170	77	57	462	462
Grand Total	193	1001	262	126	1456	1456	175	366	496	205	1037	1037	199	1516	217	94	1932	1932	405	378	162	101	945	945
Apprch %	13.3	68.8	18				16.9	35.3	47.8				10.3	78.5	11.2				42.9	40	17.1			
Total %	3.6	18.6	4.9			27.1	3.3	6.8	9.2		19.3	3.7	28.2	4		36	7.5	7	3		17.6			

Start Time	Iowa Avenue Southbound						Spruce Street Westbound						Iowa Avenue Northbound						Spruce Street Eastbound					
	Left	Thru	Right	RTOR	App. Total	Inclu. Total	Left	Thru	Right	RTOR	App. Total	Inclu. Total	Left	Thru	Right	RTOR	App. Total	Inclu. Total	Left	Thru	Right	RTOR	App. Total	Inclu. Total
07:30 AM	29	184	46		259	259	23	44	55		122	122	31	164	28		223	223	49	73	35		157	157
07:45 AM	36	166	47		249	249	28	56	54		138	138	37	232	38		307	307	73	67	27		167	167
08:00 AM	35	96	28		159	159	19	43	56		118	118	30	250	44		324	324	52	50	19		121	121
08:15 AM	18	93	27		138	138	26	58	65		149	149	37	201	30		268	268	65	27	21		113	113
Total Volume	118	539	148		805	805	96	201	230		527	527	135	847	140		1122	1122	217	237	103		557	557
% App. Total	14.7	67	18.4				18.2	38.1	43.6				12	75.5	12.5				39	42.5	18.5			
PHF	.819	.732	.787		.777	.777	.857	.866	.885		.884	.884	.912	.847	.795		.866	.866	.743	.812	.736		.834	.834

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

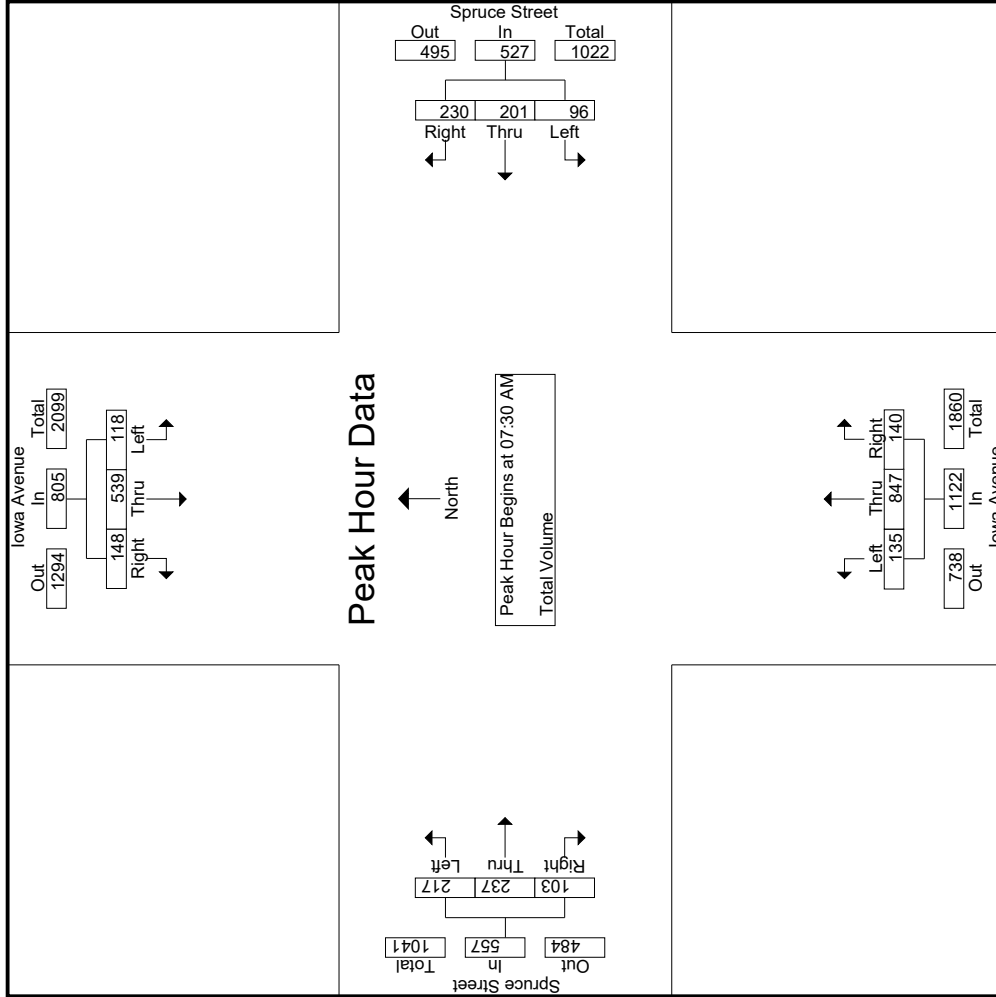
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N.S. Iowa Avenue
 E.W. Spruce Street
 Weather: Clear

File Name : 09_RIV_Iowa_Spruce AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

Page 198 of 430

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S Iowa Avenue
 E/W Spruce Street
 Weather: Clear

File Name : 09_RIV_Iowa_Spruce AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Iowa Avenue Southbound			Spruce Street Westbound			Iowa Avenue Northbound			Spruce Street Eastbound			Int. Total			
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total				
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			08:00 AM			07:45 AM			07:30 AM						
+0 mins.	20	176	32	228	19	43	56	118	37	232	38	307	49	73	35	157
+15 mins.	29	184	46	259	26	58	65	149	30	250	44	324	73	67	27	167
+30 mins.	36	166	47	249	22	48	74	144	37	201	30	268	43	47	22	112
+45 mins.	35	96	28	159	19	46	74	139	20	195	14	229	52	50	19	121
Total Volume	120	622	153	895	86	195	269	550	124	878	126	1128	217	237	103	557
% App. Total	13.4	69.5	17.1	15.6	35.5	48.9	48.9	923	11	77.8	11.2	870	39	42.5	18.5	834
PHF	.833	.845	.814	.864	.827	.841	.909	.923	.838	.878	.716	.870	.743	.812	.736	.834

Counts Unlimited
 PO Box 1178
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City of Riverside
 N/S Iowa Avenue
 E/W Spruce Street
 Weather: Clear

File Name : 09_RIV_Iowa_Spruce_PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

SMF210001

Groups Printed- Total Volume

Start Time	Iowa Avenue Southbound					Spruce Street Westbound					Iowa Avenue Northbound					Spruce Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	72	271	74	27	417	23	39	45	26	107	9	129	22	10	160	33	52	41	19	126	82	810	892
04:15 PM	66	195	52	28	313	24	28	23	13	75	16	130	16	9	162	31	56	36	19	123	69	673	742
04:30 PM	82	269	70	25	421	28	26	24	16	78	16	125	25	7	166	37	71	54	17	162	65	827	892
04:45 PM	82	220	57	32	359	24	31	25	14	80	21	106	17	5	144	35	74	36	13	145	64	728	792
Total	302	955	253	112	1510	99	124	117	69	340	62	490	80	31	632	136	253	167	68	556	280	3038	3318
05:00 PM	75	298	105	42	478	44	51	30	12	125	21	162	27	8	210	23	57	50	14	130	76	943	1019
05:15 PM	83	213	49	22	345	25	35	16	6	76	19	127	14	6	160	24	106	60	21	190	55	771	826
05:30 PM	94	293	68	38	415	37	40	17	11	94	23	143	29	11	195	39	100	61	22	200	82	904	986
05:45 PM	86	199	39	21	324	15	29	26	13	70	20	136	20	8	176	43	105	49	25	197	67	767	834
Total	338	963	261	123	1562	121	155	89	42	365	83	568	90	33	741	129	368	220	82	717	280	3385	3665
Grand Total	640	1918	514	235	3072	220	279	206	111	705	145	1058	170	64	1373	265	621	387	150	1273	560	6423	6983
Approch %	20.8	62.4	16.7		47.8	31.2	39.6	29.2		11	10.6	77.1	12.4		21.4	20.8	48.8	30.4		19.8	8	92	
Total %	10	29.9	8		47.8	3.4	4.3	3.2		11	2.3	16.5	2.6		21.4	4.1	9.7	6		19.8	8	92	

Start Time	Iowa Avenue Southbound					Spruce Street Westbound					Iowa Avenue Northbound					Spruce Street Eastbound							
	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Left	Thru	Right	RTOR	App. Total	Exclu. Total	Inclu. Total	Int. Total
05:00 PM	75	298	105	42	478	44	51	30	12	125	21	162	27	8	210	23	57	50	14	130	76	943	1019
05:15 PM	83	213	49	22	345	25	35	16	6	76	19	127	14	6	160	24	106	60	21	190	55	771	826
05:30 PM	94	293	68	38	415	37	40	17	11	94	23	143	29	11	195	39	100	61	22	200	82	904	986
05:45 PM	86	199	39	21	324	15	29	26	13	70	20	136	20	8	176	43	105	49	25	197	67	767	834
Total Volume	338	963	261	123	1562	121	155	89	42	365	83	568	90	33	741	129	368	220	82	717	280	3385	3665
% App. Total	21.6	61.7	16.7		47.8	31.2	39.6	29.2		11	10.6	77.1	12.4		21.4	20.8	48.8	30.4		19.8	8	92	
PHF	.899	.808	.621		.817	.688	.760	.742		.730	.902	.877	.776		.882	.750	.868	.902		.896		.897	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 05:00 PM

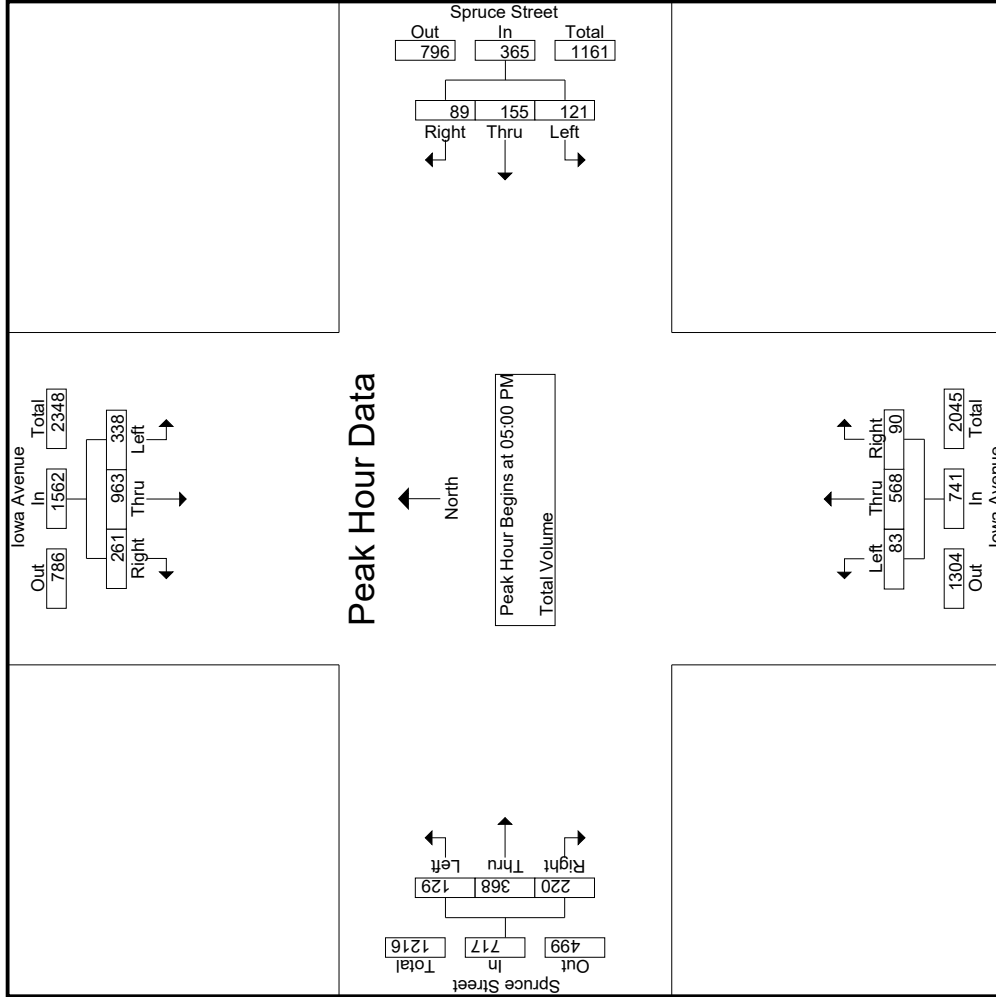
Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

File Name : 09_RIV_Iowa_Spruce PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2

City of Riverside
 NS: Iowa Avenue
 EW: Spruce Street
 Weather: Clear

SMF210001

07/26/21



ADMINISTRATIVE APPROVAL

Page 201 of 430

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S Iowa Avenue
 E/W Spruce Street
 Weather: Clear

File Name : 09_RIV_Iowa_Spruce PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 3

SMF21000

ADMINISTRATIVE APPROVAL

07/26/21

Start Time	Iowa Avenue Southbound			Spruce Street Westbound			Iowa Avenue Northbound			Spruce Street Eastbound			Int. Total	
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		App. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1														
Peak Hour for Each Approach Begins at:														
	04:30 PM			04:45 PM			05:00 PM			05:00 PM				
+0 mins.	82	269	70	24	31	25	80	21	27	27	23	57	50	130
+15 mins.	82	220	57	44	51	30	125	19	127	14	24	106	60	190
+30 mins.	75	298	105	25	35	16	76	23	143	29	39	100	61	200
+45 mins.	83	213	49	37	40	17	94	20	136	20	43	105	49	197
Total Volume	322	1000	281	130	157	88	375	83	568	90	129	368	220	717
% App. Total	20.1	62.4	17.5	34.7	41.9	23.5	75.0	11.2	76.7	12.1	18	51.3	30.7	89.6
PHF	.970	.839	.669	.739	.770	.733	.750	.902	.877	.776	.750	.868	.902	.896

Location: Riverside
 N/S: Iowa Avenue
 E/W: Spruce Street



Date: 2/25/2020
 Day: Tuesday

PEDESTRIANS

	North Leg Iowa Avenue Pedestrians	East Leg Spruce Street Pedestrians	South Leg Iowa Avenue Pedestrians	West Leg Spruce Street Pedestrians	
7:00 AM	0	0	1	1	2
7:15 AM	0	2	1	2	5
7:30 AM	0	0	4	1	5
7:45 AM	1	1	2	1	5
8:00 AM	0	0	1	0	1
8:15 AM	0	0	0	1	1
8:30 AM	0	0	1	1	2
8:45 AM	3	0	2	0	5
TOTAL VOLUMES:	4	3	12	7	26

	North Leg Iowa Avenue Pedestrians	East Leg Spruce Street Pedestrians	South Leg Iowa Avenue Pedestrians	West Leg Spruce Street Pedestrians	
4:00 PM	1	1	1	2	5
4:15 PM	0	1	1	1	3
4:30 PM	3	0	0	0	3
4:45 PM	2	0	3	5	10
5:00 PM	2	0	3	3	8
5:15 PM	0	0	3	0	3
5:30 PM	0	2	2	2	6
5:45 PM	1	0	0	1	2
TOTAL VOLUMES:	9	4	13	14	40

Location: Riverside
 N/S: Iowa Avenue
 E/W: Spruce Street



Date: 2/25/2020
 Day: Tuesday

BICYCLES

	Southbound Iowa Avenue			Westbound Spruce Street			Northbound Iowa Avenue			Eastbound Spruce Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	1	0	0	0	0	0	1	0	0	1	0	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	1	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	0	0	0	1	0	0	0	0	0	2
TOTAL VOLUMES:	0	4	0	0	0	0	1	1	0	0	2	0	8

	Southbound Iowa Avenue			Westbound Spruce Street			Northbound Iowa Avenue			Eastbound Spruce Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	1
4:45 PM	0	0	0	0	0	0	0	1	0	0	0	1	2
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:15 PM	0	0	0	0	2	0	1	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	2	0	1	2	0	1	1	0	1	1	1	10

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S: Garfield Avenue
 E/W: Center Street
 Weather: Clear

File Name : 10_RIV_Garfield_Center AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

Groups Printed- Total Volume

Start Time	Center Street Westbound			Garfield Avenue Northbound			Center Street Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
07:00 AM	4	67	71	15	8	23	34	5	39	133
07:15 AM	4	121	125	17	15	32	81	8	89	246
07:30 AM	4	134	138	33	14	47	66	8	74	259
07:45 AM	5	98	103	16	13	29	47	11	58	190
Total	17	420	437	81	50	131	228	32	260	828
08:00 AM	2	52	54	3	8	11	27	5	32	97
08:15 AM	1	49	50	3	3	6	36	2	38	94
08:30 AM	1	42	43	3	3	6	22	1	23	72
08:45 AM	0	47	47	4	2	6	23	3	26	79
Total	4	190	194	13	16	29	108	11	119	342
Grand Total	21	610	631	94	66	160	336	43	379	1170
Apprch %	3.3	96.7		58.8	41.2		88.7	11.3		
Total %	1.8	52.1	53.9	8	5.6	13.7	28.7	3.7	32.4	

Start Time	Center Street Westbound			Garfield Avenue Northbound			Center Street Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
07:00 AM	4	67	71	15	8	23	34	5	39	133
07:15 AM	4	121	125	17	15	32	81	8	89	246
07:30 AM	4	134	138	33	14	47	66	8	74	259
07:45 AM	5	98	103	16	13	29	47	11	58	190
Total Volume	17	420	437	81	50	131	228	32	260	828
% App. Total	3.9	96.1		61.8	38.2		87.7	12.3		
PHF	.850	.784	.792	.614	.833	.697	.704	.727	.730	.799

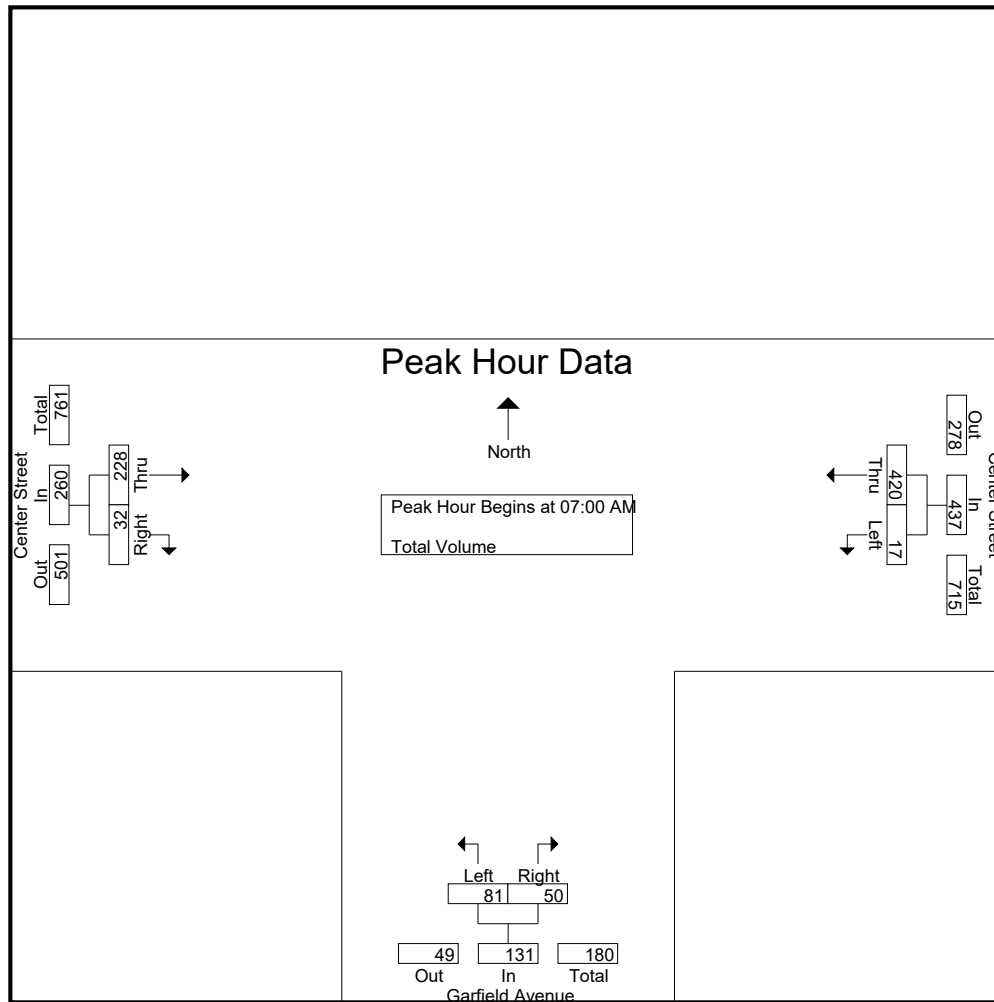
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S: Garfield Avenue
 E/W: Center Street
 Weather: Clear

File Name : 10_RIV_Garfield_Center AM
 Site Code : 05120123
 Start Date : 2/25/2020
 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.	4	67	71	15	8	23	34	5	39
+15 mins.	4	121	125	17	15	32	81	8	89
+30 mins.	4	134	138	33	14	47	66	8	74
+45 mins.	5	98	103	16	13	29	47	11	58
Total Volume	17	420	437	81	50	131	228	32	260
% App. Total	3.9	96.1		61.8	38.2		87.7	12.3	
PHF	.850	.784	.792	.614	.833	.697	.704	.727	.730

Counts Unlimited
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City of Riverside
 N/S: Garfield Avenue
 E/W: Center Street
 Weather: Clear

File Name : 10_RIV_Garfield_Center PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

Groups Printed- Total Volume

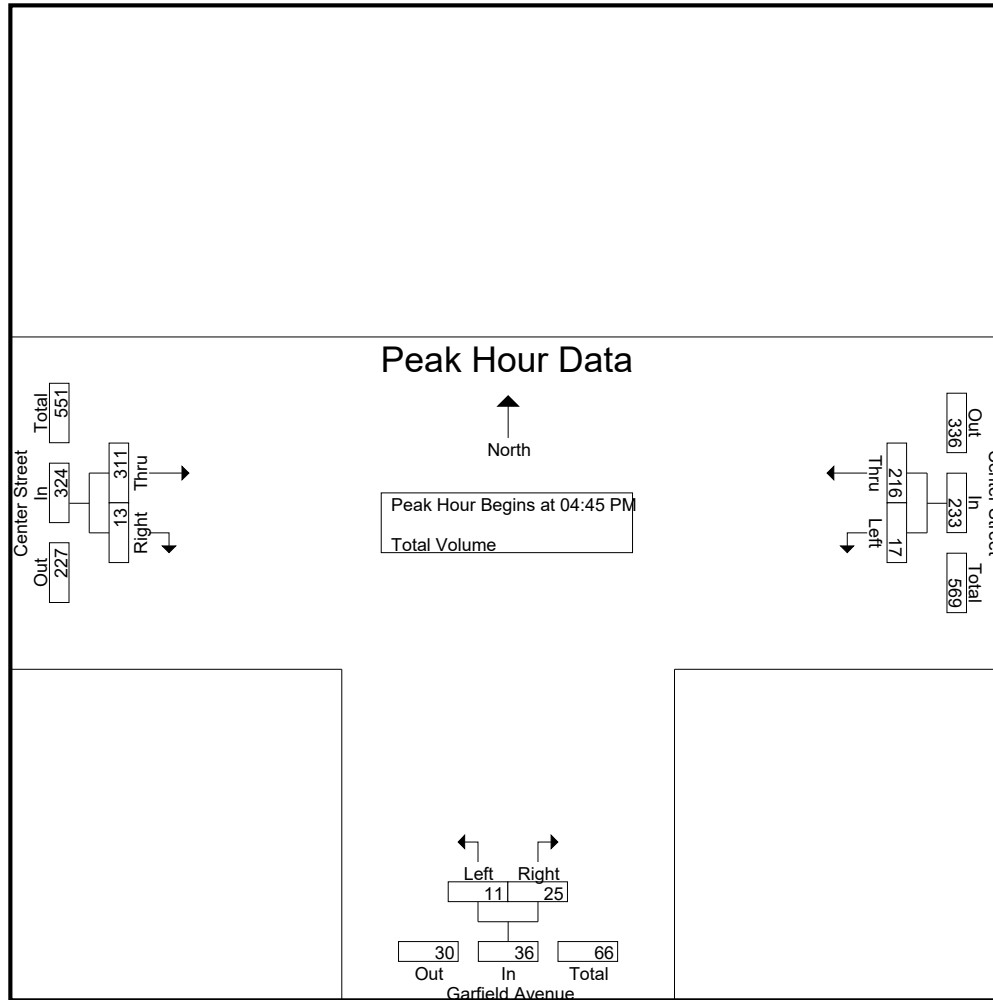
Start Time	Center Street Westbound			Garfield Avenue Northbound			Center Street Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
04:00 PM	2	43	45	3	5	8	69	1	70	123
04:15 PM	3	35	38	4	2	6	68	4	72	116
04:30 PM	0	41	41	1	1	2	67	4	71	114
04:45 PM	1	51	52	3	2	5	75	3	78	135
Total	6	170	176	11	10	21	279	12	291	488
05:00 PM	3	48	51	4	4	8	91	4	95	154
05:15 PM	6	44	50	2	11	13	77	0	77	140
05:30 PM	7	73	80	2	8	10	68	6	74	164
05:45 PM	6	38	44	6	3	9	70	5	75	128
Total	22	203	225	14	26	40	306	15	321	586
Grand Total	28	373	401	25	36	61	585	27	612	1074
Apprch %	7	93		41	59		95.6	4.4		
Total %	2.6	34.7	37.3	2.3	3.4	5.7	54.5	2.5	57	

Start Time	Center Street Westbound			Garfield Avenue Northbound			Center Street Eastbound			Int. Total
	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	1	51	52	3	2	5	75	3	78	135
05:00 PM	3	48	51	4	4	8	91	4	95	154
05:15 PM	6	44	50	2	11	13	77	0	77	140
05:30 PM	7	73	80	2	8	10	68	6	74	164
Total Volume	17	216	233	11	25	36	311	13	324	593
% App. Total	7.3	92.7		30.6	69.4		96	4		
PHF	.607	.740	.728	.688	.568	.692	.854	.542	.853	.904

Counts Unlimited
 PO Box 1178
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City of Riverside
 N/S: Garfield Avenue
 E/W: Center Street
 Weather: Clear

File Name : 10_RIV_Garfield_Center PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:45 PM			05:00 PM			04:45 PM		
+0 mins.	1	51	52	4	4	8	75	3	78
+15 mins.	3	48	51	2	11	13	91	4	95
+30 mins.	6	44	50	2	8	10	77	0	77
+45 mins.	7	73	80	6	3	9	68	6	74
Total Volume	17	216	233	14	26	40	311	13	324
% App. Total	7.3	92.7		35	65		96	4	
PHF	.607	.740	.728	.583	.591	.769	.854	.542	.853

Location: Riverside
 N/S: Garfield Avenue
 E/W: Center Street



Date: 2/25/2020
 Day: Tuesday

PEDESTRIANS

	North Leg Dead End	East Leg Center Street	South Leg Garfield Avenue	West Leg Center Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	3	3	0	6
7:15 AM	0	20	24	0	44
7:30 AM	0	32	29	0	61
7:45 AM	0	4	11	0	15
8:00 AM	0	0	2	0	2
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	1	0	1
TOTAL VOLUMES:	0	59	70	0	129

	North Leg Dead End	East Leg Center Street	South Leg Garfield Avenue	West Leg Center Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	2	8	0	10
4:45 PM	0	1	2	0	3
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	0	1	0	1
5:45 PM	0	1	6	0	7
TOTAL VOLUMES:	0	4	17	0	21

Location: Riverside
 N/S: Garfield Avenue
 E/W: Center Street



Date: 2/25/2020
 Day: Tuesday

BICYCLES

	Southbound Dead End			Westbound Center Street			Northbound Garfield Avenue			Eastbound Center Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	1	0	0	0	0	0	1

	Southbound Dead End			Westbound Center Street			Northbound Garfield Avenue			Eastbound Center Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	1	0	1	0	0	0	2	1	5

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S: Garfield Avenue
 E/W: Spring Street
 Weather: Clear

File Name : 11_RIV_Garfield_Spring AM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

Groups Printed- Total Volume

Start Time	Garfield Avenue Southbound			Spring Street Westbound			Spring Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	5	5	15	6	21	12	5	17	43
07:15 AM	0	16	16	29	11	40	18	6	24	80
07:30 AM	5	19	24	37	24	61	47	5	52	137
07:45 AM	1	10	11	19	1	20	4	7	11	42
Total	6	50	56	100	42	142	81	23	104	302
08:00 AM	3	1	4	7	3	10	3	8	11	25
08:15 AM	3	2	5	5	1	6	4	7	11	22
08:30 AM	0	3	3	12	7	19	2	6	8	30
08:45 AM	1	3	4	8	2	10	0	2	2	16
Total	7	9	16	32	13	45	9	23	32	93
Grand Total	13	59	72	132	55	187	90	46	136	395
Apprch %	18.1	81.9		70.6	29.4		66.2	33.8		
Total %	3.3	14.9	18.2	33.4	13.9	47.3	22.8	11.6	34.4	

Start Time	Garfield Avenue Southbound			Spring Street Westbound			Spring Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
07:00 AM	0	5	5	15	6	21	12	5	17	43
07:15 AM	0	16	16	29	11	40	18	6	24	80
07:30 AM	5	19	24	37	24	61	47	5	52	137
07:45 AM	1	10	11	19	1	20	4	7	11	42
Total Volume	6	50	56	100	42	142	81	23	104	302
% App. Total	10.7	89.3		70.4	29.6		77.9	22.1		
PHF	.300	.658	.583	.676	.438	.582	.431	.821	.500	.551

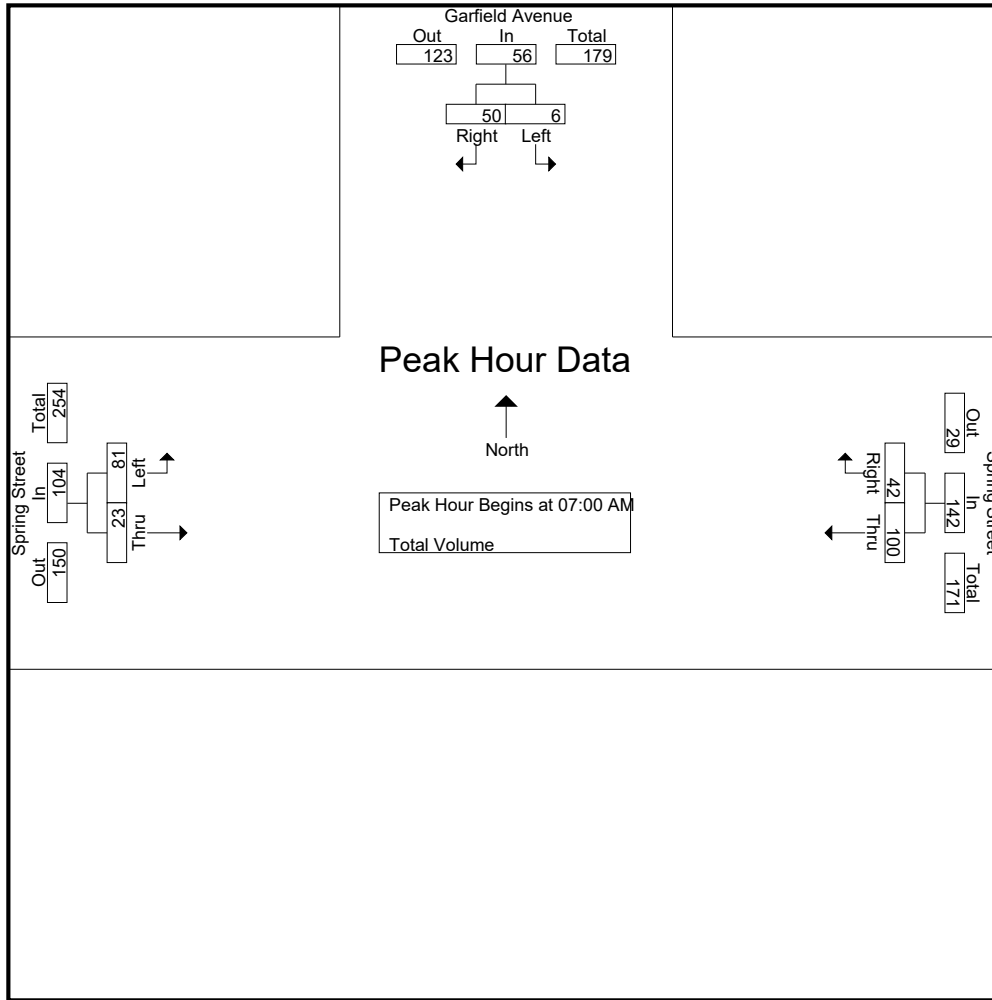
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 07:00 AM

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S: Garfield Avenue
 E/W: Spring Street
 Weather: Clear

File Name : 11_RIV_Garfield_Spring AM
 Site Code : 05120123
 Start Date : 2/25/2020
 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.	0	5	5	15	6	21	12	5	17
+15 mins.	0	16	16	29	11	40	18	6	24
+30 mins.	5	19	24	37	24	61	47	5	52
+45 mins.	1	10	11	19	1	20	4	7	11
Total Volume	6	50	56	100	42	142	81	23	104
% App. Total	10.7	89.3		70.4	29.6		77.9	22.1	
PHF	.300	.658	.583	.676	.438	.582	.431	.821	.500

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S: Garfield Avenue
 E/W: Spring Street
 Weather: Clear

File Name : 11_RIV_Garfield_Spring PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 1

Groups Printed- Total Volume

Start Time	Garfield Avenue Southbound			Spring Street Westbound			Spring Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
04:00 PM	2	2	4	6	4	10	3	10	13	27
04:15 PM	0	5	5	12	2	14	2	13	15	34
04:30 PM	3	2	5	6	3	9	3	16	19	33
04:45 PM	1	1	2	7	1	8	2	11	13	23
Total	6	10	16	31	10	41	10	50	60	117
05:00 PM	1	3	4	12	2	14	2	15	17	35
05:15 PM	0	6	6	8	6	14	6	14	20	40
05:30 PM	2	3	5	10	5	15	6	12	18	38
05:45 PM	4	2	6	6	3	9	6	12	18	33
Total	7	14	21	36	16	52	20	53	73	146
Grand Total	13	24	37	67	26	93	30	103	133	263
Apprch %	35.1	64.9		72	28		22.6	77.4		
Total %	4.9	9.1	14.1	25.5	9.9	35.4	11.4	39.2	50.6	

Start Time	Garfield Avenue Southbound			Spring Street Westbound			Spring Street Eastbound			Int. Total
	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
05:00 PM	1	3	4	12	2	14	2	15	17	35
05:15 PM	0	6	6	8	6	14	6	14	20	40
05:30 PM	2	3	5	10	5	15	6	12	18	38
05:45 PM	4	2	6	6	3	9	6	12	18	33
Total Volume	7	14	21	36	16	52	20	53	73	146
% App. Total	33.3	66.7		69.2	30.8		27.4	72.6		
PHF	.438	.583	.875	.750	.667	.867	.833	.883	.913	.913

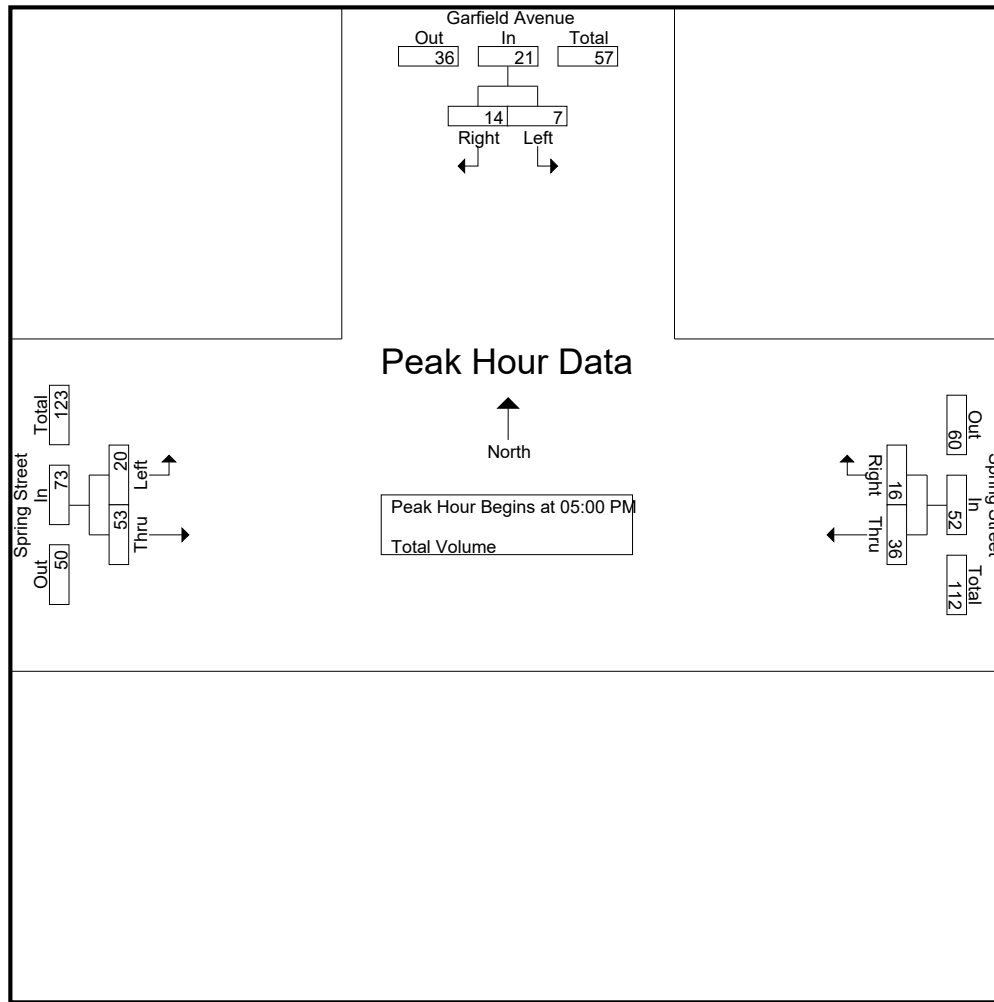
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM

Counts Unlimited
 PO Box 1178
 Corona, CA 92878
 (951) 268-6268

City of Riverside
 N/S: Garfield Avenue
 E/W: Spring Street
 Weather: Clear

File Name : 11_RIV_Garfield_Spring PM
 Site Code : 05120123
 Start Date : 2/25/2020
 Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	1	3	4	12	2	14	2	15	17
+15 mins.	0	6	6	8	6	14	6	14	20
+30 mins.	2	3	5	10	5	15	6	12	18
+45 mins.	4	2	6	6	3	9	6	12	18
Total Volume	7	14	21	36	16	52	20	53	73
% App. Total	33.3	66.7		69.2	30.8		27.4	72.6	
PHF	.438	.583	.875	.750	.667	.867	.833	.883	.913

Location: Riverside
 N/S: Garfield Avenue
 E/W: Spring Street



Date: 2/25/2020
 Day: Tuesday

PEDESTRIANS

	North Leg Garfield Avenue Pedestrians	East Leg Spring Street Pedestrians	South Leg Dead End Pedestrians	West Leg Spring Street Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	1	0	0	0	1
7:45 AM	0	0	0	0	0
8:00 AM	1	0	0	0	1
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	2	0	0	0	2

	North Leg Garfield Avenue Pedestrians	East Leg Spring Street Pedestrians	South Leg Dead End Pedestrians	West Leg Spring Street Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	0	0	0	0
4:30 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	2	0	0	0	2
5:30 PM	4	0	0	0	4
5:45 PM	0	0	0	0	0
TOTAL VOLUMES:	6	0	0	0	6

Location: Riverside
 N/S: Garfield Avenue
 E/W: Spring Street



Date: 2/25/2020
 Day: Tuesday

BICYCLES

	Southbound Garfield Avenue			Westbound Spring Street			Northbound Dead End			Eastbound Spring Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

	Southbound Garfield Avenue			Westbound Spring Street			Northbound Dead End			Eastbound Spring Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 3.2:

EXISTING (2020) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

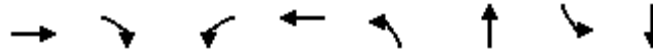
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Timings

Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↕	↗		↕		↕		↕
Traffic Volume (vph)	150	66	382	194	55	4	4	8
Future Volume (vph)	150	66	382	194	55	4	4	8
Turn Type	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4			8		2		6
Permitted Phases		4	8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	21.6	21.6	22.6	22.6	14.6	14.6
Total Split (s)	40.6	40.6	40.6	40.6	38.8	38.8	38.8	38.8
Total Split (%)	33.8%	33.8%	33.8%	33.8%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	4.6	4.6		4.6		4.6		4.6
Lead/Lag	Lag	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	12.5	12.5		36.2		11.8		11.8
Actuated g/C Ratio	0.17	0.17		0.49		0.16		0.16
v/c Ratio	0.53	0.23		7.69		0.51		0.06
Control Delay	35.3	9.4		3049.3		26.4		24.2
Queue Delay	0.0	0.0		0.0		0.0		0.0
Total Delay	35.3	9.4		3049.3		26.4		24.2
LOS	D	A		F		C		C
Approach Delay	27.3			3049.3		26.4		24.2
Approach LOS	C			F		C		C

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 74.4	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 7.69	
Intersection Signal Delay: 1895.4	Intersection LOS: F
Intersection Capacity Utilization 64.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Stephens Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (veh/h)	0	150	66	382	194	5	55	4	68	4	8	4
Future Volume (veh/h)	0	150	66	382	194	5	55	4	68	4	8	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	165	58	420	213	4	60	4	24	4	9	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	1099	931	635	266	5	306	41	71	169	260	0
Arrive On Green	0.00	0.59	0.59	0.59	0.59	0.59	0.17	0.17	0.17	0.17	0.17	0.00
Sat Flow, veh/h	0	1870	1584	817	453	8	861	234	411	271	1503	0
Grp Volume(v), veh/h	0	165	58	637	0	0	88	0	0	13	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1584	1278	0	0	1505	0	0	1774	0	0
Q Serve(g_s), s	0.0	1.5	0.6	14.7	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	1.5	0.6	16.3	0.0	0.0	1.8	0.0	0.0	0.2	0.0	0.0
Prop In Lane	0.00		1.00	0.66		0.01	0.68		0.27	0.31		0.00
Lane Grp Cap(c), veh/h	0	1099	931	906	0	0	418	0	0	430	0	0
V/C Ratio(X)	0.00	0.15	0.06	0.70	0.00	0.00	0.21	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	0	1750	1482	1368	0	0	1465	0	0	1636	0	0
HCM 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
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	3.6	3.4	6.9	0.0	0.0	13.9	0.0	0.0	13.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	1.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.2	0.1	1.8	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.6	3.4	8.0	0.0	0.0	14.1	0.0	0.0	13.3	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		223		637				88			13	
Approach Delay, s/veh		3.6		8.0				14.1			13.3	
Approach LOS		A		A				B			B	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		11.3		27.2		11.3		27.2				
Change Period (Y+Rc), s		4.6		4.6		4.6		4.6				
Max Green Setting (Gmax), s		34.2		36.0		34.2		36.0				
Max Q Clear Time (g_c+I1), s		3.8		3.5		2.2		18.3				
Green Ext Time (p_c), s		0.5		1.1		0.0		4.4				
Intersection Summary												
HCM 6th Ctrl Delay				7.6								
HCM 6th LOS				A								

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕	↕		↕	
Traffic Vol, veh/h	0	203	19	12	518	7	36	0	152	0	0	27
Future Vol, veh/h	0	203	19	12	518	7	36	0	152	0	0	27
Conflicting Peds, #/hr	0	0	0	0	0	4	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	216	20	13	551	7	38	0	162	0	0	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	562	0	0	216	0	0	811	804	217	883	801	559
Stage 1	-	-	-	-	-	-	216	216	-	585	585	-
Stage 2	-	-	-	-	-	-	595	588	-	298	216	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1009	-	-	1354	-	-	298	316	823	266	318	529
Stage 1	-	-	-	-	-	-	786	724	-	497	498	-
Stage 2	-	-	-	-	-	-	491	496	-	711	724	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1005	-	-	1354	-	-	279	310	822	210	312	527
Mov Cap-2 Maneuver	-	-	-	-	-	-	279	310	-	210	312	-
Stage 1	-	-	-	-	-	-	786	724	-	495	489	-
Stage 2	-	-	-	-	-	-	458	487	-	571	724	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.2			12.2			12.2		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	279	822	1005	-	-	1354	-	-	527
HCM Lane V/C Ratio	0.137	0.197	-	-	-	0.009	-	-	0.055
HCM Control Delay (s)	19.9	10.4	0	-	-	7.7	0	-	12.2
HCM Lane LOS	C	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0.7	0	-	-	0	-	-	0.2

Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↙	↕	↗	↙	↕	↘	↕
Traffic Volume (vph)	83	172	128	313	51	106	463	29	660
Future Volume (vph)	83	172	128	313	51	106	463	29	660
Turn Type	Perm	NA	Split	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4	8	8		5	2	1	6
Permitted Phases	4				8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	36.4	36.4	33.4	33.4	33.4	9.6	29.8	9.6	28.8
Total Split (s)	43.0	43.0	33.4	33.4	33.4	10.0	34.0	9.6	33.6
Total Split (%)	35.8%	35.8%	27.8%	27.8%	27.8%	8.3%	28.3%	8.0%	28.0%
Yellow Time (s)	4.4	4.4	4.4	4.4	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4	5.4	5.4	4.6	5.8	4.6	5.8
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	37.6	37.6	25.6	25.6	25.6	5.4	32.2	5.0	27.8
Actuated g/C Ratio	0.32	0.32	0.22	0.22	0.22	0.05	0.27	0.04	0.24
v/c Ratio	1.52	0.25	0.38	0.88	0.14	1.48	0.63	0.44	1.09
Control Delay	326.3	23.7	42.2	67.9	0.6	313.3	41.6	74.5	101.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	326.3	23.7	42.2	67.9	0.6	313.3	41.6	74.5	101.2
LOS	F	C	D	E	A	F	D	E	F
Approach Delay		98.9		54.3			86.8		100.3
Approach LOS		F		D			F		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 117.6
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.52
 Intersection Signal Delay: 86.4
 Intersection Capacity Utilization 71.4%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service C

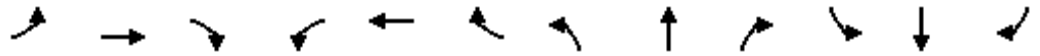
Splits and Phases: 3: Iowa Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕	↗	↖	↕		↖	↕	
Traffic Volume (veh/h)	83	172	78	128	313	51	106	463	67	29	660	135
Future Volume (veh/h)	83	172	78	128	313	51	106	463	67	29	660	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	195	59	145	356	0	120	526	44	33	750	112
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	369	108	406	427	361	112	1182	99	57	1003	150
Arrive On Green	0.14	0.14	0.14	0.23	0.23	0.00	0.06	0.36	0.36	0.03	0.32	0.32
Sat Flow, veh/h	1781	2698	792	1781	1870	1585	1781	3320	277	1781	3090	461
Grp Volume(v), veh/h	94	126	128	145	356	0	120	281	289	33	431	431
Grp Sat Flow(s),veh/h/ln	1781	1777	1713	1781	1870	1585	1781	1777	1820	1781	1777	1775
Q Serve(g_s), s	4.1	5.7	6.0	5.9	15.5	0.0	5.4	10.4	10.4	1.6	18.5	18.5
Cycle Q Clear(g_c), s	4.1	5.7	6.0	5.9	15.5	0.0	5.4	10.4	10.4	1.6	18.5	18.5
Prop In Lane	1.00		0.46	1.00		1.00	1.00		0.15	1.00		0.26
Lane Grp Cap(c), veh/h	244	243	234	406	427	361	112	632	648	57	577	576
V/C Ratio(X)	0.39	0.52	0.55	0.36	0.83	0.00	1.07	0.44	0.45	0.58	0.75	0.75
Avail Cap(c_a), veh/h	782	780	752	582	612	518	112	632	648	104	577	576
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	34.4	34.5	27.8	31.5	0.0	40.1	21.1	21.1	40.9	25.8	25.8
Incr Delay (d2), s/veh	1.0	1.7	2.0	0.5	6.7	0.0	104.5	2.3	2.2	3.5	8.6	8.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	2.5	2.5	2.4	7.4	0.0	5.5	4.3	4.4	0.7	8.5	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.7	36.1	36.5	28.3	38.3	0.0	144.6	23.4	23.3	44.4	34.4	34.4
LnGrp LOS	C	D	D	C	D	A	F	C	C	D	C	C
Approach Vol, veh/h		348			501			690			895	
Approach Delay, s/veh		35.8			35.4			44.4			34.8	
Approach LOS		D			D			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	36.3		17.1	10.0	33.6		24.9				
Change Period (Y+Rc), s	4.6	5.8		5.4	4.6	5.8		5.4				
Max Green Setting (Gmax), s	5.0	28.2		37.6	5.4	27.8		28.0				
Max Q Clear Time (g_c+1), s	3.6	12.4		8.0	7.4	20.5		17.5				
Green Ext Time (p_c), s	0.0	2.7		1.6	0.0	2.9		1.8				
Intersection Summary												
HCM 6th Ctrl Delay				37.8								
HCM 6th LOS				D								

Timings

Highgrove Town Center Due Diligence (JN:13222)

4: Iowa Av. & W. Citrus St.

03/05/2020



Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	Ø4	Ø5
Lane Configurations	↖	↗	↕	↗	↖	↕		
Traffic Volume (vph)	5	0	591	24	11	892		
Future Volume (vph)	5	0	591	24	11	892		
Turn Type	Perm	NA	NA	Perm	Prot	NA		
Protected Phases		8	2		1	6	4	5
Permitted Phases	8			2				
Detector Phase	8	8	2	2	1	6		
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0
Minimum Split (s)	14.6	14.6	29.8	29.8	9.6	15.8	14.6	9.6
Total Split (s)	19.0	19.0	85.0	85.0	16.0	91.0	19.0	10.0
Total Split (%)	15.8%	15.8%	70.8%	70.8%	13.3%	75.8%	16%	8%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.6	4.6	5.8	5.8	4.6	5.8		
Lead/Lag			Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes	Yes	Yes		Yes
Recall Mode	None	None	Max	Max	None	Max	None	None
Act Effct Green (s)	10.0	10.0	93.9	93.9	5.5	96.1		
Actuated g/C Ratio	0.10	0.10	0.90	0.90	0.05	0.92		
v/c Ratio	0.03	0.03	0.20	0.02	0.13	0.29		
Control Delay	44.4	0.1	2.2	0.0	50.6	1.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	44.4	0.1	2.2	0.0	50.6	1.5		
LOS	D	A	A	A	D	A		
Approach Delay		12.4	2.1			2.1		
Approach LOS		B	A			A		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 103.9
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.29
 Intersection Signal Delay: 2.3
 Intersection Capacity Utilization 41.7%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 4: Iowa Av. & W. Citrus St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕		↕	↕↕	↕	↕	↕↕	
Traffic Volume (veh/h)	0	0	0	5	0	12	0	591	24	11	892	0
Future Volume (veh/h)	0	0	0	5	0	12	0	591	24	11	892	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	5	0	12	0	635	25	12	959	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	70	0	140	0	60	2	2833	1263	25	3048	0
Arrive On Green	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.80	0.80	0.01	0.86	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	3554	1584	1781	3647	0
Grp Volume(v), veh/h	0	0	0	5	0	12	0	635	25	12	959	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1777	1584	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.7	0.0	4.4	0.3	0.7	5.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.3	0.0	0.7	0.0	4.4	0.3	0.7	5.2	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	70	0	140	0	60	2	2833	1263	25	3048	0
V/C Ratio(X)	0.00	0.00	0.00	0.04	0.00	0.20	0.00	0.22	0.02	0.47	0.31	0.00
Avail Cap(c_a), veh/h	0	271	0	331	0	230	97	2833	1263	204	3048	0
HCM 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
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	46.1	0.0	46.4	0.0	2.5	2.1	48.6	1.4	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	1.6	0.0	0.2	0.0	5.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.9	0.1	0.3	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	46.2	0.0	48.0	0.0	2.7	2.1	53.7	1.6	0.0
LnGrp LOS	A	A	A	D	A	D	A	A	A	D	A	A
Approach Vol, veh/h		0			17			660			971	
Approach Delay, s/veh		0.0			47.5			2.7			2.3	
Approach LOS					D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	85.0		8.3	0.0	91.0		8.3				
Change Period (Y+Rc), s	4.6	5.8		4.6	4.6	5.8		4.6				
Max Green Setting (Gmax), s	11.4	79.2		14.4	5.4	85.2		14.4				
Max Q Clear Time (g_c+11), s	2.7	6.4		0.0	0.0	7.2		2.7				
Green Ext Time (p_c), s	0.0	4.5		0.0	0.0	7.7		0.0				

Intersection Summary

HCM 6th Ctrl Delay	2.9
HCM 6th LOS	A

Timings

Highgrove Town Center Due Diligence (JN:13222)

5: Iowa Av. & E. Citurs St.

03/05/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↙	↕	↘	↘	↕
Traffic Volume (vph)	45	28	587	51	55	842
Future Volume (vph)	45	28	587	51	55	842
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.6	14.6	33.8	33.8	15.8	15.8
Total Split (s)	33.0	33.0	87.0	87.0	87.0	87.0
Total Split (%)	27.5%	27.5%	72.5%	72.5%	72.5%	72.5%
Yellow Time (s)	3.6	3.6	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	10.2	10.2	85.4	85.4	85.4	85.4
Actuated g/C Ratio	0.10	0.10	0.84	0.84	0.84	0.84
v/c Ratio	0.28	0.16	0.22	0.04	0.09	0.31
Control Delay	46.8	17.1	2.4	0.7	2.7	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.8	17.1	2.4	0.7	2.7	2.8
LOS	D	B	A	A	A	A
Approach Delay	35.5		2.3			2.8
Approach LOS	D		A			A

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 101.9
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.31
 Intersection Signal Delay: 4.0
 Intersection LOS: A
 Intersection Capacity Utilization 53.5%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 5: Iowa Av. & E. Citurs St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 5: Iowa Av. & E. Citurs St. 03/05/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↷	↕	↷	↶	↕
Traffic Volume (veh/h)	45	28	587	51	55	842
Future Volume (veh/h)	45	28	587	51	55	842
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	30	638	51	60	915
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	158	140	2871	1280	649	2871
Arrive On Green	0.09	0.09	0.81	0.81	0.81	0.81
Sat Flow, veh/h	1781	1585	3647	1584	754	3647
Grp Volume(v), veh/h	49	30	638	51	60	915
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1584	754	1777
Q Serve(g_s), s	2.6	1.8	4.2	0.6	2.0	6.7
Cycle Q Clear(g_c), s	2.6	1.8	4.2	0.6	6.3	6.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	158	140	2871	1280	649	2871
V/C Ratio(X)	0.31	0.21	0.22	0.04	0.09	0.32
Avail Cap(c_a), veh/h	503	448	2871	1280	649	2871
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.9	42.6	2.3	1.9	3.0	2.5
Incr Delay (d2), s/veh	1.1	0.8	0.2	0.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.7	0.8	0.1	0.2	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.0	43.3	2.4	2.0	3.3	2.8
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	79		689			975
Approach Delay, s/veh	43.8		2.4			2.8
Approach LOS	D		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		87.0			87.0	13.5
Change Period (Y+Rc), s		5.8			5.8	4.6
Max Green Setting (Gmax), s		81.2			81.2	28.4
Max Q Clear Time (g_c+I1), s		6.2			8.7	4.6
Green Ext Time (p_c), s		4.6			7.9	0.2
Intersection Summary						
HCM 6th Ctrl Delay			4.5			
HCM 6th LOS			A			

Timings

Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020

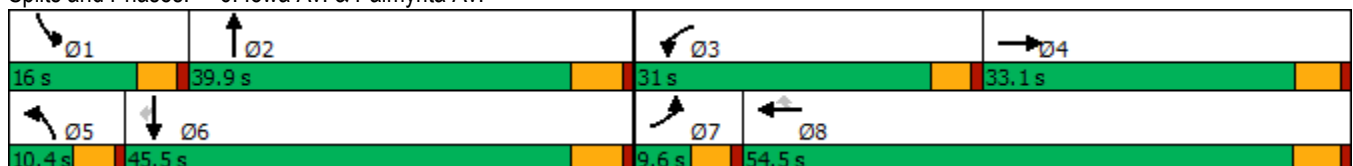


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↕	↖	↕	↗
Traffic Volume (vph)	13	55	300	62	45	27	567	115	738	25
Future Volume (vph)	13	55	300	62	45	27	567	115	738	25
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	39.4	39.4	9.6	31.8	9.6	31.8	31.8
Total Split (s)	9.6	33.1	31.0	54.5	54.5	10.4	39.9	16.0	45.5	45.5
Total Split (%)	8.0%	27.6%	25.8%	45.4%	45.4%	8.7%	33.3%	13.3%	37.9%	37.9%
Yellow Time (s)	3.6	4.1	3.6	4.4	4.4	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.4	5.4	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	5.2	13.4	22.3	34.4	34.4	5.6	35.2	10.4	44.6	44.6
Actuated g/C Ratio	0.05	0.14	0.23	0.35	0.35	0.06	0.36	0.11	0.46	0.46
v/c Ratio	0.15	0.34	0.83	0.11	0.08	0.30	0.68	0.68	0.51	0.04
Control Delay	54.7	37.4	55.7	20.9	0.2	57.8	31.7	64.8	24.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	37.4	55.7	20.9	0.2	57.8	31.7	64.8	24.7	0.1
LOS	D	D	E	C	A	E	C	E	C	A
Approach Delay		39.8		44.2			32.6		29.2	
Approach LOS		D		D			C		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 97.8
 Natural Cycle: 95
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 33.7
 Intersection LOS: C
 Intersection Capacity Utilization 64.8%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 6: Iowa Av. & Palmyrita Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↖	↗	↖	↖↗		↖	↖↗	↖
Traffic Volume (veh/h)	13	55	23	300	62	45	27	567	195	115	738	25
Future Volume (veh/h)	13	55	23	300	62	45	27	567	195	115	738	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	61	12	333	69	21	30	630	130	128	820	18
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	29	163	32	370	559	468	52	1089	224	159	1539	670
Arrive On Green	0.02	0.11	0.11	0.21	0.30	0.30	0.03	0.37	0.37	0.09	0.43	0.43
Sat Flow, veh/h	1781	1514	298	1781	1870	1565	1781	2921	602	1781	3554	1548
Grp Volume(v), veh/h	14	0	73	333	69	21	30	383	377	128	820	18
Grp Sat Flow(s),veh/h/ln	1781	0	1812	1781	1870	1565	1781	1777	1746	1781	1777	1548
Q Serve(g_s), s	0.7	0.0	3.4	16.7	2.5	0.9	1.5	15.8	15.8	6.5	15.6	0.6
Cycle Q Clear(g_c), s	0.7	0.0	3.4	16.7	2.5	0.9	1.5	15.8	15.8	6.5	15.6	0.6
Prop In Lane	1.00		0.16	1.00		1.00	1.00		0.34	1.00		1.00
Lane Grp Cap(c), veh/h	29	0	195	370	559	468	52	663	651	159	1539	670
V/C Ratio(X)	0.48	0.00	0.37	0.90	0.12	0.04	0.58	0.58	0.58	0.81	0.53	0.03
Avail Cap(c_a), veh/h	97	0	553	513	1002	838	113	663	651	221	1539	670
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.7	0.0	38.0	35.4	23.4	22.8	43.9	23.0	23.0	41.0	19.2	14.9
Incr Delay (d2), s/veh	4.5	0.0	1.2	12.3	0.1	0.0	3.7	3.6	3.7	9.5	1.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.6	8.2	1.1	0.3	0.7	6.7	6.6	3.1	6.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.2	0.0	39.2	47.7	23.5	22.9	47.7	26.6	26.7	50.4	20.5	15.0
LnGrp LOS	D	A	D	D	C	C	D	C	C	D	C	B
Approach Vol, veh/h		87			423			790			966	
Approach Delay, s/veh		40.8			42.5			27.5			24.4	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.8	40.0	23.6	15.3	7.3	45.5	6.1	32.8				
Change Period (Y+Rc), s	4.6	5.8	4.6	* 5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	11.4	34.1	26.4	* 28	5.8	39.7	5.0	49.1				
Max Q Clear Time (g_c+11), s	8.5	17.8	18.7	5.4	3.5	17.6	2.7	4.5				
Green Ext Time (p_c), s	0.0	4.0	0.3	0.3	0.0	5.4	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	29.5
HCM 6th LOS	C

Notes

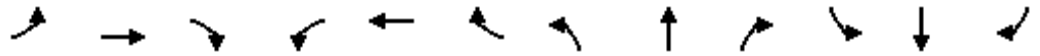
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

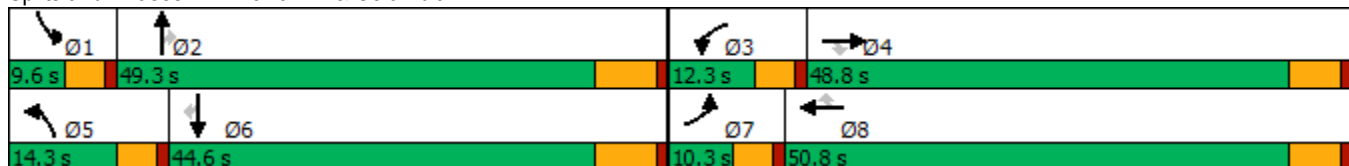


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗
Traffic Volume (vph)	144	199	250	80	128	32	211	696	100	60	822	151
Future Volume (vph)	144	199	250	80	128	32	211	696	100	60	822	151
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	47.8	47.8	9.6	50.8	50.8	9.6	42.5	42.5	9.6	44.5	44.5
Total Split (s)	10.3	48.8	48.8	12.3	50.8	50.8	14.3	49.3	49.3	9.6	44.6	44.6
Total Split (%)	8.6%	40.7%	40.7%	10.3%	42.3%	42.3%	11.9%	41.1%	41.1%	8.0%	37.2%	37.2%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	5.5	5.5	3.6	5.5	5.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	6.5	6.5	4.6	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.8	19.6	19.6	6.6	18.2	18.2	9.5	45.3	45.3	5.1	38.8	38.8
Actuated g/C Ratio	0.06	0.21	0.21	0.07	0.19	0.19	0.10	0.48	0.48	0.05	0.41	0.41
v/c Ratio	0.74	0.29	0.61	0.36	0.20	0.08	0.66	0.44	0.14	0.35	0.61	0.22
Control Delay	67.3	32.4	20.2	49.3	30.8	0.4	53.0	19.9	4.9	52.5	26.2	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.3	32.4	20.2	49.3	30.8	0.4	53.0	19.9	4.9	52.5	26.2	6.0
LOS	E	C	C	D	C	A	D	B	A	D	C	A
Approach Delay		35.7			32.9			25.3			24.8	
Approach LOS		D			C			C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 94.1
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 27.9
 Intersection LOS: C
 Intersection Capacity Utilization 69.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 7: Iowa Av. & Columbia Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	144	199	250	80	128	32	211	696	100	60	822	151
Future Volume (veh/h)	144	199	250	80	128	32	211	696	100	60	822	151
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	157	216	145	87	139	13	229	757	51	65	893	87
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	492	219	178	439	196	308	1806	794	160	1654	737
Arrive On Green	0.07	0.14	0.14	0.05	0.12	0.12	0.09	0.51	0.51	0.05	0.47	0.47
Sat Flow, veh/h	3456	3554	1582	3456	3554	1585	3456	3554	1562	3456	3554	1583
Grp Volume(v), veh/h	157	216	145	87	139	13	229	757	51	65	893	87
Grp Sat Flow(s),veh/h/ln	1728	1777	1582	1728	1777	1585	1728	1777	1562	1728	1777	1583
Q Serve(g_s), s	3.7	4.7	7.3	2.1	3.0	0.6	5.4	11.2	1.4	1.5	15.1	2.6
Cycle Q Clear(g_c), s	3.7	4.7	7.3	2.1	3.0	0.6	5.4	11.2	1.4	1.5	15.1	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	492	219	178	439	196	308	1806	794	160	1654	737
V/C Ratio(X)	0.68	0.44	0.66	0.49	0.32	0.07	0.74	0.42	0.06	0.41	0.54	0.12
Avail Cap(c_a), veh/h	234	1814	808	316	1899	847	398	1806	794	205	1654	737
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.4	33.3	34.4	38.9	33.7	32.6	37.4	12.9	10.5	39.0	16.1	12.7
Incr Delay (d2), s/veh	6.4	0.6	3.4	0.8	0.4	0.1	3.6	0.7	0.2	0.6	1.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.9	2.9	0.8	1.2	0.2	2.3	3.9	0.5	0.6	5.5	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.9	33.9	37.8	39.6	34.1	32.7	41.0	13.7	10.7	39.6	17.3	13.1
LnGrp LOS	D	C	D	D	C	C	D	B	B	D	B	B
Approach Vol, veh/h		518			239			1037			1045	
Approach Delay, s/veh		38.3			36.0			19.6			18.4	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	49.3	8.9	17.5	12.1	45.7	10.2	16.2				
Change Period (Y+Rc), s	4.6	6.5	4.6	5.8	4.6	6.5	4.6	5.8				
Max Green Setting (Gmax), s	5.0	42.8	7.7	43.0	9.7	38.1	5.7	45.0				
Max Q Clear Time (g_c+11), s	3.5	13.2	4.1	9.3	7.4	17.1	5.7	5.0				
Green Ext Time (p_c), s	0.0	5.2	0.0	1.7	0.1	5.9	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay				23.9								
HCM 6th LOS				C								

Timings

Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020

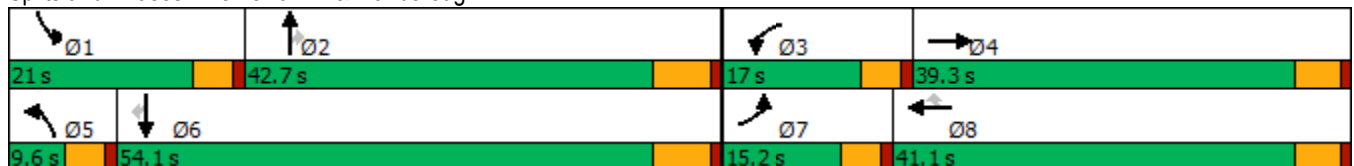


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	134	39	77	12	52	27	935	95	210	975	134
Future Volume (vph)	134	39	77	12	52	27	935	95	210	975	134
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	41.1	41.1	9.6	31.2	31.2	9.6	25.2	25.2
Total Split (s)	15.2	39.3	17.0	41.1	41.1	9.6	42.7	42.7	21.0	54.1	54.1
Total Split (%)	12.7%	32.8%	14.2%	34.3%	34.3%	8.0%	35.6%	35.6%	17.5%	45.1%	45.1%
Yellow Time (s)	3.6	4.1	3.6	4.1	4.1	3.6	5.2	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.1	5.1	4.6	6.2	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	10.8	15.1	8.8	14.4	14.4	5.1	37.2	37.2	16.4	52.8	52.8
Actuated g/C Ratio	0.11	0.16	0.09	0.15	0.15	0.05	0.39	0.39	0.17	0.55	0.55
v/c Ratio	0.75	0.24	0.53	0.05	0.16	0.32	0.76	0.15	0.77	0.56	0.17
Control Delay	67.6	26.0	56.8	34.3	0.9	57.9	32.0	2.4	58.7	19.0	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.6	26.0	56.8	34.3	0.9	57.9	32.0	2.4	58.7	19.0	7.0
LOS	E	C	E	C	A	E	C	A	E	B	A
Approach Delay		54.0		34.3			30.0			24.1	
Approach LOS		D		C			C			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 95.9	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 29.1	Intersection LOS: C
Intersection Capacity Utilization 64.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: Iowa Av. & Marlborough Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 8: Iowa Av. & Marlborough Av. 03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↖	↗	↗	↖	↗	↖
Traffic Volume (veh/h)	134	39	26	77	12	52	27	935	95	210	975	134
Future Volume (veh/h)	134	39	26	77	12	52	27	935	95	210	975	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	149	43	17	86	13	17	30	1039	77	233	1083	107
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	198	78	111	217	183	52	1443	642	268	1874	818
Arrive On Green	0.10	0.16	0.16	0.06	0.12	0.12	0.03	0.41	0.41	0.15	0.53	0.53
Sat Flow, veh/h	1781	1270	502	1781	1870	1577	1781	3554	1581	1781	3554	1551
Grp Volume(v), veh/h	149	0	60	86	13	17	30	1039	77	233	1083	107
Grp Sat Flow(s),veh/h/ln	1781	0	1772	1781	1870	1577	1781	1777	1581	1781	1777	1551
Q Serve(g_s), s	7.4	0.0	2.7	4.3	0.6	0.9	1.5	22.3	2.8	11.6	18.8	3.2
Cycle Q Clear(g_c), s	7.4	0.0	2.7	4.3	0.6	0.9	1.5	22.3	2.8	11.6	18.8	3.2
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	181	0	276	111	217	183	52	1443	642	268	1874	818
V/C Ratio(X)	0.82	0.00	0.22	0.78	0.06	0.09	0.58	0.72	0.12	0.87	0.58	0.13
Avail Cap(c_a), veh/h	208	0	667	243	741	625	98	1443	642	322	1874	818
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.0	0.0	33.5	42.0	35.7	35.9	43.5	22.6	16.8	37.7	14.6	10.9
Incr Delay (d2), s/veh	17.9	0.0	0.4	4.4	0.1	0.2	3.7	3.1	0.4	17.1	1.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	1.2	2.0	0.3	0.3	0.7	8.8	1.0	6.0	6.7	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.9	0.0	33.9	46.4	35.9	36.1	47.2	25.8	17.2	54.8	15.9	11.2
LnGrp LOS	E	A	C	D	D	D	D	C	B	D	B	B
Approach Vol, veh/h		209			116			1146			1423	
Approach Delay, s/veh		51.0			43.7			25.8			21.9	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.3	43.1	10.2	19.3	7.3	54.1	13.9	15.6				
Change Period (Y+Rc), s	4.6	6.2	4.6	5.1	4.6	6.2	4.6	5.1				
Max Green Setting (Gmax), s	16.4	36.5	12.4	34.2	5.0	47.9	10.6	36.0				
Max Q Clear Time (g_c+1), s	13.6	24.3	6.3	4.7	3.5	20.8	9.4	2.9				
Green Ext Time (p_c), s	0.1	5.4	0.0	0.3	0.0	8.2	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			26.4									
HCM 6th LOS			C									

Timings

Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020

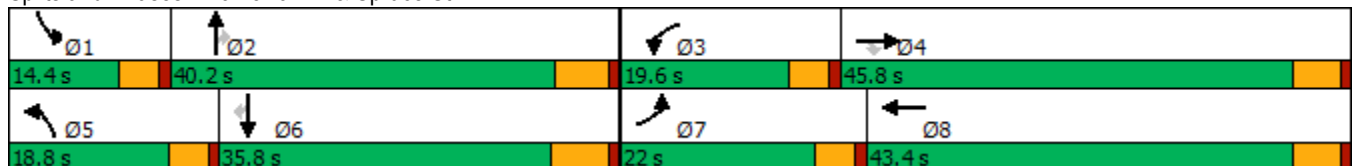


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↗	↘	↕	↗
Traffic Volume (vph)	217	237	103	96	201	135	847	140	118	539	148
Future Volume (vph)	217	237	103	96	201	135	847	140	118	539	148
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	34.4	9.6	43.4	9.6	30.8	30.8	9.6	31.2	31.2
Total Split (s)	22.0	45.8	45.8	19.6	43.4	18.8	40.2	40.2	14.4	35.8	35.8
Total Split (%)	18.3%	38.2%	38.2%	16.3%	36.2%	15.7%	33.5%	33.5%	12.0%	29.8%	29.8%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	3.6	4.8	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	4.6	5.8	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	17.5	24.4	24.4	10.3	17.2	12.2	34.7	34.7	9.9	32.1	32.1
Actuated g/C Ratio	0.18	0.24	0.24	0.10	0.17	0.12	0.35	0.35	0.10	0.32	0.32
v/c Ratio	0.80	0.60	0.25	0.60	0.66	0.72	0.79	0.26	0.78	0.55	0.28
Control Delay	61.5	39.4	6.7	58.5	23.7	62.9	36.4	10.0	74.9	32.2	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	39.4	6.7	58.5	23.7	62.9	36.4	10.0	74.9	32.2	6.4
LOS	E	D	A	E	C	E	D	A	E	C	A
Approach Delay		42.0			30.0		36.3			33.7	
Approach LOS		D			C		D			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 99.9
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 35.6
 Intersection LOS: D
 Intersection Capacity Utilization 72.6%
 ICU Level of Service C
 Analysis Period (min) 15

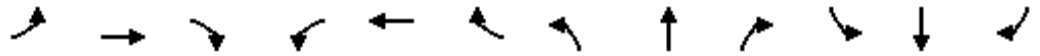
Splits and Phases: 9: Iowa Av. & Spruce St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↕		↘	↕	↗	↘	↕	↗
Traffic Volume (veh/h)	217	237	103	96	201	230	135	847	140	118	539	148
Future Volume (veh/h)	217	237	103	96	201	230	135	847	140	118	539	148
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	249	272	43	110	231	0	155	974	160	136	620	167
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	414	343	139	498	0	189	1343	598	167	1301	572
Arrive On Green	0.16	0.22	0.22	0.08	0.14	0.00	0.11	0.38	0.38	0.09	0.37	0.37
Sat Flow, veh/h	1781	1870	1550	1781	3647	0	1781	3554	1583	1781	3554	1561
Grp Volume(v), veh/h	249	272	43	110	231	0	155	974	160	136	620	167
Grp Sat Flow(s),veh/h/ln	1781	1870	1550	1781	1777	0	1781	1777	1583	1781	1777	1561
Q Serve(g_s), s	12.4	12.1	2.0	5.5	5.4	0.0	7.8	21.4	6.4	6.8	12.2	6.9
Cycle Q Clear(g_c), s	12.4	12.1	2.0	5.5	5.4	0.0	7.8	21.4	6.4	6.8	12.2	6.9
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	284	414	343	139	498	0	189	1343	598	167	1301	572
V/C Ratio(X)	0.88	0.66	0.13	0.79	0.46	0.00	0.82	0.73	0.27	0.81	0.48	0.29
Avail Cap(c_a), veh/h	341	830	688	294	1484	0	278	1343	598	192	1301	572
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.4	32.3	28.4	41.2	36.0	0.0	39.8	24.3	19.6	40.4	22.2	20.5
Incr Delay (d2), s/veh	17.3	1.8	0.2	3.7	0.7	0.0	7.5	3.4	1.1	17.9	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	5.4	0.7	2.5	2.3	0.0	3.6	8.8	2.4	3.6	4.8	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.7	34.1	28.5	45.0	36.7	0.0	47.4	27.7	20.7	58.4	23.4	21.8
LnGrp LOS	D	C	C	D	D	A	D	C	C	E	C	C
Approach Vol, veh/h		564			341			1289			923	
Approach Delay, s/veh		42.8			39.3			29.2			28.3	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.1	40.6	11.7	25.5	14.2	39.5	19.1	18.1				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	9.8	* 34	15.0	40.4	14.2	29.6	17.4	38.0				
Max Q Clear Time (g_c+11), s	8.8	23.4	7.5	14.1	9.8	14.2	14.4	7.4				
Green Ext Time (p_c), s	0.0	5.0	0.1	1.6	0.1	3.8	0.1	1.4				

Intersection Summary

HCM 6th Ctrl Delay	32.5
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection

Intersection Delay, s/veh 11.5
Intersection LOS B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	228	32	17	420	81	50
Future Vol, veh/h	228	32	17	420	81	50
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	285	40	21	525	101	63
Number of Lanes	2	0	0	2	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	10.2	12.6	10.7
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	62%	0%	0%	11%	0%
Vol Thru, %	0%	100%	70%	89%	100%
Vol Right, %	38%	0%	30%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	131	152	108	157	280
LT Vol	81	0	0	17	0
Through Vol	0	152	76	140	280
RT Vol	50	0	32	0	0
Lane Flow Rate	164	190	135	196	350
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.257	0.294	0.201	0.294	0.518
Departure Headway (Hd)	5.65	5.567	5.358	5.386	5.331
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	629	638	662	661	669
Service Time	3.743	3.364	3.154	3.171	3.116
HCM Lane V/C Ratio	0.261	0.298	0.204	0.297	0.523
HCM Control Delay	10.7	10.7	9.5	10.4	13.8
HCM Lane LOS	B	B	A	B	B
HCM 95th-tile Q	1	1.2	0.7	1.2	3

Intersection

Int Delay, s/veh 4.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	81	23	100	42	6	50
Future Vol, veh/h	81	23	100	42	6	50
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	400	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	147	42	182	76	11	91

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	259	0	0 519 183
Stage 1	-	-	- 183 -
Stage 2	-	-	- 336 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1306	-	- 517 859
Stage 1	-	-	- 848 -
Stage 2	-	-	- 724 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1305	-	- 457 858
Mov Cap-2 Maneuver	-	-	- 457 -
Stage 1	-	-	- 750 -
Stage 2	-	-	- 723 -

Approach	EB	WB	SB
HCM Control Delay, s	6.3	0	10.3
HCM LOS			B

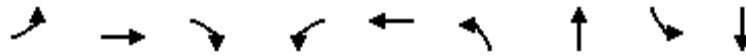
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1305	-	-	-	784
HCM Lane V/C Ratio	0.113	-	-	-	0.13
HCM Control Delay (s)	8.1	0	-	-	10.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.4

Timings

Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕	↕		↕		↕		↕
Traffic Volume (vph)	5	293	137	250	143	68	5	4	4
Future Volume (vph)	5	293	137	250	143	68	5	4	4
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	21.6	21.6	22.6	22.6	14.6	14.6
Total Split (s)	40.6	40.6	40.6	40.6	40.6	38.8	38.8	38.8	38.8
Total Split (%)	33.8%	33.8%	33.8%	33.8%	33.8%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)		4.6	4.6		4.6		4.6		4.6
Lead/Lag	Lag	Lag	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		20.3	20.3		36.5		13.5		13.5
Actuated g/C Ratio		0.24	0.24		0.43		0.16		0.16
v/c Ratio		0.73	0.31		6.15		0.62		0.04
Control Delay		40.2	6.3		2366.2		35.0		27.7
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		40.2	6.3		2366.2		35.0		27.7
LOS		D	A		F		C		C
Approach Delay		29.5			2366.2		35.0		27.7
Approach LOS		C			F		C		C

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 84.3	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 6.15	
Intersection Signal Delay: 962.0	Intersection LOS: F
Intersection Capacity Utilization 61.9%	ICU Level of Service B
Analysis Period (min) 15	

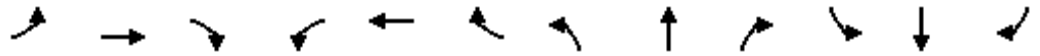
Splits and Phases: 1: Stephens Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (veh/h)	5	293	137	250	143	5	68	5	82	4	4	3
Future Volume (veh/h)	5	293	137	250	143	5	68	5	82	4	4	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	322	97	275	157	2	75	5	41	4	4	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	960	818	482	239	3	335	52	110	257	209	39
Arrive On Green	0.52	0.52	0.52	0.52	0.52	0.52	0.21	0.21	0.21	0.21	0.21	0.21
Sat Flow, veh/h	6	1861	1585	596	464	5	765	245	517	485	985	184
Grp Volume(v), veh/h	327	0	97	434	0	0	121	0	0	9	0	0
Grp Sat Flow(s),veh/h/ln	1867	0	1585	1065	0	0	1527	0	0	1654	0	0
Q Serve(g_s), s	0.0	0.0	1.1	8.7	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	1.1	12.2	0.0	0.0	2.1	0.0	0.0	0.1	0.0	0.0
Prop In Lane	0.02		1.00	0.63		0.00	0.62		0.34	0.44		0.11
Lane Grp Cap(c), veh/h	1071	0	818	724	0	0	496	0	0	504	0	0
V/C Ratio(X)	0.31	0.00	0.12	0.60	0.00	0.00	0.24	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	2093	0	1690	1370	0	0	1682	0	0	1765	0	0
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.8	0.0	4.2	7.3	0.0	0.0	11.3	0.0	0.0	10.5	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.8	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.1	1.3	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.0	0.0	4.3	8.1	0.0	0.0	11.5	0.0	0.0	10.6	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		424			434			121				9
Approach Delay, s/veh		4.8			8.1			11.5				10.6
Approach LOS		A			A			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		11.8		22.0		11.8		22.0				
Change Period (Y+Rc), s		4.6		4.6		4.6		4.6				
Max Green Setting (Gmax), s		34.2		36.0		34.2		36.0				
Max Q Clear Time (g_c+I1), s		4.1		5.5		2.1		14.2				
Green Ext Time (p_c), s		0.7		2.2		0.0		3.3				
Intersection Summary												
HCM 6th Ctrl Delay				7.1								
HCM 6th LOS				A								

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕	↕		↕	
Traffic Vol, veh/h	2	346	31	5	320	4	45	1	237	7	0	33
Future Vol, veh/h	2	346	31	5	320	4	45	1	237	7	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	360	32	5	333	4	47	1	247	7	0	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	337	0	0	360	0	0	726	711	360	833	709	335
Stage 1	-	-	-	-	-	-	364	364	-	345	345	-
Stage 2	-	-	-	-	-	-	362	347	-	488	364	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1222	-	-	1199	-	-	340	358	684	288	359	707
Stage 1	-	-	-	-	-	-	655	624	-	671	636	-
Stage 2	-	-	-	-	-	-	657	635	-	561	624	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1222	-	-	1199	-	-	322	355	684	183	356	707
Mov Cap-2 Maneuver	-	-	-	-	-	-	322	355	-	183	356	-
Stage 1	-	-	-	-	-	-	654	623	-	670	633	-
Stage 2	-	-	-	-	-	-	622	632	-	357	623	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			14			13.4		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	323	684	1222	-	-	1199	-	-	471
HCM Lane V/C Ratio	0.148	0.361	0.002	-	-	0.004	-	-	0.088
HCM Control Delay (s)	18.1	13.2	8	0	-	8	0	-	13.4
HCM Lane LOS	C	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	1.6	0	-	-	0	-	-	0.3

Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↙	↕	↗	↙	↕	↘	↕
Traffic Volume (vph)	199	316	80	148	25	139	681	31	523
Future Volume (vph)	199	316	80	148	25	139	681	31	523
Turn Type	Perm	NA	Split	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4	8	8		5	2	1	6
Permitted Phases	4				8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	36.4	36.4	33.4	33.4	33.4	9.6	29.8	9.6	28.8
Total Split (s)	43.0	43.0	33.4	33.4	33.4	10.0	34.0	9.6	33.6
Total Split (%)	35.8%	35.8%	27.8%	27.8%	27.8%	8.3%	28.3%	8.0%	28.0%
Yellow Time (s)	4.4	4.4	4.4	4.4	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4	5.4	5.4	4.6	5.8	4.6	5.8
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	37.7	37.7	15.7	15.7	15.7	5.4	32.3	5.0	27.9
Actuated g/C Ratio	0.35	0.35	0.15	0.15	0.15	0.05	0.30	0.05	0.26
v/c Ratio	3.01	0.36	0.32	0.57	0.08	1.62	0.75	0.39	0.66
Control Delay	957.7	25.5	43.9	50.9	0.5	357.7	41.0	66.5	40.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	957.7	25.5	43.9	50.9	0.5	357.7	41.0	66.5	40.3
LOS	F	C	D	D	A	F	D	E	D
Approach Delay		325.5		43.7			89.6		41.6
Approach LOS		F		D			F		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 108
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 3.01
 Intersection Signal Delay: 133.4
 Intersection Capacity Utilization 67.1%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service C

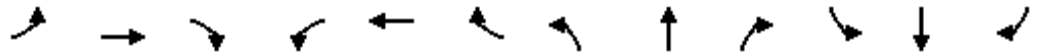
Splits and Phases: 3: Iowa Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕		↔	↕	↔	↔	↕		↔	↕	
Traffic Volume (veh/h)	199	316	103	80	148	25	139	681	85	31	523	60
Future Volume (veh/h)	199	316	103	80	148	25	139	681	85	31	523	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	205	326	80	82	153	23	143	702	49	32	539	54
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	326	517	125	225	237	200	122	1311	91	57	1151	115
Arrive On Green	0.18	0.18	0.18	0.13	0.13	0.13	0.07	0.39	0.39	0.03	0.35	0.35
Sat Flow, veh/h	1781	2824	682	1781	1870	1585	1781	3366	235	1781	3262	326
Grp Volume(v), veh/h	205	203	203	82	153	23	143	370	381	32	293	300
Grp Sat Flow(s),veh/h/ln	1781	1777	1729	1781	1870	1585	1781	1777	1824	1781	1777	1811
Q Serve(g_s), s	8.4	8.3	8.6	3.3	6.1	1.0	5.4	12.7	12.7	1.4	10.1	10.1
Cycle Q Clear(g_c), s	8.4	8.3	8.6	3.3	6.1	1.0	5.4	12.7	12.7	1.4	10.1	10.1
Prop In Lane	1.00		0.39	1.00		1.00	1.00		0.13	1.00		0.18
Lane Grp Cap(c), veh/h	326	325	316	225	237	200	122	692	711	57	627	639
V/C Ratio(X)	0.63	0.62	0.64	0.36	0.65	0.11	1.17	0.54	0.54	0.56	0.47	0.47
Avail Cap(c_a), veh/h	850	848	825	633	665	563	122	692	711	113	627	639
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	29.7	29.8	31.5	32.7	30.5	36.7	18.5	18.6	37.6	19.8	19.8
Incr Delay (d2), s/veh	2.0	2.0	2.2	1.0	3.0	0.3	134.7	3.0	2.9	3.2	2.5	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	3.5	3.5	1.4	2.8	0.4	6.8	5.2	5.3	0.6	4.2	4.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.7	31.7	32.0	32.5	35.7	30.8	171.4	21.5	21.4	40.8	22.2	22.2
LnGrp LOS	C	C	C	C	D	C	F	C	C	D	C	C
Approach Vol, veh/h		611			258			894			625	
Approach Delay, s/veh		31.8			34.2			45.5			23.2	
Approach LOS		C			C			D			C	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.1	36.5		19.8	10.0	33.6		15.4				
Change Period (Y+Rc), s	4.6	5.8		5.4	4.6	5.8		5.4				
Max Green Setting (Gmax), s	5.0	28.2		37.6	5.4	27.8		28.0				
Max Q Clear Time (g_c+11), s	3.4	14.7		10.6	7.4	12.1		8.1				
Green Ext Time (p_c), s	0.0	3.5		2.9	0.0	2.9		1.0				
Intersection Summary												
HCM 6th Ctrl Delay				34.9								
HCM 6th LOS				C								

Timings

Highgrove Town Center Due Diligence (JN:13222)

4: Iowa Av. & W. Citrus St.

03/05/2020



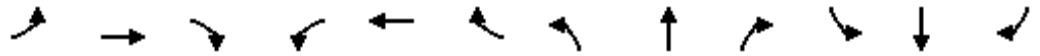
Lane Group	WBL	WBT	NBL	NBT	NBR	SBL	SBT	Ø4
Lane Configurations	↵	↵	↵	↑↑	↵	↵	↑↑	
Traffic Volume (vph)	13	0	1	839	6	8	681	
Future Volume (vph)	13	0	1	839	6	8	681	
Turn Type	Perm	NA	Prot	NA	Perm	Prot	NA	
Protected Phases		8	5	2		1	6	4
Permitted Phases	8				2			
Detector Phase	8	8	5	2	2	1	6	
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.6	14.6	9.6	29.8	29.8	9.6	15.8	14.6
Total Split (s)	19.0	19.0	10.0	85.0	85.0	16.0	91.0	19.0
Total Split (%)	15.8%	15.8%	8.3%	70.8%	70.8%	13.3%	75.8%	16%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8	3.6	4.8	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8	5.8	4.6	5.8	
Lead/Lag			Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max	None
Act Effct Green (s)	10.0	10.0	5.0	93.5	93.5	5.4	93.8	
Actuated g/C Ratio	0.09	0.09	0.05	0.87	0.87	0.05	0.87	
v/c Ratio	0.11	0.07	0.01	0.29	0.00	0.10	0.24	
Control Delay	48.3	0.3	51.0	2.9	0.0	52.5	2.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	48.3	0.3	51.0	2.9	0.0	52.5	2.6	
LOS	D	A	D	A	A	D	A	
Approach Delay		17.1		3.0			3.2	
Approach LOS		B		A			A	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 107.7	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.29	
Intersection Signal Delay: 3.4	Intersection LOS: A
Intersection Capacity Utilization 40.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Iowa Av. & W. Citrus St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↗		↖	↑↑	↗	↖	↕	
Traffic Volume (veh/h)	0	0	0	13	0	24	1	839	6	8	681	0
Future Volume (veh/h)	0	0	0	13	0	24	1	839	6	8	681	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	14	0	4	1	902	5	9	732	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	73	0	138	0	62	2	2866	1251	20	2900	0
Arrive On Green	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.81	0.81	0.01	0.82	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	3554	1551	1781	3647	0
Grp Volume(v), veh/h	0	0	0	14	0	4	1	902	5	9	732	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1777	1551	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	0.3	0.1	6.9	0.1	0.5	5.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.8	0.0	0.3	0.1	6.9	0.1	0.5	5.0	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	73	0	138	0	62	2	2866	1251	20	2900	0
V/C Ratio(X)	0.00	0.00	0.00	0.10	0.00	0.06	0.41	0.31	0.00	0.46	0.25	0.00
Avail Cap(c_a), veh/h	0	258	0	315	0	219	92	2866	1251	194	2900	0
HCM 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
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	48.6	0.0	48.3	52.1	2.6	2.0	51.3	2.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.3	0.0	0.4	36.2	0.3	0.0	6.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.4	0.0	0.1	0.0	1.4	0.0	0.3	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	48.9	0.0	48.8	88.3	2.9	2.0	57.4	2.4	0.0
LnGrp LOS	A	A	A	D	A	D	F	A	A	E	A	A
Approach Vol, veh/h		0			18			908				741
Approach Delay, s/veh		0.0			48.9			3.0				3.1
Approach LOS					D			A				A
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	90.0		8.7	4.7	91.0		8.7				
Change Period (Y+Rc), s	4.6	5.8		4.6	4.6	5.8		4.6				
Max Green Setting (Gmax), s	11.4	79.2		14.4	5.4	85.2		14.4				
Max Q Clear Time (g_c+11), s	2.5	8.9		0.0	2.1	7.0		2.8				
Green Ext Time (p_c), s	0.0	7.1		0.0	0.0	5.3		0.0				

Intersection Summary

HCM 6th Ctrl Delay	3.5
HCM 6th LOS	A

Timings

Highgrove Town Center Due Diligence (JN:13222)

5: Iowa Av. & E. Citurs St.

03/05/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↙	↕	↘	↘	↕
Traffic Volume (vph)	87	50	796	35	21	673
Future Volume (vph)	87	50	796	35	21	673
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.6	14.6	33.8	33.8	15.8	15.8
Total Split (s)	33.0	33.0	87.0	87.0	87.0	87.0
Total Split (%)	27.5%	27.5%	72.5%	72.5%	72.5%	72.5%
Yellow Time (s)	3.6	3.6	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	11.6	11.6	81.7	81.7	81.7	81.7
Actuated g/C Ratio	0.11	0.11	0.79	0.79	0.79	0.79
v/c Ratio	0.48	0.24	0.31	0.03	0.05	0.26
Control Delay	51.3	14.3	3.5	1.0	3.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	14.3	3.5	1.0	3.0	3.3
LOS	D	B	A	A	A	A
Approach Delay	37.8		3.4			3.3
Approach LOS	D		A			A

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 103.7
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 6.2
 Intersection Capacity Utilization 41.3%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 5: Iowa Av. & E. Citurs St.





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↷	↕	↷	↶	↕
Traffic Volume (veh/h)	87	50	796	35	21	673
Future Volume (veh/h)	87	50	796	35	21	673
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	14	856	32	23	724
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	168	149	2854	1243	535	2854
Arrive On Green	0.09	0.09	0.80	0.80	0.80	0.80
Sat Flow, veh/h	1781	1585	3647	1548	626	3647
Grp Volume(v), veh/h	94	14	856	32	23	724
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1548	626	1777
Q Serve(g_s), s	5.1	0.8	6.3	0.4	1.0	5.1
Cycle Q Clear(g_c), s	5.1	0.8	6.3	0.4	7.3	5.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	168	149	2854	1243	535	2854
V/C Ratio(X)	0.56	0.09	0.30	0.03	0.04	0.25
Avail Cap(c_a), veh/h	500	445	2854	1243	535	2854
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	41.9	2.6	2.0	3.5	2.5
Incr Delay (d2), s/veh	2.9	0.3	0.3	0.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.3	1.2	0.1	0.1	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	46.7	42.1	2.9	2.0	3.7	2.7
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	108		888			747
Approach Delay, s/veh	46.1		2.8			2.7
Approach LOS	D		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		87.0			87.0	14.1
Change Period (Y+Rc), s		5.8			5.8	4.6
Max Green Setting (Gmax), s		81.2			81.2	28.4
Max Q Clear Time (g_c+I1), s		8.3			9.3	7.1
Green Ext Time (p_c), s		6.7			5.5	0.3
Intersection Summary						
HCM 6th Ctrl Delay			5.5			
HCM 6th LOS			A			

Timings

Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020

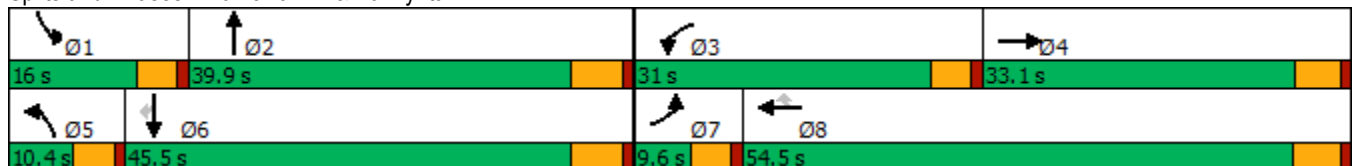


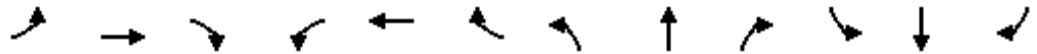
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↕	↖	↕	↗
Traffic Volume (vph)	16	20	326	61	87	51	712	44	706	23
Future Volume (vph)	16	20	326	61	87	51	712	44	706	23
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	39.4	39.4	9.6	31.8	9.6	31.8	31.8
Total Split (s)	9.6	33.1	31.0	54.5	54.5	10.4	39.9	16.0	45.5	45.5
Total Split (%)	8.0%	27.6%	25.8%	45.4%	45.4%	8.7%	33.3%	13.3%	37.9%	37.9%
Yellow Time (s)	3.6	4.1	3.6	4.4	4.4	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.4	5.4	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	5.2	13.3	24.6	34.6	34.6	5.8	39.6	7.5	41.2	41.2
Actuated g/C Ratio	0.05	0.13	0.25	0.35	0.35	0.06	0.40	0.08	0.42	0.42
v/c Ratio	0.19	0.19	0.83	0.11	0.15	0.55	0.74	0.37	0.54	0.03
Control Delay	56.0	23.8	54.3	22.6	1.3	70.7	32.6	55.6	26.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	23.8	54.3	22.6	1.3	70.7	32.6	55.6	26.7	0.1
LOS	E	C	D	C	A	E	C	E	C	A
Approach Delay		32.4		40.5			34.6		27.6	
Approach LOS		C		D			C		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 98.6
 Natural Cycle: 105
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 33.4
 Intersection LOS: C
 Intersection Capacity Utilization 68.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 6: Iowa Av. & Palmyrita Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↖	↗		↖	↗	↖
Traffic Volume (veh/h)	16	20	24	326	61	87	51	712	204	44	706	23
Future Volume (veh/h)	16	20	24	326	61	87	51	712	204	44	706	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	18	22	8	366	69	34	57	800	145	49	793	15
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	135	49	400	576	488	73	1256	228	68	1482	661
Arrive On Green	0.02	0.10	0.10	0.22	0.31	0.31	0.04	0.42	0.42	0.04	0.42	0.42
Sat Flow, veh/h	1781	1309	476	1781	1870	1585	1781	2990	542	1781	3554	1585
Grp Volume(v), veh/h	18	0	30	366	69	34	57	475	470	49	793	15
Grp Sat Flow(s),veh/h/ln	1781	0	1785	1781	1870	1585	1781	1777	1755	1781	1777	1585
Q Serve(g_s), s	1.0	0.0	1.5	19.1	2.5	1.4	3.0	20.2	20.2	2.6	15.9	0.5
Cycle Q Clear(g_c), s	1.0	0.0	1.5	19.1	2.5	1.4	3.0	20.2	20.2	2.6	15.9	0.5
Prop In Lane	1.00		0.27	1.00		1.00	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	35	0	184	400	576	488	73	746	737	68	1482	661
V/C Ratio(X)	0.51	0.00	0.16	0.91	0.12	0.07	0.78	0.64	0.64	0.72	0.54	0.02
Avail Cap(c_a), veh/h	94	0	525	494	965	817	109	746	737	213	1482	661
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.2	0.0	38.9	36.0	23.7	23.3	45.2	21.9	21.9	45.3	20.8	16.3
Incr Delay (d2), s/veh	4.1	0.0	0.4	17.4	0.1	0.1	10.0	4.1	4.2	5.3	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.6	9.8	1.1	0.5	1.5	8.5	8.4	1.2	6.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.3	0.0	39.4	53.4	23.8	23.4	55.2	26.0	26.1	50.6	22.2	16.4
LnGrp LOS	D	A	D	D	C	C	E	C	C	D	C	B
Approach Vol, veh/h		48			469			1002			857	
Approach Delay, s/veh		43.5			46.9			27.7			23.7	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.2	45.8	26.0	15.2	8.5	45.5	6.5	34.7				
Change Period (Y+Rc), s	4.6	5.8	4.6	* 5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	11.4	34.1	26.4	* 28	5.8	39.7	5.0	49.1				
Max Q Clear Time (g_c+1), s	4.6	22.2	21.1	3.5	5.0	17.9	3.0	4.5				
Green Ext Time (p_c), s	0.0	4.4	0.3	0.1	0.0	5.1	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	30.4
HCM 6th LOS	C

Notes

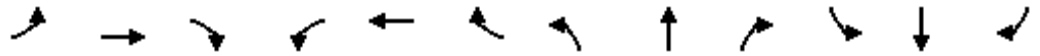
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

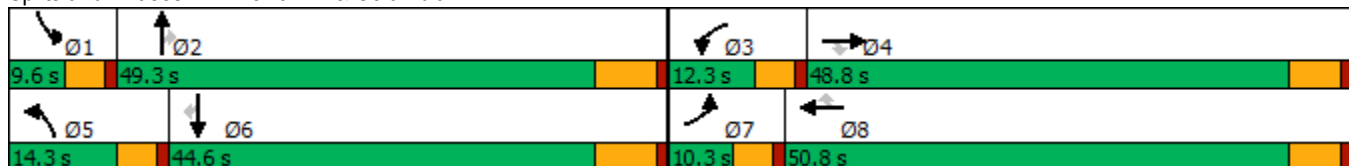


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗
Traffic Volume (vph)	132	127	222	136	219	35	245	724	90	20	883	160
Future Volume (vph)	132	127	222	136	219	35	245	724	90	20	883	160
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	47.8	47.8	9.6	50.8	50.8	9.6	42.5	42.5	9.6	44.5	44.5
Total Split (s)	10.3	48.8	48.8	12.3	50.8	50.8	14.3	49.3	49.3	9.6	44.6	44.6
Total Split (%)	8.6%	40.7%	40.7%	10.3%	42.3%	42.3%	11.9%	41.1%	41.1%	8.0%	37.2%	37.2%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	5.5	5.5	3.6	5.5	5.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	6.5	6.5	4.6	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.8	16.3	16.3	7.4	18.0	18.0	9.9	49.7	49.7	5.1	38.7	38.7
Actuated g/C Ratio	0.06	0.17	0.17	0.08	0.19	0.19	0.11	0.53	0.53	0.05	0.41	0.41
v/c Ratio	0.70	0.23	0.62	0.56	0.36	0.09	0.77	0.44	0.12	0.12	0.68	0.24
Control Delay	64.0	32.9	19.8	52.7	33.2	0.4	57.8	17.8	4.3	48.8	27.7	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.0	32.9	19.8	52.7	33.2	0.4	57.8	17.8	4.3	48.8	27.7	6.9
LOS	E	C	B	D	C	A	E	B	A	D	C	A
Approach Delay		35.3			37.1			25.9			24.9	
Approach LOS		D			D			C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 94.2
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 28.5
 Intersection LOS: C
 Intersection Capacity Utilization 64.6%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 7: Iowa Av. & Columbia Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	132	127	222	136	219	35	245	724	90	20	883	160
Future Volume (veh/h)	132	127	222	136	219	35	245	724	90	20	883	160
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	148	143	111	153	246	17	275	813	50	22	992	88
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	425	189	227	432	193	353	1897	835	83	1618	722
Arrive On Green	0.06	0.12	0.12	0.07	0.12	0.12	0.10	0.53	0.53	0.02	0.46	0.46
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	3456	3554	1564	3456	3554	1585
Grp Volume(v), veh/h	148	143	111	153	246	17	275	813	50	22	992	88
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1728	1777	1564	1728	1777	1585
Q Serve(g_s), s	3.5	3.1	5.5	3.6	5.5	0.8	6.5	11.6	1.3	0.5	17.6	2.7
Cycle Q Clear(g_c), s	3.5	3.1	5.5	3.6	5.5	0.8	6.5	11.6	1.3	0.5	17.6	2.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	220	425	189	227	432	193	353	1897	835	83	1618	722
V/C Ratio(X)	0.67	0.34	0.59	0.67	0.57	0.09	0.78	0.43	0.06	0.27	0.61	0.12
Avail Cap(c_a), veh/h	235	1827	815	318	1912	853	401	1897	835	207	1618	722
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.3	33.8	34.9	38.2	34.7	32.6	36.6	11.8	9.4	40.1	17.2	13.1
Incr Delay (d2), s/veh	5.1	0.5	2.9	1.3	1.2	0.2	7.1	0.7	0.1	0.6	1.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.3	2.2	1.5	2.3	0.3	2.9	3.9	0.4	0.2	6.5	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.4	34.2	37.7	39.5	35.9	32.8	43.7	12.5	9.5	40.7	19.0	13.5
LnGrp LOS	D	C	D	D	D	C	D	B	A	D	B	B
Approach Vol, veh/h		402			416			1138			1102	
Approach Delay, s/veh		38.6			37.1			19.9			18.9	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.6	51.1	10.1	15.8	13.1	44.6	9.9	16.0				
Change Period (Y+Rc), s	4.6	6.5	4.6	5.8	4.6	6.5	4.6	5.8				
Max Green Setting (Gmax), s	5.0	42.8	7.7	43.0	9.7	38.1	5.7	45.0				
Max Q Clear Time (g_c+11), s	2.5	13.6	5.6	7.5	8.5	19.6	5.5	7.5				
Green Ext Time (p_c), s	0.0	5.6	0.0	1.2	0.1	6.3	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay				24.4								
HCM 6th LOS				C								

Timings

Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020

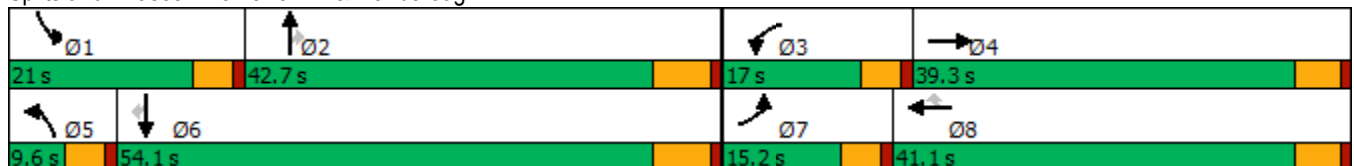


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↑↑	↗	↖	↑↑	↗
Traffic Volume (vph)	67	15	191	37	114	33	761	34	30	1300	50
Future Volume (vph)	67	15	191	37	114	33	761	34	30	1300	50
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	41.1	41.1	9.6	31.2	31.2	9.6	25.2	25.2
Total Split (s)	15.2	39.3	17.0	41.1	41.1	9.6	42.7	42.7	21.0	54.1	54.1
Total Split (%)	12.7%	32.8%	14.2%	34.3%	34.3%	8.0%	35.6%	35.6%	17.5%	45.1%	45.1%
Yellow Time (s)	3.6	4.1	3.6	4.1	4.1	3.6	5.2	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.1	5.1	4.6	6.2	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	7.8	14.0	14.9	16.2	16.2	5.1	48.7	48.7	6.5	50.0	50.0
Actuated g/C Ratio	0.08	0.15	0.16	0.17	0.17	0.05	0.52	0.52	0.07	0.54	0.54
v/c Ratio	0.48	0.16	0.71	0.12	0.30	0.36	0.43	0.04	0.26	0.72	0.06
Control Delay	56.0	19.7	56.6	34.3	4.1	59.3	18.6	0.1	51.8	23.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	19.7	56.6	34.3	4.1	59.3	18.6	0.1	51.8	23.0	0.2
LOS	E	B	E	C	A	E	B	A	D	C	A
Approach Delay		42.1		36.7			19.5			22.8	
Approach LOS		D		D			B			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 93.2
 Natural Cycle: 105
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 24.3
 Intersection LOS: C
 Intersection Capacity Utilization 62.6%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 8: Iowa Av. & Marlborough Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 8: Iowa Av. & Marlborough Av. 03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↖	↖	↖	↖↖	↖	↖	↖↖	↖
Traffic Volume (veh/h)	67	15	27	191	37	114	33	761	34	30	1300	50
Future Volume (veh/h)	67	15	27	191	37	114	33	761	34	30	1300	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	71	16	9	201	39	27	35	801	32	32	1368	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	120	68	234	350	297	57	1821	812	54	1815	789
Arrive On Green	0.05	0.11	0.11	0.13	0.19	0.19	0.03	0.51	0.51	0.03	0.51	0.51
Sat Flow, veh/h	1781	1117	628	1781	1870	1585	1781	3554	1584	1781	3554	1544
Grp Volume(v), veh/h	71	0	25	201	39	27	35	801	32	32	1368	37
Grp Sat Flow(s),veh/h/ln	1781	0	1745	1781	1870	1585	1781	1777	1584	1781	1777	1544
Q Serve(g_s), s	3.7	0.0	1.2	10.4	1.6	1.3	1.8	13.3	0.9	1.7	28.7	1.1
Cycle Q Clear(g_c), s	3.7	0.0	1.2	10.4	1.6	1.3	1.8	13.3	0.9	1.7	28.7	1.1
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	92	0	188	234	350	297	57	1821	812	54	1815	789
V/C Ratio(X)	0.78	0.00	0.13	0.86	0.11	0.09	0.62	0.44	0.04	0.60	0.75	0.05
Avail Cap(c_a), veh/h	201	0	636	236	718	608	95	1821	812	311	1815	789
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.9	0.0	37.9	39.9	31.6	31.5	44.8	14.4	11.4	44.9	18.2	11.5
Incr Delay (d2), s/veh	5.2	0.0	0.3	24.9	0.1	0.1	4.0	0.8	0.1	3.9	3.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.5	6.0	0.7	0.5	0.8	4.8	0.3	0.8	10.7	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	0.0	38.2	64.8	31.8	31.6	48.8	15.2	11.5	48.8	21.2	11.6
LnGrp LOS	D	A	D	E	C	C	D	B	B	D	C	B
Approach Vol, veh/h		96			267			868			1437	
Approach Delay, s/veh		46.3			56.6			16.4			21.6	
Approach LOS		D			E			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.4	54.3	16.9	15.2	7.6	54.1	9.4	22.7				
Change Period (Y+Rc), s	4.6	6.2	4.6	5.1	4.6	6.2	4.6	5.1				
Max Green Setting (Gmax), s	16.4	36.5	12.4	34.2	5.0	47.9	10.6	36.0				
Max Q Clear Time (g_c+11), s	3.7	15.3	12.4	3.2	3.8	30.7	5.7	3.6				
Green Ext Time (p_c), s	0.0	5.0	0.0	0.1	0.0	8.6	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay				24.3								
HCM 6th LOS				C								

Timings

Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020

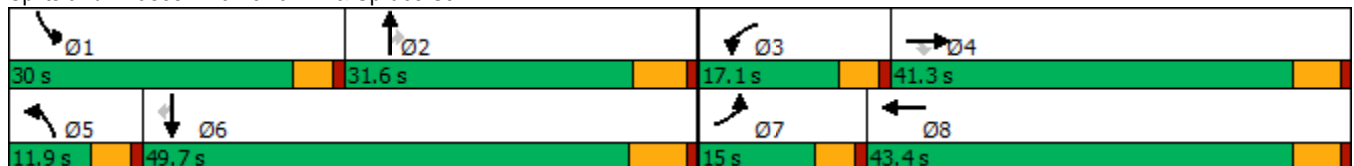


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↗	↘	↕	↗
Traffic Volume (vph)	129	368	220	121	155	83	568	90	338	963	261
Future Volume (vph)	129	368	220	121	155	83	568	90	338	963	261
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	34.4	9.6	43.4	9.6	30.8	30.8	9.6	31.2	31.2
Total Split (s)	15.0	41.3	41.3	17.1	43.4	11.9	31.6	31.6	30.0	49.7	49.7
Total Split (%)	12.5%	34.4%	34.4%	14.3%	36.2%	9.9%	26.3%	26.3%	25.0%	41.4%	41.4%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	3.6	4.8	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	4.6	5.8	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	10.5	29.4	29.4	11.2	30.1	7.3	25.9	25.9	25.5	43.7	43.7
Actuated g/C Ratio	0.09	0.26	0.26	0.10	0.27	0.06	0.23	0.23	0.23	0.39	0.39
v/c Ratio	0.87	0.84	0.45	0.76	0.28	0.80	0.77	0.21	0.94	0.78	0.37
Control Delay	95.6	55.8	11.3	77.3	20.3	97.4	49.2	2.8	76.3	36.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	95.6	55.8	11.3	77.3	20.3	97.4	49.2	2.8	76.3	36.2	4.4
LOS	F	E	B	E	C	F	D	A	E	D	A
Approach Delay		49.3			39.1		48.9			39.6	
Approach LOS		D			D		D			D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 112.6
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 43.6
 Intersection LOS: D
 Intersection Capacity Utilization 78.6%
 ICU Level of Service D
 Analysis Period (min) 15

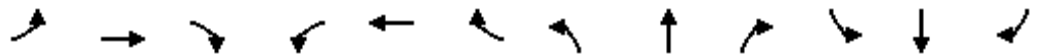
Splits and Phases: 9: Iowa Av. & Spruce St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↕		↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	129	368	220	121	155	89	83	568	90	338	963	261
Future Volume (veh/h)	129	368	220	121	155	89	83	568	90	338	963	261
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	143	409	153	134	172	99	92	631	63	376	1070	153
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	171	469	388	162	545	298	116	854	372	403	1426	636
Arrive On Green	0.10	0.25	0.25	0.09	0.25	0.25	0.07	0.24	0.24	0.23	0.40	0.40
Sat Flow, veh/h	1781	1870	1550	1781	2216	1213	1781	3554	1551	1781	3554	1585
Grp Volume(v), veh/h	143	409	153	134	136	135	92	631	63	376	1070	153
Grp Sat Flow(s),veh/h/ln	1781	1870	1550	1781	1777	1652	1781	1777	1551	1781	1777	1585
Q Serve(g_s), s	8.6	22.7	8.9	8.0	6.8	7.3	5.5	17.8	3.5	22.4	28.0	6.9
Cycle Q Clear(g_c), s	8.6	22.7	8.9	8.0	6.8	7.3	5.5	17.8	3.5	22.4	28.0	6.9
Prop In Lane	1.00		1.00	1.00		0.73	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	171	469	388	162	437	406	116	854	372	403	1426	636
V/C Ratio(X)	0.84	0.87	0.39	0.83	0.31	0.33	0.79	0.74	0.17	0.93	0.75	0.24
Avail Cap(c_a), veh/h	171	619	513	205	623	579	120	854	372	417	1426	636
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.2	38.9	33.8	48.4	33.4	33.6	50.0	38.0	32.6	41.1	27.8	21.5
Incr Delay (d2), s/veh	27.5	10.4	0.6	15.8	0.4	0.5	26.6	5.7	1.0	26.9	3.7	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	11.4	3.3	4.2	2.9	2.9	3.2	8.1	1.4	12.3	11.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.6	49.3	34.4	64.2	33.8	34.0	76.6	43.7	33.6	68.1	31.5	22.4
LnGrp LOS	E	D	C	E	C	C	E	D	C	E	C	C
Approach Vol, veh/h		705			405			786			1599	
Approach Delay, s/veh		51.4			43.9			46.8			39.2	
Approach LOS		D			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.1	32.2	14.5	32.6	11.6	49.7	15.0	32.0				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	25.4	* 26	12.5	35.9	7.3	43.5	10.4	38.0				
Max Q Clear Time (g_c+11), s	24.4	19.8	10.0	24.7	7.5	30.0	10.6	9.3				
Green Ext Time (p_c), s	0.1	2.1	0.0	2.2	0.0	6.1	0.0	1.5				

Intersection Summary

HCM 6th Ctrl Delay	43.9
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection

Intersection Delay, s/veh	9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	311	13	17	216	11	25
Future Vol, veh/h	311	13	17	216	11	25
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	346	14	19	240	12	28
Number of Lanes	2	0	0	2	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	9.3	8.8	8.2
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	31%	0%	0%	19%	0%
Vol Thru, %	0%	100%	89%	81%	100%
Vol Right, %	69%	0%	11%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	36	207	117	89	144
LT Vol	11	0	0	17	0
Through Vol	0	207	104	72	144
RT Vol	25	0	13	0	0
Lane Flow Rate	40	230	130	99	160
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.054	0.31	0.172	0.138	0.219
Departure Headway (Hd)	4.903	4.845	4.767	5.024	4.928
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	731	744	754	716	731
Service Time	2.931	2.561	2.482	2.74	2.644
HCM Lane V/C Ratio	0.055	0.309	0.172	0.138	0.219
HCM Control Delay	8.2	9.7	8.5	8.5	9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	1.3	0.6	0.5	0.8

Intersection

Int Delay, s/veh 2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑	↑	↑
Traffic Vol, veh/h	20	53	36	16	7	14
Future Vol, veh/h	20	53	36	16	7	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	400	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	58	40	18	8	15

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	58	0	0
Stage 1	-	-	40
Stage 2	-	-	102
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1546	-	851
Stage 1	-	-	982
Stage 2	-	-	922
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1546	-	838
Mov Cap-2 Maneuver	-	-	838
Stage 1	-	-	967
Stage 2	-	-	922

Approach	EB	WB	SB
HCM Control Delay, s	2	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1546	-	-	-	957
HCM Lane V/C Ratio	0.014	-	-	-	0.024
HCM Control Delay (s)	7.4	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

APPENDIX 3.3:

EXISTING (2020) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = Existing (2020) Conditions - Weekday PM Peak Hour

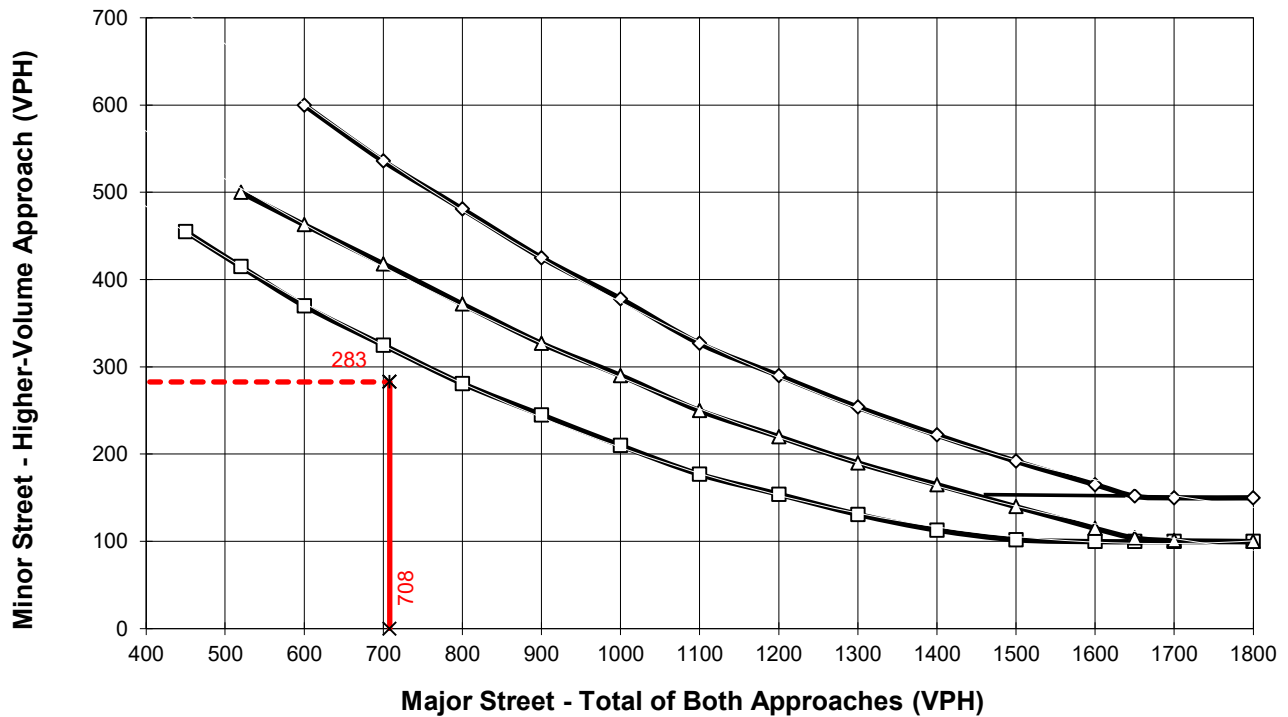
Major Street Name = Center Street

Total of Both Approaches (VPH) = 708
Number of Approach Lanes on Major Street = 1

Minor Street Name = Highgrove Place

High Volume Approach (VPH) = 283
Number of Approach Lanes On Minor Street = 1

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = Existing (2020) Conditions - Weekday AM Peak Hour

Major Street Name = Center Street

Total of Both Approaches (VPH) = 697

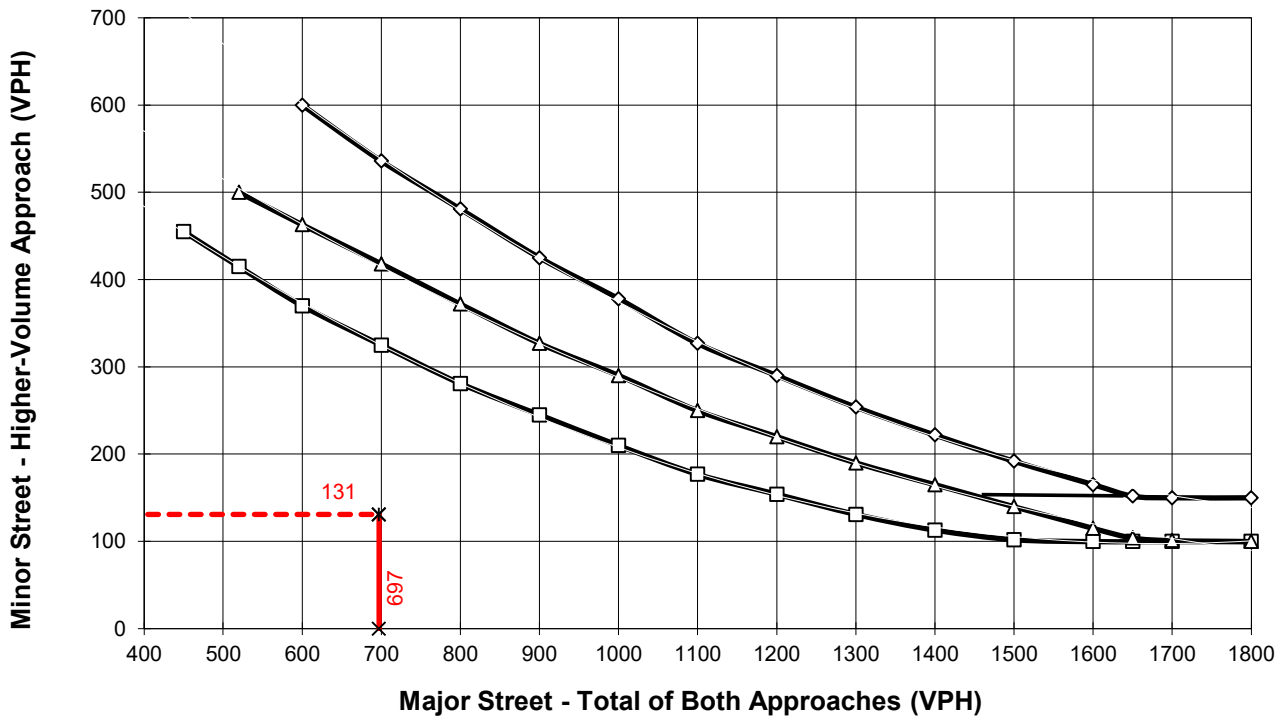
Number of Approach Lanes on Major Street = 2

Minor Street Name = Garfield Avenue

High Volume Approach (VPH) = 131

Number of Approach Lanes On Minor Street = 1

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = Existing (2020) Conditions - Weekday AM Peak Hour

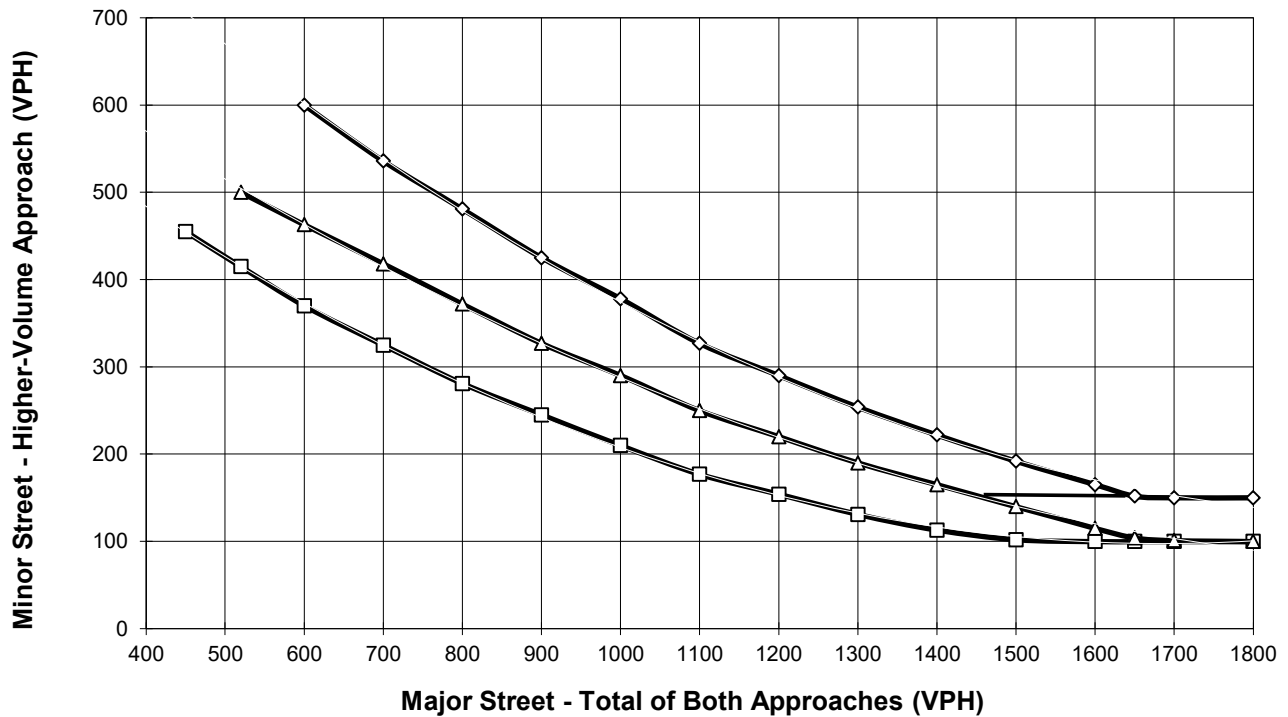
Major Street Name = Spring Street

Total of Both Approaches (VPH) = 246
Number of Approach Lanes on Major Street = 1

Minor Street Name = Garfield Avenue

High Volume Approach (VPH) = 56
Number of Approach Lanes On Minor Street = 1

SIGNAL WARRANT NOT SATISFIED



- 1 Lane (Major) & 1 Lane (Minor)
- △— 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- ◇— 2+ Lanes (Major) & 2+ Lanes (Minor)
- x— Major Street Approaches
- x— Minor Street Approaches

*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 5.1:

E+P CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

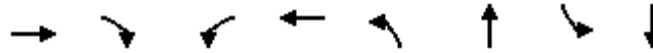
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Timings

Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020

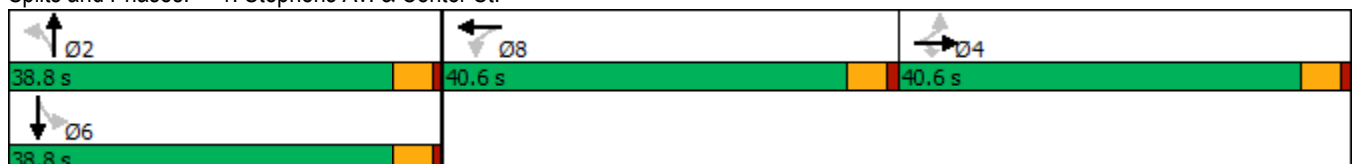


Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↕	↗		↕		↕		↕
Traffic Volume (vph)	160	66	461	226	55	4	4	8
Future Volume (vph)	160	66	461	226	55	4	4	8
Turn Type	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4			8		2		6
Permitted Phases		4	8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	21.6	21.6	22.6	22.6	14.6	14.6
Total Split (s)	40.6	40.6	40.6	40.6	38.8	38.8	38.8	38.8
Total Split (%)	33.8%	33.8%	33.8%	33.8%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	4.6	4.6		4.6		4.6		4.6
Lead/Lag	Lag	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	12.8	12.8		36.2		11.8		11.8
Actuated g/C Ratio	0.17	0.17		0.48		0.16		0.16
v/c Ratio	0.55	0.23		9.27		0.51		0.06
Control Delay	35.8	9.3		3730.8		26.5		24.3
Queue Delay	0.0	0.0		0.0		0.0		0.0
Total Delay	35.8	9.3		3730.8		26.5		24.3
LOS	D	A		F		C		C
Approach Delay	28.0			3730.8		26.5		24.3
Approach LOS	C			F		C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 74.7
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 9.27
 Intersection Signal Delay: 2443.4
 Intersection LOS: F
 Intersection Capacity Utilization 70.7%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Stephens Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (veh/h)	0	160	66	461	226	5	55	4	68	4	8	4
Future Volume (veh/h)	0	160	66	461	226	5	55	4	68	4	8	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	176	58	507	248	4	60	4	24	4	9	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	1230	1041	669	267	4	259	33	63	141	229	0
Arrive On Green	0.00	0.66	0.66	0.66	0.66	0.66	0.15	0.15	0.15	0.15	0.15	0.00
Sat Flow, veh/h	0	1870	1584	830	406	7	875	216	409	286	1482	0
Grp Volume(v), veh/h	0	176	58	759	0	0	88	0	0	13	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1584	1243	0	0	1501	0	0	1769	0	0
Q Serve(g_s), s	0.0	1.7	0.6	25.3	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	1.7	0.6	27.0	0.0	0.0	2.4	0.0	0.0	0.3	0.0	0.0
Prop In Lane	0.00		1.00	0.67		0.01	0.68		0.27	0.31		0.00
Lane Grp Cap(c), veh/h	0	1230	1041	940	0	0	355	0	0	369	0	0
V/C Ratio(X)	0.00	0.14	0.06	0.81	0.00	0.00	0.25	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	0	1378	1167	1045	0	0	1154	0	0	1290	0	0
HCM 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
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	3.2	3.0	8.3	0.0	0.0	18.5	0.0	0.0	17.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	4.4	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.1	4.3	0.0	0.0	0.9	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.2	3.0	12.6	0.0	0.0	18.8	0.0	0.0	17.6	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h		234			759			88				13
Approach Delay, s/veh		3.2			12.6			18.8				17.6
Approach LOS		A			B			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.1		36.7		12.1		36.7				
Change Period (Y+Rc), s		4.6		4.6		4.6		4.6				
Max Green Setting (Gmax), s		34.2		36.0		34.2		36.0				
Max Q Clear Time (g_c+11), s		4.4		3.7		2.3		29.0				
Green Ext Time (p_c), s		0.5		1.1		0.0		3.1				
Intersection Summary												
HCM 6th Ctrl Delay				11.2								
HCM 6th LOS				B								

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕	↕		↕	
Traffic Vol, veh/h	0	213	19	12	629	7	36	0	177	0	0	27
Future Vol, veh/h	0	213	19	12	629	7	36	0	177	0	0	27
Conflicting Peds, #/hr	0	0	0	0	0	4	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	227	20	13	669	7	38	0	188	0	0	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	680	0	0	227	0	0	940	933	228	1025	930	677
Stage 1	-	-	-	-	-	-	227	227	-	703	703	-
Stage 2	-	-	-	-	-	-	713	706	-	322	227	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	912	-	-	1341	-	-	244	266	811	213	267	453
Stage 1	-	-	-	-	-	-	776	716	-	428	440	-
Stage 2	-	-	-	-	-	-	423	439	-	690	716	-
Platoon blocked, %		-	-	-	-	-						
Mov Cap-1 Maneuver	909	-	-	1341	-	-	226	261	810	161	262	451
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	261	-	161	262	-
Stage 1	-	-	-	-	-	-	776	716	-	426	431	-
Stage 2	-	-	-	-	-	-	390	430	-	529	716	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.1	13.1	13.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	226	810	909	-	-	1341	-	-	451
HCM Lane V/C Ratio	0.169	0.232	-	-	-	0.01	-	-	0.064
HCM Control Delay (s)	24.2	10.8	0	-	-	7.7	0	-	13.5
HCM Lane LOS	C	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.6	0.9	0	-	-	0	-	-	0.2

Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020

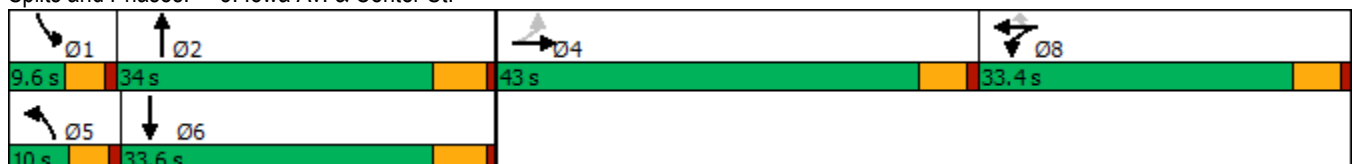


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↙	↕	↗	↙	↕	↘	↕
Traffic Volume (vph)	83	207	207	424	114	106	463	49	660
Future Volume (vph)	83	207	207	424	114	106	463	49	660
Turn Type	Perm	NA	Split	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4	8	8		5	2	1	6
Permitted Phases	4				8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	36.4	36.4	33.4	33.4	33.4	9.6	29.8	9.6	28.8
Total Split (s)	43.0	43.0	33.4	33.4	33.4	10.0	34.0	9.6	33.6
Total Split (%)	35.8%	35.8%	27.8%	27.8%	27.8%	8.3%	28.3%	8.0%	28.0%
Yellow Time (s)	4.4	4.4	4.4	4.4	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4	5.4	5.4	4.6	5.8	4.6	5.8
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	37.6	37.6	28.0	28.0	28.0	5.4	30.1	5.0	27.8
Actuated g/C Ratio	0.31	0.31	0.23	0.23	0.23	0.04	0.25	0.04	0.23
v/c Ratio	1.54	0.30	0.57	1.11	0.29	1.52	0.72	0.77	1.11
Control Delay	341.1	27.3	47.0	119.6	10.5	326.0	45.9	111.2	109.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	341.1	27.3	47.0	119.6	10.5	326.0	45.9	111.2	109.9
LOS	F	C	D	F	B	F	D	F	F
Approach Delay		97.9		82.7			90.7		109.9
Approach LOS		F		F			F		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.54
 Intersection Signal Delay: 95.6
 Intersection LOS: F
 Intersection Capacity Utilization 76.8%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Iowa Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕	↗	↖	↕		↖	↕	
Traffic Volume (veh/h)	83	207	78	207	424	114	106	463	92	49	660	135
Future Volume (veh/h)	83	207	78	207	424	114	106	463	92	49	660	135
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	235	59	235	482	72	120	526	73	56	750	112
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	249	394	97	502	527	446	102	978	135	73	913	136
Arrive On Green	0.14	0.14	0.14	0.28	0.28	0.28	0.06	0.31	0.31	0.04	0.30	0.30
Sat Flow, veh/h	1781	2819	692	1781	1870	1582	1781	3134	433	1781	3090	461
Grp Volume(v), veh/h	94	146	148	235	482	72	120	297	302	56	431	431
Grp Sat Flow(s),veh/h/ln	1781	1777	1733	1781	1870	1582	1781	1777	1791	1781	1777	1775
Q Serve(g_s), s	4.5	7.3	7.5	10.3	23.5	3.2	5.4	13.0	13.1	2.9	21.2	21.3
Cycle Q Clear(g_c), s	4.5	7.3	7.5	10.3	23.5	3.2	5.4	13.0	13.1	2.9	21.2	21.3
Prop In Lane	1.00		0.40	1.00		1.00	1.00		0.24	1.00		0.26
Lane Grp Cap(c), veh/h	249	249	242	502	527	446	102	554	559	73	525	524
V/C Ratio(X)	0.38	0.59	0.61	0.47	0.91	0.16	1.17	0.54	0.54	0.77	0.82	0.82
Avail Cap(c_a), veh/h	712	710	693	530	557	471	102	554	559	95	525	524
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.7	37.9	38.0	27.9	32.7	25.4	44.3	26.7	26.8	44.7	30.8	30.8
Incr Delay (d2), s/veh	0.9	2.2	2.5	0.7	19.2	0.2	143.1	3.7	3.7	17.6	13.5	13.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	3.2	3.3	4.3	12.8	1.2	6.4	5.7	5.8	1.6	10.4	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.7	40.1	40.5	28.6	51.9	25.6	187.5	30.4	30.5	62.3	44.3	44.4
LnGrp LOS	D	D	D	C	D	C	F	C	C	E	D	D
Approach Vol, veh/h		388			789			719			918	
Approach Delay, s/veh		39.7			42.6			56.7			45.4	
Approach LOS		D			D			E			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.4	35.2		18.6	10.0	33.6		31.9				
Change Period (Y+Rc), s	4.6	5.8		5.4	4.6	5.8		5.4				
Max Green Setting (Gmax), s	5.0	28.2		37.6	5.4	27.8		28.0				
Max Q Clear Time (g_c+1), s	4.9	15.1		9.5	7.4	23.3		25.5				
Green Ext Time (p_c), s	0.0	2.7		1.9	0.0	2.0		1.0				

Intersection Summary

HCM 6th Ctrl Delay	46.7
HCM 6th LOS	D

Timings

Highgrove Town Center Due Diligence (JN:13222)

4: Iowa Av. & W. Citrus St.

03/05/2020



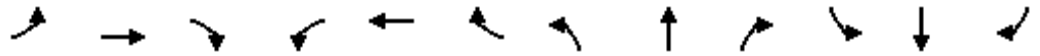
Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	Ø4	Ø5
Lane Configurations	↶	↷	↶↷	↶	↶	↶↷		
Traffic Volume (vph)	5	0	616	24	11	971		
Future Volume (vph)	5	0	616	24	11	971		
Turn Type	Perm	NA	NA	Perm	Prot	NA		
Protected Phases		8	2		1	6	4	5
Permitted Phases	8			2				
Detector Phase	8	8	2	2	1	6		
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0
Minimum Split (s)	14.6	14.6	29.8	29.8	9.6	15.8	14.6	9.6
Total Split (s)	19.0	19.0	85.0	85.0	16.0	91.0	19.0	10.0
Total Split (%)	15.8%	15.8%	70.8%	70.8%	13.3%	75.8%	16%	8%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.6	4.6	5.8	5.8	4.6	5.8		
Lead/Lag			Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes	Yes	Yes		Yes
Recall Mode	None	None	Max	Max	None	Max	None	None
Act Effct Green (s)	10.0	10.0	93.9	93.9	5.5	96.1		
Actuated g/C Ratio	0.10	0.10	0.90	0.90	0.05	0.92		
v/c Ratio	0.03	0.03	0.21	0.02	0.13	0.32		
Control Delay	44.4	0.1	2.2	0.0	50.6	1.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	44.4	0.1	2.2	0.0	50.6	1.6		
LOS	D	A	A	A	D	A		
Approach Delay		12.4	2.2			2.2		
Approach LOS		B	A			A		

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 103.9	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.32	
Intersection Signal Delay: 2.3	Intersection LOS: A
Intersection Capacity Utilization 43.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Iowa Av. & W. Citrus St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↗		↖	↑↑	↗	↖	↗	
Traffic Volume (veh/h)	0	0	0	5	0	12	0	616	24	11	971	0
Future Volume (veh/h)	0	0	0	5	0	12	0	616	24	11	971	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	5	0	12	0	662	25	12	1044	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	70	0	140	0	60	2	2833	1263	25	3048	0
Arrive On Green	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.80	0.80	0.01	0.86	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	3554	1584	1781	3647	0
Grp Volume(v), veh/h	0	0	0	5	0	12	0	662	25	12	1044	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1777	1584	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.7	0.0	4.6	0.3	0.7	5.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.3	0.0	0.7	0.0	4.6	0.3	0.7	5.9	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	70	0	140	0	60	2	2833	1263	25	3048	0
V/C Ratio(X)	0.00	0.00	0.00	0.04	0.00	0.20	0.00	0.23	0.02	0.47	0.34	0.00
Avail Cap(c_a), veh/h	0	271	0	331	0	230	97	2833	1263	204	3048	0
HCM 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
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	46.1	0.0	46.4	0.0	2.5	2.1	48.6	1.4	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	1.6	0.0	0.2	0.0	5.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.9	0.1	0.3	0.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	46.2	0.0	48.0	0.0	2.7	2.1	53.7	1.7	0.0
LnGrp LOS	A	A	A	D	A	D	A	A	A	D	A	A
Approach Vol, veh/h		0			17			687			1056	
Approach Delay, s/veh		0.0			47.5			2.7			2.3	
Approach LOS					D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	85.0		8.3	0.0	91.0		8.3				
Change Period (Y+Rc), s	4.6	5.8		4.6	4.6	5.8		4.6				
Max Green Setting (Gmax), s	11.4	79.2		14.4	5.4	85.2		14.4				
Max Q Clear Time (g_c+11), s	2.7	6.6		0.0	0.0	7.9		2.7				
Green Ext Time (p_c), s	0.0	4.8		0.0	0.0	8.7		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				2.9								
HCM 6th LOS				A								

Timings

Highgrove Town Center Due Diligence (JN:13222)

5: Iowa Av. & E. Citurs St.

03/05/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↙	↕	↘	↘	↕
Traffic Volume (vph)	45	28	612	51	55	921
Future Volume (vph)	45	28	612	51	55	921
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.6	14.6	33.8	33.8	15.8	15.8
Total Split (s)	33.0	33.0	87.0	87.0	87.0	87.0
Total Split (%)	27.5%	27.5%	72.5%	72.5%	72.5%	72.5%
Yellow Time (s)	3.6	3.6	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	10.2	10.2	85.4	85.4	85.4	85.4
Actuated g/C Ratio	0.10	0.10	0.84	0.84	0.84	0.84
v/c Ratio	0.28	0.16	0.22	0.04	0.10	0.34
Control Delay	46.8	17.1	2.5	0.7	2.7	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.8	17.1	2.5	0.7	2.7	2.9
LOS	D	B	A	A	A	A
Approach Delay	35.5		2.3			2.9
Approach LOS	D		A			A

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 101.9
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.34
 Intersection Signal Delay: 4.0
 Intersection LOS: A
 Intersection Capacity Utilization 53.5%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 5: Iowa Av. & E. Citurs St.





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↕	↷	↶	↕
Traffic Volume (veh/h)	45	28	612	51	55	921
Future Volume (veh/h)	45	28	612	51	55	921
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	49	30	665	51	60	1001
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	158	140	2871	1280	633	2871
Arrive On Green	0.09	0.09	0.81	0.81	0.81	0.81
Sat Flow, veh/h	1781	1585	3647	1584	735	3647
Grp Volume(v), veh/h	49	30	665	51	60	1001
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1584	735	1777
Q Serve(g_s), s	2.6	1.8	4.4	0.6	2.1	7.6
Cycle Q Clear(g_c), s	2.6	1.8	4.4	0.6	6.6	7.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	158	140	2871	1280	633	2871
V/C Ratio(X)	0.31	0.21	0.23	0.04	0.09	0.35
Avail Cap(c_a), veh/h	503	448	2871	1280	633	2871
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.9	42.6	2.3	1.9	3.1	2.6
Incr Delay (d2), s/veh	1.1	0.8	0.2	0.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.7	0.8	0.1	0.3	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.0	43.3	2.5	2.0	3.4	2.9
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	79		716			1061
Approach Delay, s/veh	43.8		2.4			2.9
Approach LOS	D		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		87.0			87.0	13.5
Change Period (Y+Rc), s		5.8			5.8	4.6
Max Green Setting (Gmax), s		81.2			81.2	28.4
Max Q Clear Time (g_c+I1), s		6.4			9.6	4.6
Green Ext Time (p_c), s		4.9			8.9	0.2
Intersection Summary						
HCM 6th Ctrl Delay			4.5			
HCM 6th LOS			A			

Timings

Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020

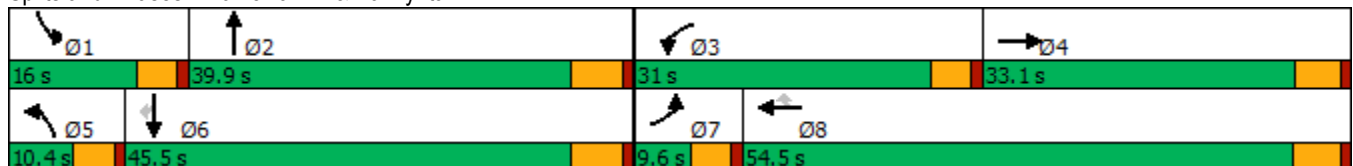


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	13	55	354	62	45	27	592	115	817	25
Future Volume (vph)	13	55	354	62	45	27	592	115	817	25
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	39.4	39.4	9.6	31.8	9.6	31.8	31.8
Total Split (s)	9.6	33.1	31.0	54.5	54.5	10.4	39.9	16.0	45.5	45.5
Total Split (%)	8.0%	27.6%	25.8%	45.4%	45.4%	8.7%	33.3%	13.3%	37.9%	37.9%
Yellow Time (s)	3.6	4.1	3.6	4.4	4.4	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.4	5.4	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	5.1	13.4	26.8	39.2	39.2	5.6	34.6	10.4	43.7	43.7
Actuated g/C Ratio	0.05	0.13	0.26	0.39	0.39	0.06	0.34	0.10	0.43	0.43
v/c Ratio	0.16	0.35	0.85	0.10	0.07	0.31	0.76	0.71	0.60	0.04
Control Delay	55.4	37.7	55.5	20.6	0.2	59.1	35.4	68.4	27.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.4	37.7	55.5	20.6	0.2	59.1	35.4	68.4	27.3	0.1
LOS	E	D	E	C	A	E	D	E	C	A
Approach Delay		40.1		45.4			36.2		31.5	
Approach LOS		D		D			D		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 101.8
 Natural Cycle: 105
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 36.2
 Intersection LOS: D
 Intersection Capacity Utilization 69.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 6: Iowa Av. & Palmyrita Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↖	↗	↖	↖↗		↖	↖↗	↖
Traffic Volume (veh/h)	13	55	23	354	62	45	27	592	212	115	817	25
Future Volume (veh/h)	13	55	23	354	62	45	27	592	212	115	817	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	14	61	12	393	69	21	30	658	149	128	908	18
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	29	157	31	426	610	510	51	1020	231	158	1478	644
Arrive On Green	0.02	0.10	0.10	0.24	0.33	0.33	0.03	0.36	0.36	0.09	0.42	0.42
Sat Flow, veh/h	1781	1514	298	1781	1870	1565	1781	2865	648	1781	3554	1548
Grp Volume(v), veh/h	14	0	73	393	69	21	30	408	399	128	908	18
Grp Sat Flow(s),veh/h/ln	1781	0	1812	1781	1870	1565	1781	1777	1736	1781	1777	1548
Q Serve(g_s), s	0.7	0.0	3.6	20.6	2.5	0.9	1.6	18.4	18.4	6.8	19.2	0.7
Cycle Q Clear(g_c), s	0.7	0.0	3.6	20.6	2.5	0.9	1.6	18.4	18.4	6.8	19.2	0.7
Prop In Lane	1.00		0.16	1.00		1.00	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	29	0	187	426	610	510	51	632	618	158	1478	644
V/C Ratio(X)	0.48	0.00	0.39	0.92	0.11	0.04	0.59	0.64	0.65	0.81	0.61	0.03
Avail Cap(c_a), veh/h	93	0	529	491	959	802	108	632	618	212	1478	644
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.7	0.0	40.1	35.6	22.6	22.0	46.0	25.8	25.8	42.9	21.9	16.5
Incr Delay (d2), s/veh	4.6	0.0	1.3	20.3	0.1	0.0	3.9	5.0	5.2	11.6	1.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.6	10.9	1.1	0.3	0.7	8.1	7.9	3.4	7.7	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.3	0.0	41.4	55.9	22.7	22.1	49.9	30.8	31.0	54.4	23.9	16.6
LnGrp LOS	D	A	D	E	C	C	D	C	C	D	C	B
Approach Vol, veh/h		87			483			837			1054	
Approach Delay, s/veh		43.0			49.7			31.6			27.5	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.1	39.9	27.5	15.3	7.3	45.7	6.2	36.7				
Change Period (Y+Rc), s	4.6	5.8	4.6	* 5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	11.4	34.1	26.4	* 28	5.8	39.7	5.0	49.1				
Max Q Clear Time (g_c+11), s	8.8	20.4	22.6	5.6	3.6	21.2	2.7	4.5				
Green Ext Time (p_c), s	0.0	3.9	0.3	0.3	0.0	5.7	0.0	0.4				

Intersection Summary

HCM 6th Ctrl Delay	33.8
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

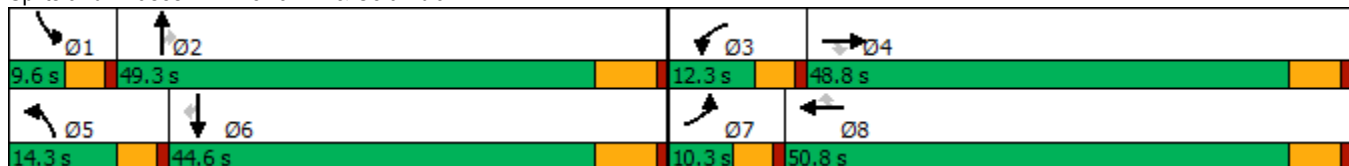


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗
Traffic Volume (vph)	154	199	250	80	128	32	211	728	100	60	923	183
Future Volume (vph)	154	199	250	80	128	32	211	728	100	60	923	183
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	47.8	47.8	9.6	50.8	50.8	9.6	42.5	42.5	9.6	44.5	44.5
Total Split (s)	10.3	48.8	48.8	12.3	50.8	50.8	14.3	49.3	49.3	9.6	44.6	44.6
Total Split (%)	8.6%	40.7%	40.7%	10.3%	42.3%	42.3%	11.9%	41.1%	41.1%	8.0%	37.2%	37.2%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	5.5	5.5	3.6	5.5	5.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	6.5	6.5	4.6	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.8	19.6	19.6	6.6	18.2	18.2	9.5	45.3	45.3	5.1	38.8	38.8
Actuated g/C Ratio	0.06	0.21	0.21	0.07	0.19	0.19	0.10	0.48	0.48	0.05	0.41	0.41
v/c Ratio	0.79	0.29	0.61	0.36	0.20	0.08	0.66	0.46	0.14	0.35	0.69	0.27
Control Delay	71.8	32.4	20.2	49.3	30.8	0.4	53.0	20.2	4.9	52.5	27.9	8.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	32.4	20.2	49.3	30.8	0.4	53.0	20.2	4.9	52.5	27.9	8.1
LOS	E	C	C	D	C	A	D	C	A	D	C	A
Approach Delay		37.4			32.9			25.4			26.1	
Approach LOS		D			C			C			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 94.1	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 28.6	Intersection LOS: C
Intersection Capacity Utilization 69.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 7: Iowa Av. & Columbia Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	154	199	250	80	128	32	211	728	100	60	923	183
Future Volume (veh/h)	154	199	250	80	128	32	211	728	100	60	923	183
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	167	216	145	87	139	13	229	791	51	65	1003	122
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	496	221	178	439	196	308	1804	793	160	1652	736
Arrive On Green	0.07	0.14	0.14	0.05	0.12	0.12	0.09	0.51	0.51	0.05	0.46	0.46
Sat Flow, veh/h	3456	3554	1582	3456	3554	1585	3456	3554	1562	3456	3554	1583
Grp Volume(v), veh/h	167	216	145	87	139	13	229	791	51	65	1003	122
Grp Sat Flow(s),veh/h/ln	1728	1777	1582	1728	1777	1585	1728	1777	1562	1728	1777	1583
Q Serve(g_s), s	4.0	4.7	7.3	2.1	3.0	0.6	5.5	11.9	1.4	1.5	17.7	3.8
Cycle Q Clear(g_c), s	4.0	4.7	7.3	2.1	3.0	0.6	5.5	11.9	1.4	1.5	17.7	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	234	496	221	178	439	196	308	1804	793	160	1652	736
V/C Ratio(X)	0.71	0.44	0.66	0.49	0.32	0.07	0.74	0.44	0.06	0.41	0.61	0.17
Avail Cap(c_a), veh/h	234	1812	807	316	1896	846	398	1804	793	205	1652	736
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	33.2	34.4	38.9	33.7	32.7	37.5	13.2	10.6	39.1	16.8	13.1
Incr Delay (d2), s/veh	8.6	0.6	3.3	0.8	0.4	0.1	3.6	0.8	0.2	0.6	1.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.9	2.8	0.9	1.3	0.2	2.3	4.1	0.5	0.6	6.5	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.1	33.8	37.7	39.7	34.1	32.8	41.1	13.9	10.7	39.7	18.5	13.6
LnGrp LOS	D	C	D	D	C	C	D	B	B	D	B	B
Approach Vol, veh/h		528			239			1071			1190	
Approach Delay, s/veh		39.1			36.1			19.6			19.1	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	49.3	8.9	17.6	12.1	45.7	10.3	16.2				
Change Period (Y+Rc), s	4.6	6.5	4.6	5.8	4.6	6.5	4.6	5.8				
Max Green Setting (Gmax), s	5.0	42.8	7.7	43.0	9.7	38.1	5.7	45.0				
Max Q Clear Time (g_c+1), s	3.5	13.9	4.1	9.3	7.5	19.7	6.0	5.0				
Green Ext Time (p_c), s	0.0	5.4	0.0	1.7	0.1	6.5	0.0	0.8				
Intersection Summary												
HCM 6th Ctrl Delay			24.1									
HCM 6th LOS			C									

Timings

Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020

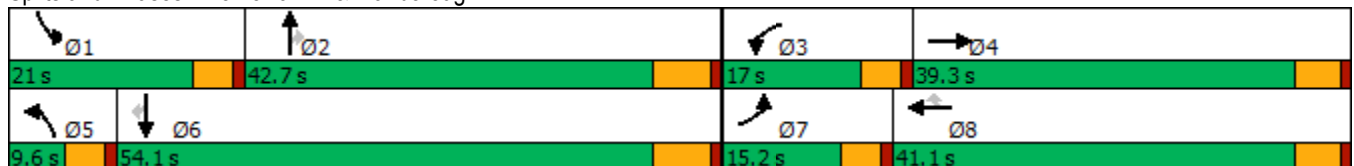


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	134	39	77	12	52	27	967	95	210	1076	134
Future Volume (vph)	134	39	77	12	52	27	967	95	210	1076	134
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	41.1	41.1	9.6	31.2	31.2	9.6	25.2	25.2
Total Split (s)	15.2	39.3	17.0	41.1	41.1	9.6	42.7	42.7	21.0	54.1	54.1
Total Split (%)	12.7%	32.8%	14.2%	34.3%	34.3%	8.0%	35.6%	35.6%	17.5%	45.1%	45.1%
Yellow Time (s)	3.6	4.1	3.6	4.1	4.1	3.6	5.2	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.1	5.1	4.6	6.2	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	10.8	15.1	8.8	14.4	14.4	5.1	37.2	37.2	16.4	52.8	52.8
Actuated g/C Ratio	0.11	0.16	0.09	0.15	0.15	0.05	0.39	0.39	0.17	0.55	0.55
v/c Ratio	0.75	0.24	0.53	0.05	0.16	0.32	0.78	0.15	0.77	0.61	0.17
Control Delay	67.6	26.0	56.8	34.3	0.9	57.9	32.9	2.4	58.7	20.2	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	67.6	26.0	56.8	34.3	0.9	57.9	32.9	2.4	58.7	20.2	7.0
LOS	E	C	E	C	A	E	C	A	E	C	A
Approach Delay		54.0		34.3			30.9			24.6	
Approach LOS		D		C			C			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 95.9	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 29.6	Intersection LOS: C
Intersection Capacity Utilization 65.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: Iowa Av. & Marlborough Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 8: Iowa Av. & Marlborough Av. 03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↖	↗	↗	↖	↗	↖
Traffic Volume (veh/h)	134	39	26	77	12	52	27	967	95	210	1076	134
Future Volume (veh/h)	134	39	26	77	12	52	27	967	95	210	1076	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	149	43	17	86	13	17	30	1074	77	233	1196	107
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	198	78	111	217	183	52	1443	642	268	1874	818
Arrive On Green	0.10	0.16	0.16	0.06	0.12	0.12	0.03	0.41	0.41	0.15	0.53	0.53
Sat Flow, veh/h	1781	1270	502	1781	1870	1577	1781	3554	1581	1781	3554	1551
Grp Volume(v), veh/h	149	0	60	86	13	17	30	1074	77	233	1196	107
Grp Sat Flow(s),veh/h/ln	1781	0	1772	1781	1870	1577	1781	1777	1581	1781	1777	1551
Q Serve(g_s), s	7.4	0.0	2.7	4.3	0.6	0.9	1.5	23.4	2.8	11.6	21.8	3.2
Cycle Q Clear(g_c), s	7.4	0.0	2.7	4.3	0.6	0.9	1.5	23.4	2.8	11.6	21.8	3.2
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	181	0	276	111	217	183	52	1443	642	268	1874	818
V/C Ratio(X)	0.82	0.00	0.22	0.78	0.06	0.09	0.58	0.74	0.12	0.87	0.64	0.13
Avail Cap(c_a), veh/h	208	0	667	243	741	625	98	1443	642	322	1874	818
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.0	0.0	33.5	42.0	35.7	35.9	43.5	23.0	16.8	37.7	15.3	10.9
Incr Delay (d2), s/veh	17.9	0.0	0.4	4.4	0.1	0.2	3.7	3.5	0.4	17.1	1.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	1.2	2.0	0.3	0.3	0.7	9.3	1.0	6.0	7.8	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.9	0.0	33.9	46.4	35.9	36.1	47.2	26.5	17.2	54.8	17.0	11.2
LnGrp LOS	E	A	C	D	D	D	D	C	B	D	B	B
Approach Vol, veh/h		209			116			1181			1536	
Approach Delay, s/veh		51.0			43.7			26.4			22.3	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.3	43.1	10.2	19.3	7.3	54.1	13.9	15.6				
Change Period (Y+Rc), s	4.6	6.2	4.6	5.1	4.6	6.2	4.6	5.1				
Max Green Setting (Gmax), s	16.4	36.5	12.4	34.2	5.0	47.9	10.6	36.0				
Max Q Clear Time (g_c+1), s	13.6	25.4	6.3	4.7	3.5	23.8	9.4	2.9				
Green Ext Time (p_c), s	0.1	5.2	0.0	0.3	0.0	8.9	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			26.7									
HCM 6th LOS			C									

Timings

Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020

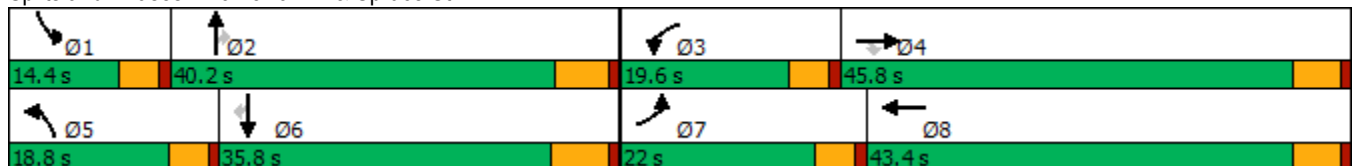


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↗	↘	↕	↗
Traffic Volume (vph)	224	237	103	96	201	135	867	140	134	602	170
Future Volume (vph)	224	237	103	96	201	135	867	140	134	602	170
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	34.4	9.6	43.4	9.6	30.8	30.8	9.6	31.2	31.2
Total Split (s)	22.0	45.8	45.8	19.6	43.4	18.8	40.2	40.2	14.4	35.8	35.8
Total Split (%)	18.3%	38.2%	38.2%	16.3%	36.2%	15.7%	33.5%	33.5%	12.0%	29.8%	29.8%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	3.6	4.8	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	4.6	5.8	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	17.6	24.6	24.6	10.3	17.4	12.2	34.7	34.7	9.9	32.0	32.0
Actuated g/C Ratio	0.18	0.25	0.25	0.10	0.17	0.12	0.35	0.35	0.10	0.32	0.32
v/c Ratio	0.83	0.59	0.25	0.60	0.67	0.72	0.81	0.26	0.88	0.61	0.31
Control Delay	64.2	39.1	6.7	58.6	24.3	63.1	37.4	10.4	90.0	33.7	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.2	39.1	6.7	58.6	24.3	63.1	37.4	10.4	90.0	33.7	6.2
LOS	E	D	A	E	C	E	D	B	F	C	A
Approach Delay		43.2			30.4		37.2			36.9	
Approach LOS		D			C		D			D	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 100.1	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 37.0	Intersection LOS: D
Intersection Capacity Utilization 74.6%	ICU Level of Service D
Analysis Period (min) 15	

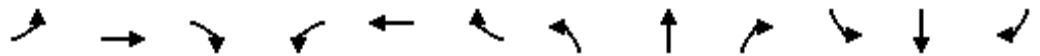
Splits and Phases: 9: Iowa Av. & Spruce St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↕		↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	224	237	103	96	201	235	135	867	140	134	602	170
Future Volume (veh/h)	224	237	103	96	201	235	135	867	140	134	602	170
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	257	272	43	110	231	6	155	997	160	154	692	192
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	291	417	346	139	488	13	188	1317	586	186	1312	576
Arrive On Green	0.16	0.22	0.22	0.08	0.14	0.14	0.11	0.37	0.37	0.10	0.37	0.37
Sat Flow, veh/h	1781	1870	1550	1781	3539	92	1781	3554	1583	1781	3554	1561
Grp Volume(v), veh/h	257	272	43	110	116	121	155	997	160	154	692	192
Grp Sat Flow(s),veh/h/ln	1781	1870	1550	1781	1777	1854	1781	1777	1583	1781	1777	1561
Q Serve(g_s), s	13.1	12.3	2.1	5.6	5.6	5.6	7.9	22.8	6.6	7.9	14.2	8.2
Cycle Q Clear(g_c), s	13.1	12.3	2.1	5.6	5.6	5.6	7.9	22.8	6.6	7.9	14.2	8.2
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	291	417	346	139	245	255	188	1317	586	186	1312	576
V/C Ratio(X)	0.88	0.65	0.12	0.79	0.47	0.47	0.82	0.76	0.27	0.83	0.53	0.33
Avail Cap(c_a), veh/h	334	814	674	288	727	759	272	1317	586	188	1312	576
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.0	32.8	28.8	42.1	36.9	36.9	40.7	25.6	20.5	40.8	22.9	21.1
Incr Delay (d2), s/veh	19.6	1.7	0.2	3.8	1.4	1.4	8.4	4.1	1.1	23.9	1.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	5.5	0.8	2.5	2.4	2.5	3.7	9.5	2.5	4.5	5.6	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.6	34.5	29.0	45.8	38.3	38.3	49.1	29.7	21.6	64.7	24.5	22.6
LnGrp LOS	E	C	C	D	D	D	D	C	C	E	C	C
Approach Vol, veh/h		572			347			1312			1038	
Approach Delay, s/veh		44.5			40.7			31.0			30.1	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.3	40.6	11.8	26.1	14.4	40.5	19.8	18.2				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	9.8	* 34	15.0	40.4	14.2	29.6	17.4	38.0				
Max Q Clear Time (g_c+11), s	9.9	24.8	7.6	14.3	9.9	16.2	15.1	7.6				
Green Ext Time (p_c), s	0.0	4.7	0.1	1.6	0.1	4.0	0.1	1.2				

Intersection Summary

HCM 6th Ctrl Delay	34.1
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection

Intersection Delay, s/veh 12.7
Intersection LOS B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	234	47	17	422	129	50
Future Vol, veh/h	234	47	17	422	129	50
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	293	59	21	528	161	63
Number of Lanes	2	0	0	2	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	11	13.9	12.4
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	72%	0%	0%	11%	0%
Vol Thru, %	0%	100%	62%	89%	100%
Vol Right, %	28%	0%	38%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	179	156	125	158	281
LT Vol	129	0	0	17	0
Through Vol	0	156	78	141	281
RT Vol	50	0	47	0	0
Lane Flow Rate	224	195	156	197	352
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.369	0.322	0.246	0.315	0.557
Departure Headway (Hd)	5.932	5.941	5.674	5.754	5.7
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	606	605	633	625	633
Service Time	3.966	3.676	3.409	3.484	3.429
HCM Lane V/C Ratio	0.37	0.322	0.246	0.315	0.556
HCM Control Delay	12.4	11.5	10.3	11.1	15.4
HCM Lane LOS	B	B	B	B	C
HCM 95th-tile Q	1.7	1.4	1	1.3	3.4

Intersection

Int Delay, s/veh 5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	129	26	101	42	6	65
Future Vol, veh/h	129	26	101	42	6	65
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	400	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	235	47	184	76	11	118

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	261	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1303	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1302	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	7	0	10.8
HCM LOS			B

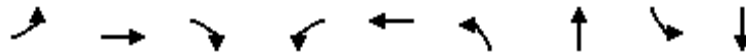
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1302	-	-	-	753
HCM Lane V/C Ratio	0.18	-	-	-	0.171
HCM Control Delay (s)	8.4	0	-	-	10.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.7	-	-	-	0.6

Timings

Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕	↗		↕		↕		↕
Traffic Volume (vph)	5	325	137	298	162	68	5	4	4
Future Volume (vph)	5	325	137	298	162	68	5	4	4
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	21.6	21.6	22.6	22.6	14.6	14.6
Total Split (s)	40.6	40.6	40.6	40.6	40.6	38.8	38.8	38.8	38.8
Total Split (%)	33.8%	33.8%	33.8%	33.8%	33.8%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)		4.6	4.6		4.6		4.6		4.6
Lead/Lag	Lag	Lag	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		22.4	22.4		36.6		13.7		13.7
Actuated g/C Ratio		0.26	0.26		0.42		0.16		0.16
v/c Ratio		0.76	0.29		7.29		0.63		0.04
Control Delay		40.7	5.9		2856.2		36.3		29.0
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		40.7	5.9		2856.2		36.3		29.0
LOS		D	A		F		D		C
Approach Delay		30.5			2856.2		36.3		29.0
Approach LOS		C			F		D		C

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 86.7	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 7.29	
Intersection Signal Delay: 1228.2	Intersection LOS: F
Intersection Capacity Utilization 67.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Stephens Av. & Center St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (veh/h)	5	325	137	298	162	5	68	5	82	4	4	3
Future Volume (veh/h)	5	325	137	298	162	5	68	5	82	4	4	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	357	97	327	178	2	75	5	41	4	4	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	1078	918	498	242	2	294	45	100	226	188	36
Arrive On Green	0.58	0.58	0.58	0.58	0.58	0.58	0.19	0.19	0.19	0.19	0.19	0.19
Sat Flow, veh/h	5	1863	1585	606	418	4	776	231	516	504	974	185
Grp Volume(v), veh/h	362	0	97	507	0	0	121	0	0	9	0	0
Grp Sat Flow(s),veh/h/ln	1868	0	1585	1028	0	0	1523	0	0	1662	0	0
Q Serve(g_s), s	0.0	0.0	1.1	13.7	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	4.1	0.0	1.1	17.7	0.0	0.0	2.7	0.0	0.0	0.2	0.0	0.0
Prop In Lane	0.01		1.00	0.64		0.00	0.62		0.34	0.44		0.11
Lane Grp Cap(c), veh/h	1172	0	918	742	0	0	439	0	0	450	0	0
V/C Ratio(X)	0.31	0.00	0.11	0.68	0.00	0.00	0.28	0.00	0.00	0.02	0.00	0.00
Avail Cap(c_a), veh/h	1753	0	1414	1098	0	0	1407	0	0	1480	0	0
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.4	0.0	3.8	8.0	0.0	0.0	14.2	0.0	0.0	13.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	1.1	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.2	2.1	0.0	0.0	0.9	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.6	0.0	3.9	9.1	0.0	0.0	14.5	0.0	0.0	13.2	0.0	0.0
LnGrp LOS	A	A	A	A	A	A	B	A	A	B	A	A
Approach Vol, veh/h		459			507			121				9
Approach Delay, s/veh		4.4			9.1			14.5				13.2
Approach LOS		A			A			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		12.4		28.0		12.4		28.0				
Change Period (Y+Rc), s		4.6		4.6		4.6		4.6				
Max Green Setting (Gmax), s		34.2		36.0		34.2		36.0				
Max Q Clear Time (g_c+I1), s		4.7		6.1		2.2		19.7				
Green Ext Time (p_c), s		0.7		2.4		0.0		3.6				
Intersection Summary												
HCM 6th Ctrl Delay				7.8								
HCM 6th LOS				A								

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔	↔		↔	
Traffic Vol, veh/h	2	378	31	5	387	4	45	1	317	7	0	33
Future Vol, veh/h	2	378	31	5	387	4	45	1	317	7	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	394	32	5	403	4	47	1	330	7	0	34

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	407	0	0	394	0	0	830	815	394	979	813	405
Stage 1	-	-	-	-	-	-	398	398	-	415	415	-
Stage 2	-	-	-	-	-	-	432	417	-	564	398	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1152	-	-	1165	-	-	289	312	655	229	313	646
Stage 1	-	-	-	-	-	-	628	603	-	615	592	-
Stage 2	-	-	-	-	-	-	602	591	-	510	603	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1152	-	-	1165	-	-	272	310	655	113	310	646
Mov Cap-2 Maneuver	-	-	-	-	-	-	272	310	-	113	310	-
Stage 1	-	-	-	-	-	-	627	602	-	614	588	-
Stage 2	-	-	-	-	-	-	567	587	-	252	602	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			16.6			16.5		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	273	655	1152	-	-	1165	-	-	354
HCM Lane V/C Ratio	0.176	0.504	0.002	-	-	0.004	-	-	0.118
HCM Control Delay (s)	21	16	8.1	0	-	8.1	0	-	16.5
HCM Lane LOS	C	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.6	2.9	0	-	-	0	-	-	0.4

Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020

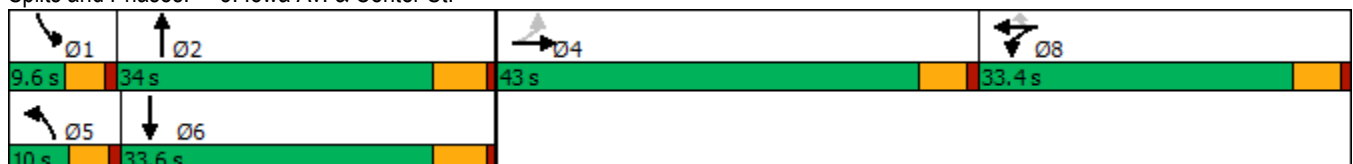


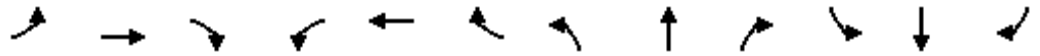
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↙	↕	↗	↙	↕	↘	↕
Traffic Volume (vph)	199	428	128	215	63	139	681	95	523
Future Volume (vph)	199	428	128	215	63	139	681	95	523
Turn Type	Perm	NA	Split	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4	8	8		5	2	1	6
Permitted Phases	4				8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	36.4	36.4	33.4	33.4	33.4	9.6	29.8	9.6	28.8
Total Split (s)	43.0	43.0	33.4	33.4	33.4	10.0	34.0	9.6	33.6
Total Split (%)	35.8%	35.8%	27.8%	27.8%	27.8%	8.3%	28.3%	8.0%	28.0%
Yellow Time (s)	4.4	4.4	4.4	4.4	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4	5.4	5.4	4.6	5.8	4.6	5.8
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	37.7	37.7	18.7	18.7	18.7	5.4	28.3	5.0	27.9
Actuated g/C Ratio	0.34	0.34	0.17	0.17	0.17	0.05	0.26	0.05	0.25
v/c Ratio	3.11	0.46	0.44	0.71	0.18	1.66	0.98	1.23	0.68
Control Delay	994.8	29.6	45.7	56.0	1.7	379.1	66.6	220.5	42.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	994.8	29.6	45.7	56.0	1.7	379.1	66.6	220.5	42.3
LOS	F	C	D	E	A	F	E	F	D
Approach Delay		292.7		44.4			110.6		67.3
Approach LOS		F		D			F		E

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 110.9
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 3.11
 Intersection Signal Delay: 138.0
 Intersection LOS: F
 Intersection Capacity Utilization 72.2%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: Iowa Av. & Center St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖	↖	↖	↖↗		↖	↖↗	
Traffic Volume (veh/h)	199	428	103	128	215	63	139	681	165	95	523	60
Future Volume (veh/h)	199	428	103	128	215	63	139	681	165	95	523	60
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	205	441	80	132	222	62	143	702	131	98	539	54
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	377	634	114	276	290	246	112	979	183	104	1055	105
Arrive On Green	0.21	0.21	0.21	0.16	0.16	0.16	0.06	0.33	0.33	0.06	0.32	0.32
Sat Flow, veh/h	1781	2997	540	1781	1870	1585	1781	2982	556	1781	3261	326
Grp Volume(v), veh/h	205	260	261	132	222	62	143	418	415	98	293	300
Grp Sat Flow(s),veh/h/ln	1781	1777	1760	1781	1870	1585	1781	1777	1761	1781	1777	1811
Q Serve(g_s), s	8.8	11.6	11.8	5.8	9.8	3.0	5.4	17.8	17.8	4.7	11.5	11.5
Cycle Q Clear(g_c), s	8.8	11.6	11.8	5.8	9.8	3.0	5.4	17.8	17.8	4.7	11.5	11.5
Prop In Lane	1.00		0.31	1.00		1.00	1.00		0.32	1.00		0.18
Lane Grp Cap(c), veh/h	377	376	372	276	290	246	112	583	578	104	575	586
V/C Ratio(X)	0.54	0.69	0.70	0.48	0.77	0.25	1.28	0.72	0.72	0.95	0.51	0.51
Avail Cap(c_a), veh/h	780	778	770	581	610	517	112	583	578	104	575	586
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	31.3	31.3	33.1	34.8	31.9	40.3	25.3	25.4	40.3	23.5	23.6
Incr Delay (d2), s/veh	1.2	2.3	2.4	1.3	4.2	0.5	176.9	7.4	7.5	70.1	3.2	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	4.9	5.0	2.5	4.6	1.1	7.7	8.0	8.0	4.0	4.9	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.4	33.6	33.7	34.4	39.0	32.4	217.2	32.7	32.8	110.4	26.7	26.7
LnGrp LOS	C	C	C	C	D	C	F	C	C	F	C	C
Approach Vol, veh/h		726			416			976			691	
Approach Delay, s/veh		33.0			36.6			59.8			38.6	
Approach LOS		C			D			E			D	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	34.0		23.6	10.0	33.6		18.7				
Change Period (Y+Rc), s	4.6	5.8		5.4	4.6	5.8		5.4				
Max Green Setting (Gmax), s	5.0	28.2		37.6	5.4	27.8		28.0				
Max Q Clear Time (g_c+11), s	6.7	19.8		13.8	7.4	13.5		11.8				
Green Ext Time (p_c), s	0.0	3.1		3.6	0.0	2.8		1.6				
Intersection Summary												
HCM 6th Ctrl Delay			44.2									
HCM 6th LOS			D									

Timings

Highgrove Town Center Due Diligence (JN:13222)

4: Iowa Av. & W. Citrus St.

03/05/2020



Lane Group	WBL	WBT	NBL	NBT	NBR	SBL	SBT	Ø4
Lane Configurations	↶	↷	↶	↷	↷	↶	↷	
Traffic Volume (vph)	13	0	1	919	6	8	729	
Future Volume (vph)	13	0	1	919	6	8	729	
Turn Type	Perm	NA	Prot	NA	Perm	Prot	NA	
Protected Phases		8	5	2		1	6	4
Permitted Phases	8				2			
Detector Phase	8	8	5	2	2	1	6	
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.6	14.6	9.6	29.8	29.8	9.6	15.8	14.6
Total Split (s)	19.0	19.0	10.0	85.0	85.0	16.0	91.0	19.0
Total Split (%)	15.8%	15.8%	8.3%	70.8%	70.8%	13.3%	75.8%	16%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8	3.6	4.8	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8	5.8	4.6	5.8	
Lead/Lag			Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max	None
Act Effct Green (s)	10.0	10.0	5.0	93.5	93.5	5.4	93.8	
Actuated g/C Ratio	0.09	0.09	0.05	0.87	0.87	0.05	0.87	
v/c Ratio	0.11	0.07	0.01	0.32	0.00	0.10	0.25	
Control Delay	48.3	0.4	51.0	3.0	0.0	52.5	2.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	48.3	0.4	51.0	3.0	0.0	52.5	2.6	
LOS	D	A	D	A	A	D	A	
Approach Delay		17.2		3.1			3.2	
Approach LOS		B		A			A	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 107.7
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.32
 Intersection Signal Delay: 3.4
 Intersection Capacity Utilization 42.4%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 4: Iowa Av. & W. Citrus St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↗		↖	↑↑	↗	↖	↑↔	
Traffic Volume (veh/h)	0	0	0	13	0	24	1	919	6	8	729	0
Future Volume (veh/h)	0	0	0	13	0	24	1	919	6	8	729	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	14	0	4	1	988	5	9	784	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	73	0	138	0	62	2	2866	1251	20	2900	0
Arrive On Green	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.81	0.81	0.01	0.82	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	3554	1551	1781	3647	0
Grp Volume(v), veh/h	0	0	0	14	0	4	1	988	5	9	784	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1777	1551	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	0.3	0.1	7.8	0.1	0.5	5.4	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.8	0.0	0.3	0.1	7.8	0.1	0.5	5.4	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	73	0	138	0	62	2	2866	1251	20	2900	0
V/C Ratio(X)	0.00	0.00	0.00	0.10	0.00	0.06	0.41	0.34	0.00	0.46	0.27	0.00
Avail Cap(c_a), veh/h	0	258	0	315	0	219	92	2866	1251	194	2900	0
HCM 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
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	48.6	0.0	48.3	52.1	2.7	2.0	51.3	2.3	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.3	0.0	0.4	36.2	0.3	0.0	6.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.4	0.0	0.1	0.0	1.5	0.0	0.3	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	48.9	0.0	48.8	88.3	3.0	2.0	57.4	2.5	0.0
LnGrp LOS	A	A	A	D	A	D	F	A	A	E	A	A
Approach Vol, veh/h		0			18			994			793	
Approach Delay, s/veh		0.0			48.9			3.1			3.1	
Approach LOS					D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	90.0		8.7	4.7	91.0		8.7				
Change Period (Y+Rc), s	4.6	5.8		4.6	4.6	5.8		4.6				
Max Green Setting (Gmax), s	11.4	79.2		14.4	5.4	85.2		14.4				
Max Q Clear Time (g_c+11), s	2.5	9.8		0.0	2.1	7.4		2.8				
Green Ext Time (p_c), s	0.0	8.1		0.0	0.0	5.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				3.6								
HCM 6th LOS				A								

Timings

Highgrove Town Center Due Diligence (JN:13222)

5: Iowa Av. & E. Citurs St.

03/05/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↙	↕	↘	↘	↕
Traffic Volume (vph)	87	50	876	35	21	721
Future Volume (vph)	87	50	876	35	21	721
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.6	14.6	33.8	33.8	15.8	15.8
Total Split (s)	20.0	20.0	100.0	100.0	100.0	100.0
Total Split (%)	16.7%	16.7%	83.3%	83.3%	83.3%	83.3%
Yellow Time (s)	3.6	3.6	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	12.0	12.0	94.3	94.3	94.3	94.3
Actuated g/C Ratio	0.10	0.10	0.81	0.81	0.81	0.81
v/c Ratio	0.52	0.26	0.33	0.03	0.05	0.27
Control Delay	59.9	15.7	3.4	0.9	2.9	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.9	15.7	3.4	0.9	2.9	3.1
LOS	E	B	A	A	A	A
Approach Delay	43.8		3.3			3.1
Approach LOS	D		A			A

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 116.7
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.52
 Intersection Signal Delay: 6.3
 Intersection Capacity Utilization 41.3%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 5: Iowa Av. & E. Citurs St.





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	87	50	876	35	21	721
Future Volume (veh/h)	87	50	876	35	21	721
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	94	14	942	32	23	775
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	151	134	2929	1277	502	2929
Arrive On Green	0.08	0.08	0.82	0.82	0.82	0.82
Sat Flow, veh/h	1781	1585	3647	1549	577	3647
Grp Volume(v), veh/h	94	14	942	32	23	775
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1549	577	1777
Q Serve(g_s), s	5.8	0.9	7.2	0.4	1.1	5.6
Cycle Q Clear(g_c), s	5.8	0.9	7.2	0.4	8.4	5.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	151	134	2929	1277	502	2929
V/C Ratio(X)	0.62	0.10	0.32	0.03	0.05	0.26
Avail Cap(c_a), veh/h	240	214	2929	1277	502	2929
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.5	48.3	2.4	1.8	3.4	2.3
Incr Delay (d2), s/veh	4.2	0.3	0.3	0.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.4	1.4	0.1	0.1	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.7	48.6	2.7	1.8	3.6	2.5
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	108		974			798
Approach Delay, s/veh	53.9		2.7			2.5
Approach LOS	D		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		100.0			100.0	14.3
Change Period (Y+Rc), s		5.8			5.8	4.6
Max Green Setting (Gmax), s		94.2			94.2	15.4
Max Q Clear Time (g_c+I1), s		9.2			10.4	7.8
Green Ext Time (p_c), s		7.6			6.1	0.1
Intersection Summary						
HCM 6th Ctrl Delay			5.5			
HCM 6th LOS			A			

Timings

Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020

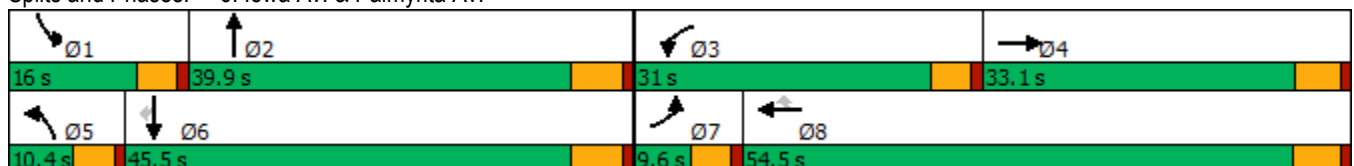


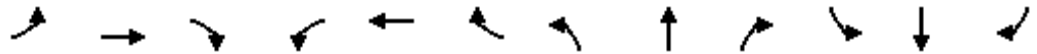
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	16	20	359	61	87	51	792	44	754	23
Future Volume (vph)	16	20	359	61	87	51	792	44	754	23
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	39.4	39.4	9.6	31.8	9.6	31.8	31.8
Total Split (s)	9.6	33.1	31.0	54.5	54.5	10.4	39.9	16.0	45.5	45.5
Total Split (%)	8.0%	27.6%	25.8%	45.4%	45.4%	8.7%	33.3%	13.3%	37.9%	37.9%
Yellow Time (s)	3.6	4.1	3.6	4.4	4.4	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.4	5.4	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	5.1	13.2	27.0	37.1	37.1	5.7	38.9	7.4	40.6	40.6
Actuated g/C Ratio	0.05	0.13	0.27	0.37	0.37	0.06	0.39	0.07	0.40	0.40
v/c Ratio	0.20	0.20	0.85	0.10	0.14	0.57	0.89	0.38	0.59	0.04
Control Delay	56.4	23.9	55.4	22.6	1.2	72.7	40.1	56.2	28.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.4	23.9	55.4	22.6	1.2	72.7	40.1	56.2	28.2	0.1
LOS	E	C	E	C	A	E	D	E	C	A
Approach Delay		32.6		42.1			41.6		28.9	
Approach LOS		C		D			D		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 100.5
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 37.3
 Intersection LOS: D
 Intersection Capacity Utilization 74.1%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 6: Iowa Av. & Palmyrita Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↖	↗	↖	↖↗		↖	↖↗	↖
Traffic Volume (veh/h)	16	20	24	359	61	87	51	792	258	44	754	23
Future Volume (veh/h)	16	20	24	359	61	87	51	792	258	44	754	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	18	22	8	403	69	34	57	890	206	49	847	15
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	132	48	434	607	514	73	1166	270	67	1443	644
Arrive On Green	0.02	0.10	0.10	0.24	0.32	0.32	0.04	0.41	0.41	0.04	0.41	0.41
Sat Flow, veh/h	1781	1309	476	1781	1870	1585	1781	2849	659	1781	3554	1585
Grp Volume(v), veh/h	18	0	30	403	69	34	57	555	541	49	847	15
Grp Sat Flow(s),veh/h/ln	1781	0	1785	1781	1870	1585	1781	1777	1731	1781	1777	1585
Q Serve(g_s), s	1.0	0.0	1.5	21.6	2.5	1.4	3.1	26.2	26.3	2.7	18.2	0.6
Cycle Q Clear(g_c), s	1.0	0.0	1.5	21.6	2.5	1.4	3.1	26.2	26.3	2.7	18.2	0.6
Prop In Lane	1.00		0.27	1.00		1.00	1.00		0.38	1.00		1.00
Lane Grp Cap(c), veh/h	35	0	179	434	607	514	73	728	709	67	1443	644
V/C Ratio(X)	0.51	0.00	0.17	0.93	0.11	0.07	0.78	0.76	0.76	0.73	0.59	0.02
Avail Cap(c_a), veh/h	91	0	511	481	939	796	106	728	709	208	1443	644
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.5	0.0	40.2	36.1	23.2	22.8	46.4	24.8	24.8	46.6	22.7	17.4
Incr Delay (d2), s/veh	4.2	0.0	0.4	22.3	0.1	0.1	11.8	7.4	7.7	5.6	1.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.7	11.7	1.1	0.5	1.6	11.6	11.3	1.2	7.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.7	0.0	40.7	58.4	23.2	22.9	58.3	32.2	32.5	52.2	24.4	17.5
LnGrp LOS	D	A	D	E	C	C	E	C	C	D	C	B
Approach Vol, veh/h		48			506			1153			911	
Approach Delay, s/veh		44.8			51.2			33.6			25.8	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.3	45.8	28.4	15.2	8.6	45.5	6.5	37.1				
Change Period (Y+Rc), s	4.6	5.8	4.6	* 5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	11.4	34.1	26.4	* 28	5.8	39.7	5.0	49.1				
Max Q Clear Time (g_c+I1), s	4.7	28.3	23.6	3.5	5.1	20.2	3.0	4.5				
Green Ext Time (p_c), s	0.0	3.1	0.2	0.1	0.0	5.3	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	34.5
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

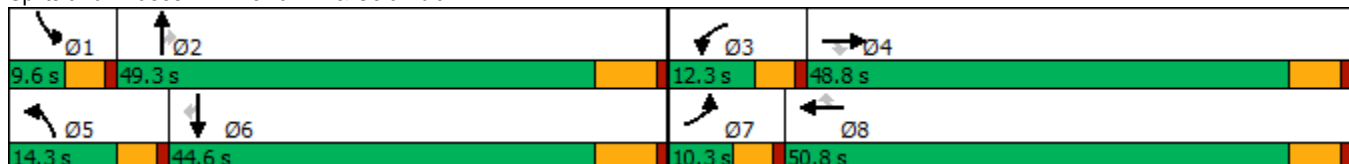


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗
Traffic Volume (vph)	164	127	222	136	219	35	245	826	90	20	944	179
Future Volume (vph)	164	127	222	136	219	35	245	826	90	20	944	179
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	47.8	47.8	9.6	50.8	50.8	9.6	42.5	42.5	9.6	44.5	44.5
Total Split (s)	10.3	48.8	48.8	12.3	50.8	50.8	14.3	49.3	49.3	9.6	44.6	44.6
Total Split (%)	8.6%	40.7%	40.7%	10.3%	42.3%	42.3%	11.9%	41.1%	41.1%	8.0%	37.2%	37.2%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	5.5	5.5	3.6	5.5	5.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	6.5	6.5	4.6	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.8	16.3	16.3	7.4	18.0	18.0	9.9	49.7	49.7	5.1	38.7	38.7
Actuated g/C Ratio	0.06	0.17	0.17	0.08	0.19	0.19	0.11	0.53	0.53	0.05	0.41	0.41
v/c Ratio	0.87	0.23	0.62	0.56	0.36	0.09	0.77	0.50	0.12	0.12	0.73	0.27
Control Delay	82.6	32.9	19.8	52.7	33.2	0.4	57.8	18.8	4.3	48.8	29.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.6	32.9	19.8	52.7	33.2	0.4	57.8	18.8	4.3	48.8	29.0	8.0
LOS	F	C	B	D	C	A	E	B	A	D	C	A
Approach Delay		43.1			37.1			25.9			26.0	
Approach LOS		D			D			C			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 94.2	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 30.0	Intersection LOS: C
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 7: Iowa Av. & Columbia Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↔↔	↑↑	↗	↔↔	↑↑	↗	↔↔	↑↑	↗
Traffic Volume (veh/h)	164	127	222	136	219	35	245	826	90	20	944	179
Future Volume (veh/h)	164	127	222	136	219	35	245	826	90	20	944	179
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	184	143	111	153	246	17	275	928	50	22	1061	109
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	432	192	227	424	189	353	1892	833	83	1614	720
Arrive On Green	0.07	0.12	0.12	0.07	0.12	0.12	0.10	0.53	0.53	0.02	0.45	0.45
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	3456	3554	1564	3456	3554	1585
Grp Volume(v), veh/h	184	143	111	153	246	17	275	928	50	22	1061	109
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1728	1777	1564	1728	1777	1585
Q Serve(g_s), s	4.4	3.1	5.5	3.6	5.5	0.8	6.5	13.9	1.3	0.5	19.5	3.4
Cycle Q Clear(g_c), s	4.4	3.1	5.5	3.6	5.5	0.8	6.5	13.9	1.3	0.5	19.5	3.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	432	192	227	424	189	353	1892	833	83	1614	720
V/C Ratio(X)	0.78	0.33	0.58	0.67	0.58	0.09	0.78	0.49	0.06	0.27	0.66	0.15
Avail Cap(c_a), veh/h	235	1822	813	317	1907	851	400	1892	833	206	1614	720
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	33.7	34.8	38.3	34.9	32.9	36.7	12.4	9.5	40.2	17.8	13.4
Incr Delay (d2), s/veh	14.5	0.4	2.7	1.3	1.3	0.2	7.2	0.9	0.1	0.6	2.1	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.3	2.2	1.5	2.3	0.3	2.9	4.7	0.4	0.2	7.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.0	34.2	37.5	39.6	36.2	33.1	43.9	13.3	9.6	40.8	19.9	13.9
LnGrp LOS	D	C	D	D	D	C	D	B	A	D	B	B
Approach Vol, veh/h		438			416			1253			1192	
Approach Delay, s/veh		42.9			37.3			19.9			19.7	
Approach LOS		D			D			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.6	51.2	10.1	16.0	13.2	44.6	10.3	15.8				
Change Period (Y+Rc), s	4.6	6.5	4.6	5.8	4.6	6.5	4.6	5.8				
Max Green Setting (Gmax), s	5.0	42.8	7.7	43.0	9.7	38.1	5.7	45.0				
Max Q Clear Time (g_c+11), s	2.5	15.9	5.6	7.5	8.5	21.5	6.4	7.5				
Green Ext Time (p_c), s	0.0	6.5	0.0	1.2	0.1	6.6	0.0	1.5				
Intersection Summary												
HCM 6th Ctrl Delay			25.1									
HCM 6th LOS			C									

Timings

Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020

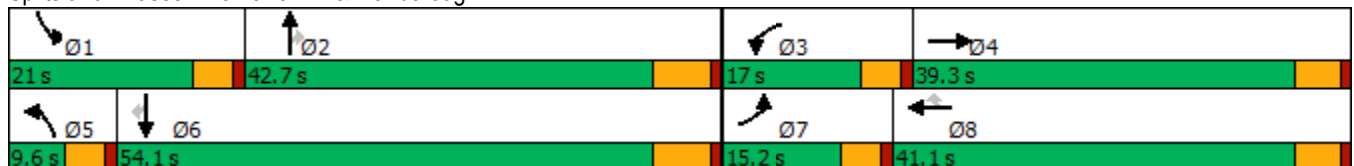


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (vph)	67	15	191	37	114	33	863	34	30	1361	50
Future Volume (vph)	67	15	191	37	114	33	863	34	30	1361	50
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	41.1	41.1	9.6	31.2	31.2	9.6	25.2	25.2
Total Split (s)	15.2	39.3	17.0	41.1	41.1	9.6	42.7	42.7	21.0	54.1	54.1
Total Split (%)	12.7%	32.8%	14.2%	34.3%	34.3%	8.0%	35.6%	35.6%	17.5%	45.1%	45.1%
Yellow Time (s)	3.6	4.1	3.6	4.1	4.1	3.6	5.2	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.1	5.1	4.6	6.2	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	7.8	14.0	14.9	16.2	16.2	5.1	48.7	48.7	6.5	50.0	50.0
Actuated g/C Ratio	0.08	0.15	0.16	0.17	0.17	0.05	0.52	0.52	0.07	0.54	0.54
v/c Ratio	0.48	0.16	0.71	0.12	0.30	0.36	0.49	0.04	0.26	0.76	0.06
Control Delay	56.0	19.7	56.6	34.3	4.1	59.3	19.5	0.1	51.8	23.9	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.0	19.7	56.6	34.3	4.1	59.3	19.5	0.1	51.8	23.9	0.2
LOS	E	B	E	C	A	E	B	A	D	C	A
Approach Delay		42.1		36.7			20.2			23.7	
Approach LOS		D		D			C			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 93.2	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 24.8	Intersection LOS: C
Intersection Capacity Utilization 64.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: Iowa Av. & Marlborough Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↖	↗	↗	↖	↗	↖
Traffic Volume (veh/h)	67	15	27	191	37	114	33	863	34	30	1361	50
Future Volume (veh/h)	67	15	27	191	37	114	33	863	34	30	1361	50
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	71	16	9	201	39	27	35	908	32	32	1433	37
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	120	68	234	350	297	57	1821	812	54	1815	789
Arrive On Green	0.05	0.11	0.11	0.13	0.19	0.19	0.03	0.51	0.51	0.03	0.51	0.51
Sat Flow, veh/h	1781	1117	628	1781	1870	1585	1781	3554	1584	1781	3554	1544
Grp Volume(v), veh/h	71	0	25	201	39	27	35	908	32	32	1433	37
Grp Sat Flow(s),veh/h/ln	1781	0	1745	1781	1870	1585	1781	1777	1584	1781	1777	1544
Q Serve(g_s), s	3.7	0.0	1.2	10.4	1.6	1.3	1.8	15.7	0.9	1.7	31.0	1.1
Cycle Q Clear(g_c), s	3.7	0.0	1.2	10.4	1.6	1.3	1.8	15.7	0.9	1.7	31.0	1.1
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	92	0	188	234	350	297	57	1821	812	54	1815	789
V/C Ratio(X)	0.78	0.00	0.13	0.86	0.11	0.09	0.62	0.50	0.04	0.60	0.79	0.05
Avail Cap(c_a), veh/h	201	0	636	236	718	608	95	1821	812	311	1815	789
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.9	0.0	37.9	39.9	31.6	31.5	44.8	15.0	11.4	44.9	18.8	11.5
Incr Delay (d2), s/veh	5.2	0.0	0.3	24.9	0.1	0.1	4.0	1.0	0.1	3.9	3.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.5	6.0	0.7	0.5	0.8	5.7	0.3	0.8	11.7	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.1	0.0	38.2	64.8	31.8	31.6	48.8	15.9	11.5	48.8	22.4	11.6
LnGrp LOS	D	A	D	E	C	C	D	B	B	D	C	B
Approach Vol, veh/h		96			267			975			1502	
Approach Delay, s/veh		46.3			56.6			17.0			22.7	
Approach LOS		D			E			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.4	54.3	16.9	15.2	7.6	54.1	9.4	22.7				
Change Period (Y+Rc), s	4.6	6.2	4.6	5.1	4.6	6.2	4.6	5.1				
Max Green Setting (Gmax), s	16.4	36.5	12.4	34.2	5.0	47.9	10.6	36.0				
Max Q Clear Time (g_c+11), s	3.7	17.7	12.4	3.2	3.8	33.0	5.7	3.6				
Green Ext Time (p_c), s	0.0	5.6	0.0	0.1	0.0	8.3	0.0	0.2				
Intersection Summary												
HCM 6th Ctrl Delay				24.7								
HCM 6th LOS				C								

Timings

Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020

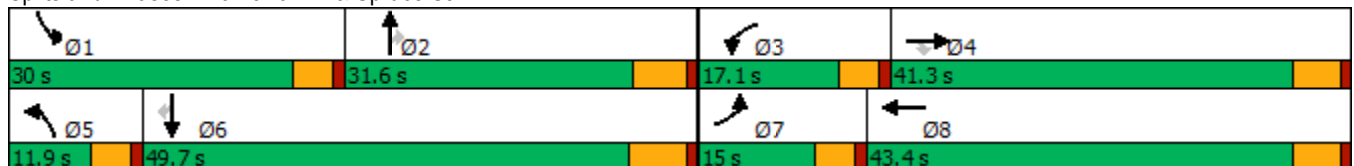


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↗	↘	↕	↗
Traffic Volume (vph)	151	368	220	121	155	83	632	90	348	1001	274
Future Volume (vph)	151	368	220	121	155	83	632	90	348	1001	274
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	34.4	9.6	43.4	9.6	30.8	30.8	9.6	31.2	31.2
Total Split (s)	15.0	41.3	41.3	17.1	43.4	11.9	31.6	31.6	30.0	49.7	49.7
Total Split (%)	12.5%	34.4%	34.4%	14.3%	36.2%	9.9%	26.3%	26.3%	25.0%	41.4%	41.4%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	3.6	4.8	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	4.6	5.8	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	10.5	29.4	29.4	11.2	30.1	7.3	25.9	25.9	25.5	43.7	43.7
Actuated g/C Ratio	0.09	0.26	0.26	0.10	0.27	0.06	0.23	0.23	0.23	0.39	0.39
v/c Ratio	1.02	0.84	0.45	0.76	0.30	0.80	0.86	0.21	0.97	0.81	0.38
Control Delay	128.7	55.8	11.6	77.3	19.1	97.4	54.6	2.8	81.8	37.6	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	128.7	55.8	11.6	77.3	19.1	97.4	54.6	2.8	81.8	37.6	4.4
LOS	F	E	B	E	B	F	D	A	F	D	A
Approach Delay		57.6			37.5		53.2			41.5	
Approach LOS		E			D		D			D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 112.6
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 47.1
 Intersection LOS: D
 Intersection Capacity Utilization 80.9%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 9: Iowa Av. & Spruce St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↕		↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	151	368	220	121	155	105	83	632	90	348	1001	274
Future Volume (veh/h)	151	368	220	121	155	105	83	632	90	348	1001	274
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	168	409	153	134	172	117	92	702	63	387	1112	167
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	170	468	388	162	510	328	116	840	367	413	1433	639
Arrive On Green	0.10	0.25	0.25	0.09	0.25	0.25	0.06	0.24	0.24	0.23	0.40	0.40
Sat Flow, veh/h	1781	1870	1550	1781	2073	1334	1781	3554	1551	1781	3554	1585
Grp Volume(v), veh/h	168	409	153	134	146	143	92	702	63	387	1112	167
Grp Sat Flow(s),veh/h/ln	1781	1870	1550	1781	1777	1630	1781	1777	1551	1781	1777	1585
Q Serve(g_s), s	10.3	22.9	9.0	8.1	7.4	7.9	5.6	20.5	3.5	23.3	29.7	7.7
Cycle Q Clear(g_c), s	10.3	22.9	9.0	8.1	7.4	7.9	5.6	20.5	3.5	23.3	29.7	7.7
Prop In Lane	1.00		1.00	1.00		0.82	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	170	468	388	162	437	401	116	840	367	413	1433	639
V/C Ratio(X)	0.99	0.87	0.39	0.83	0.33	0.36	0.79	0.84	0.17	0.94	0.78	0.26
Avail Cap(c_a), veh/h	170	615	510	204	619	568	119	840	367	415	1433	639
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.3	39.3	34.0	48.7	33.8	34.0	50.3	39.6	33.2	41.1	28.3	21.7
Incr Delay (d2), s/veh	65.7	10.6	0.7	16.2	0.4	0.5	27.0	9.6	1.0	28.5	4.2	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	11.5	3.4	4.2	3.2	3.1	3.3	9.7	1.4	12.9	12.4	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	115.0	49.9	34.7	64.9	34.2	34.5	77.3	49.3	34.2	69.7	32.5	22.7
LnGrp LOS	F	D	C	E	C	C	E	D	C	E	C	C
Approach Vol, veh/h		730			423			857			1666	
Approach Delay, s/veh		61.7			44.1			51.2			40.1	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	29.9	32.0	14.5	32.7	11.7	50.2	15.0	32.2				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	25.4	* 26	12.5	35.9	7.3	43.5	10.4	38.0				
Max Q Clear Time (g_c+11), s	25.3	22.5	10.1	24.9	7.6	31.7	12.3	9.9				
Green Ext Time (p_c), s	0.0	1.4	0.0	2.2	0.0	5.9	0.0	1.6				

Intersection Summary

HCM 6th Ctrl Delay	47.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection

Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	315	61	17	222	40	25
Future Vol, veh/h	315	61	17	222	40	25
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	350	68	19	247	44	28
Number of Lanes	2	0	0	2	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	9.5	9.2	8.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	62%	0%	0%	19%	0%
Vol Thru, %	0%	100%	63%	81%	100%
Vol Right, %	38%	0%	37%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	65	210	166	91	148
LT Vol	40	0	0	17	0
Through Vol	0	210	105	74	148
RT Vol	25	0	61	0	0
Lane Flow Rate	72	233	184	101	164
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.106	0.322	0.241	0.146	0.232
Departure Headway (Hd)	5.264	4.961	4.702	5.183	5.089
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	680	726	764	692	705
Service Time	3.306	2.69	2.432	2.917	2.823
HCM Lane V/C Ratio	0.106	0.321	0.241	0.146	0.233
HCM Control Delay	8.9	10	8.9	8.8	9.4
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	1.4	0.9	0.5	0.9

Intersection

Int Delay, s/veh 4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑	↑	↑
Traffic Vol, veh/h	49	55	39	16	7	62
Future Vol, veh/h	49	55	39	16	7	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	400	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	60	43	18	8	68

Major/Minor

	Major1	Major2	Minor2		
Conflicting Flow All	61	0	0	211	43
Stage 1	-	-	-	43	-
Stage 2	-	-	-	168	-
Critical Hdwy	4.12	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	3.518	3.318
Pot Cap-1 Maneuver	1542	-	-	777	1027
Stage 1	-	-	-	979	-
Stage 2	-	-	-	862	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1542	-	-	749	1027
Mov Cap-2 Maneuver	-	-	-	749	-
Stage 1	-	-	-	944	-
Stage 2	-	-	-	862	-

Approach

	EB	WB	SB
HCM Control Delay, s	3.5	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt

	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1542	-	-	-	990
HCM Lane V/C Ratio	0.035	-	-	-	0.077
HCM Control Delay (s)	7.4	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

APPENDIX 5.2:

E+P CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **E+P Conditions - Weekday PM Peak Hour**

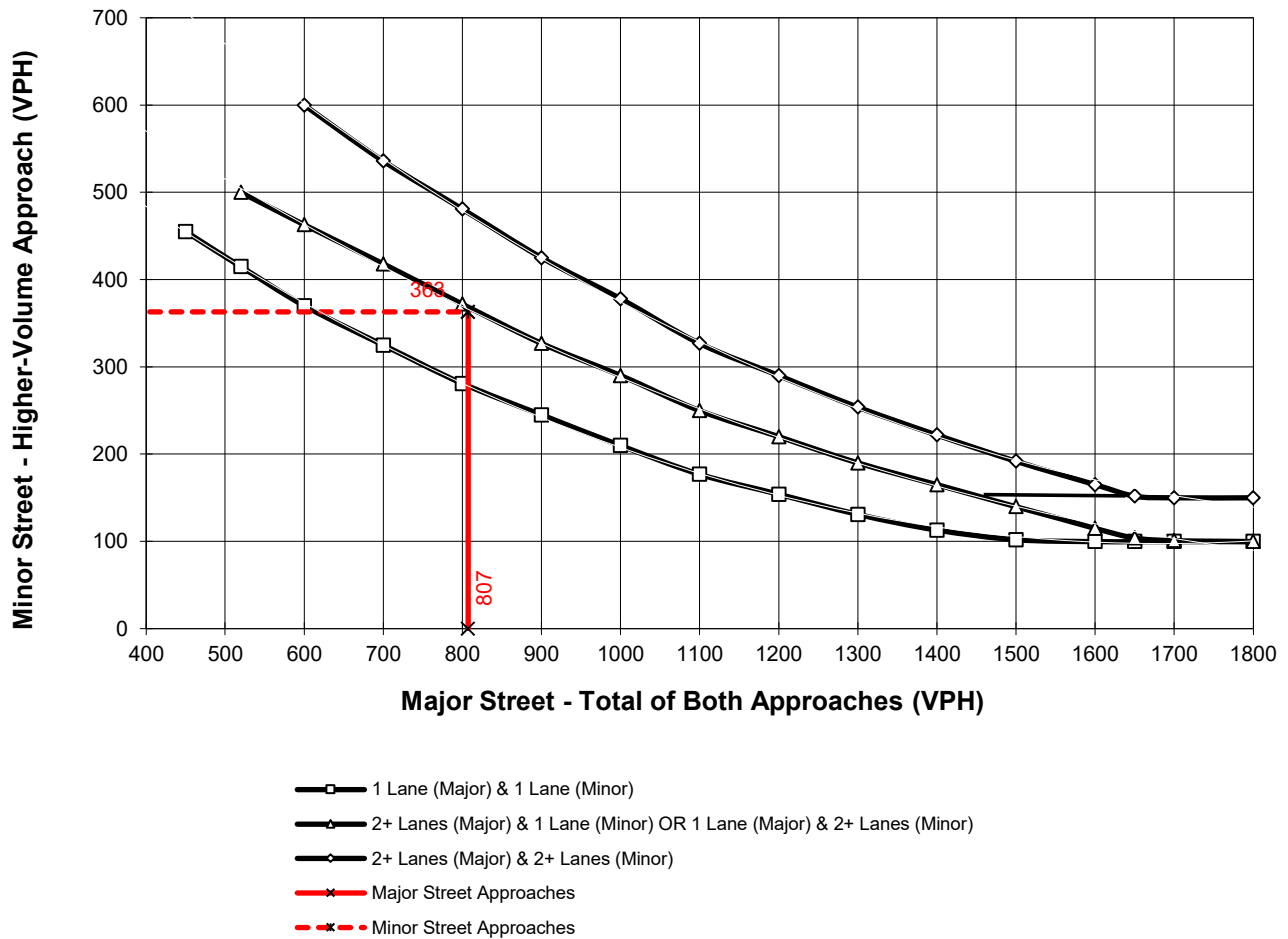
Major Street Name = **Center Street**

Total of Both Approaches (VPH) = **807**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Highgrove Place**

High Volume Approach (VPH) = **363**
Number of Approach Lanes On Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **E+P Conditions - Weekday AM Peak Hour**

Major Street Name = **Center Street**

Total of Both Approaches (VPH) = **720**

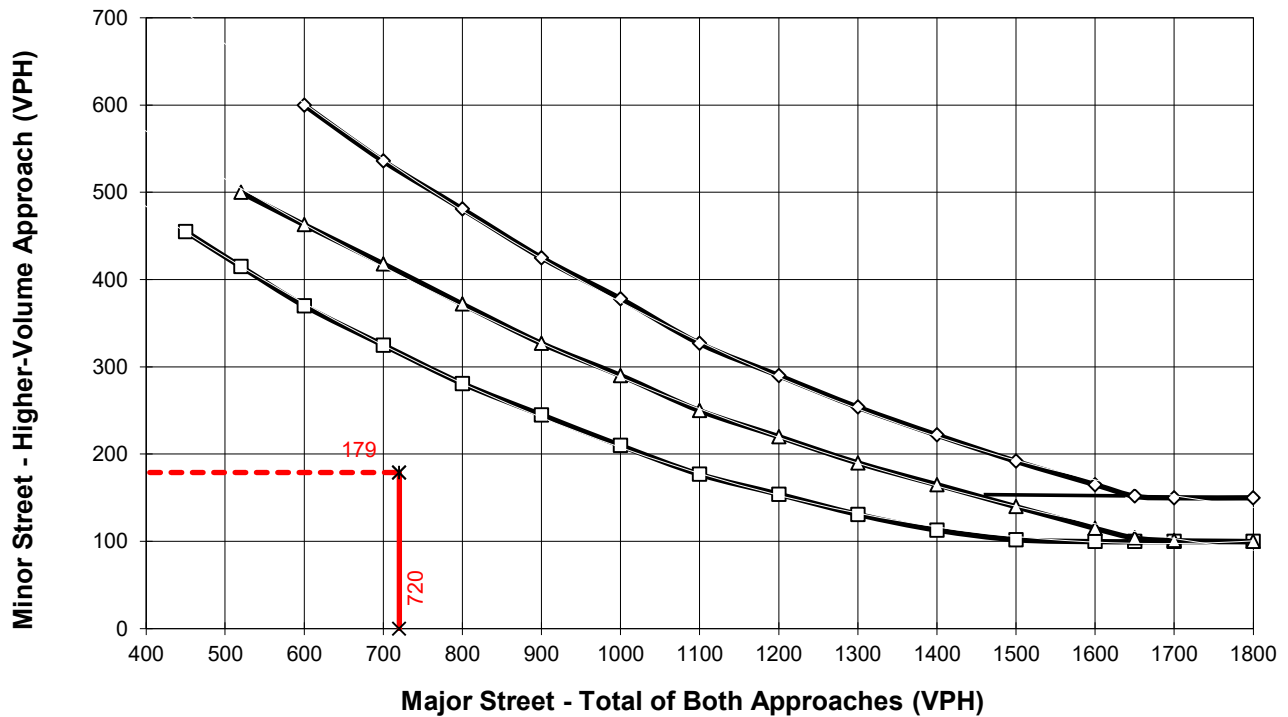
Number of Approach Lanes on Major Street = **2**

Minor Street Name = **Garfield Avenue**

High Volume Approach (VPH) = **179**

Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



- 1 Lane (Major) & 1 Lane (Minor)
- △— 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- ◇— 2+ Lanes (Major) & 2+ Lanes (Minor)
- x— Major Street Approaches
- x- Minor Street Approaches

*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **E+P Conditions - Weekday AM Peak Hour**

Major Street Name = **Spring Street**

Total of Both Approaches (VPH) = **298**

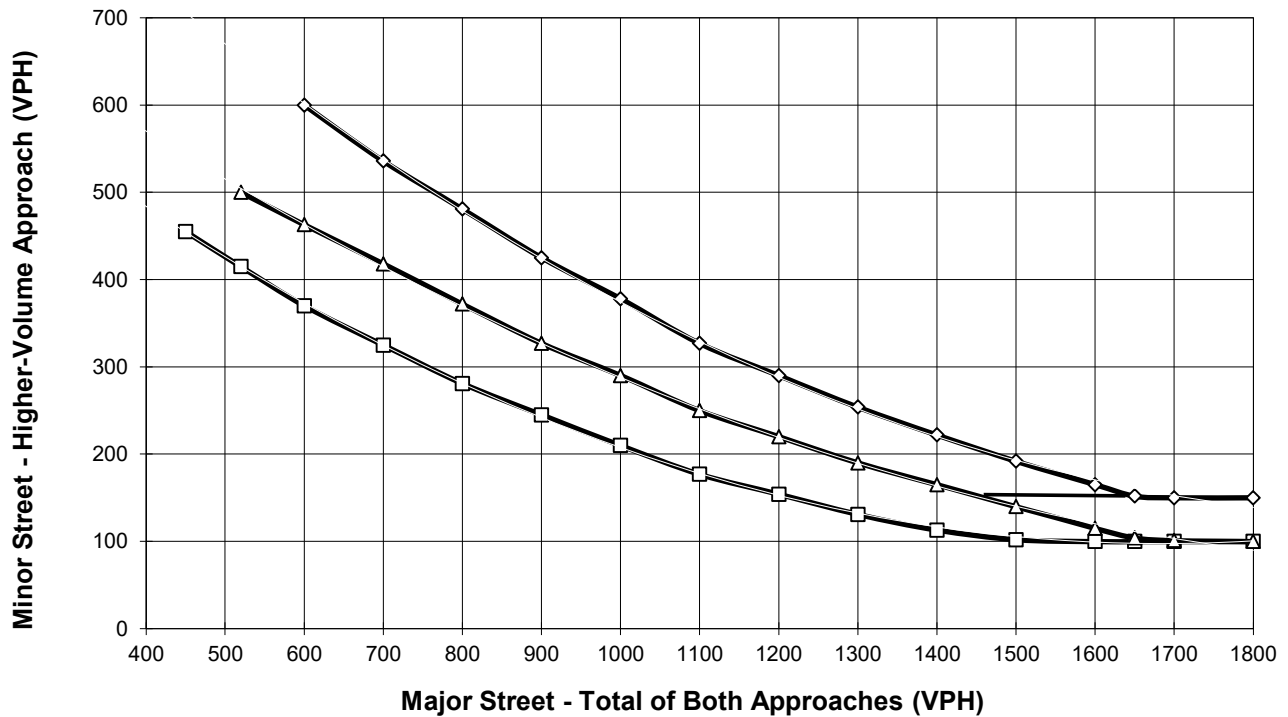
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Garfield Avenue**

High Volume Approach (VPH) = **71**

Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



- 1 Lane (Major) & 1 Lane (Minor)
- △— 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- ◇— 2+ Lanes (Major) & 2+ Lanes (Minor)
- x— Major Street Approaches
- x— Minor Street Approaches

*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 6.1:

EAP (2027) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

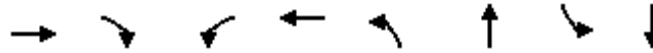
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Timings

Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↕	↗		↕		↕		↕
Traffic Volume (vph)	182	76	518	255	63	5	5	9
Future Volume (vph)	182	76	518	255	63	5	5	9
Turn Type	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4			8		2		6
Permitted Phases		4	8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	21.6	21.6	22.6	22.6	14.6	14.6
Total Split (s)	40.6	40.6	40.6	40.6	38.8	38.8	38.8	38.8
Total Split (%)	33.8%	33.8%	33.8%	33.8%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	4.6	4.6		4.6		4.6		4.6
Lead/Lag	Lag	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	13.7	13.7		36.2		12.4		12.4
Actuated g/C Ratio	0.18	0.18		0.48		0.16		0.16
v/c Ratio	0.60	0.24		10.57		0.58		0.07
Control Delay	37.1	8.9		4347.1		29.7		24.0
Queue Delay	0.0	0.0		0.0		0.0		0.0
Total Delay	37.1	8.9		4347.1		29.7		24.0
LOS	D	A		F		C		C
Approach Delay	28.7			4347.1		29.7		24.0
Approach LOS	C			F		C		C

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 76.2
 Natural Cycle: 75
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 10.57
 Intersection Signal Delay: 2829.2
 Intersection LOS: F
 Intersection Capacity Utilization 78.0%
 ICU Level of Service D
 Analysis Period (min) 15

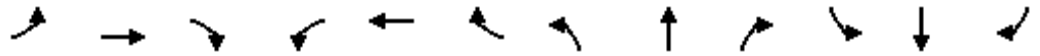
Splits and Phases: 1: Stephens Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (veh/h)	0	182	76	518	255	6	63	5	78	5	9	5
Future Volume (veh/h)	0	182	76	518	255	6	63	5	78	5	9	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	200	69	569	280	6	69	5	35	5	10	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	1253	1061	650	265	6	237	35	77	136	210	17
Arrive On Green	0.00	0.67	0.67	0.67	0.67	0.67	0.16	0.16	0.16	0.16	0.16	0.16
Sat Flow, veh/h	0	1870	1584	804	395	8	805	218	484	305	1322	108
Grp Volume(v), veh/h	0	200	69	855	0	0	109	0	0	16	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1584	1208	0	0	1507	0	0	1735	0	0
Q Serve(g_s), s	0.0	2.1	0.8	33.9	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	2.1	0.8	36.0	0.0	0.0	3.4	0.0	0.0	0.4	0.0	0.0
Prop In Lane	0.00		1.00	0.67		0.01	0.63		0.32	0.31		0.06
Lane Grp Cap(c), veh/h	0	1253	1061	921	0	0	349	0	0	363	0	0
V/C Ratio(X)	0.00	0.16	0.07	0.93	0.00	0.00	0.31	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	0	1253	1061	921	0	0	1050	0	0	1155	0	0
HCM 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
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	3.3	3.1	10.8	0.0	0.0	20.4	0.0	0.0	19.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	15.3	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.4	0.1	9.5	0.0	0.0	1.2	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.3	3.1	26.1	0.0	0.0	20.9	0.0	0.0	19.2	0.0	0.0
LnGrp LOS	A	A	A	C	A	A	C	A	A	B	A	A
Approach Vol, veh/h		269			855			109				16
Approach Delay, s/veh		3.3			26.1			20.9				19.2
Approach LOS		A			C			C				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.1		40.6		13.1		40.6				
Change Period (Y+Rc), s		4.6		4.6		4.6		4.6				
Max Green Setting (Gmax), s		34.2		36.0		34.2		36.0				
Max Q Clear Time (g_c+11), s		5.4		4.1		2.4		38.0				
Green Ext Time (p_c), s		0.6		1.3		0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				20.7								
HCM 6th LOS				C								

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕	↕		↕	
Traffic Vol, veh/h	0	243	22	14	706	8	41	0	200	0	0	31
Future Vol, veh/h	0	243	22	14	706	8	41	0	200	0	0	31
Conflicting Peds, #/hr	0	0	0	0	0	4	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	259	23	15	751	9	44	0	213	0	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	764	0	0	259	0	0	1061	1053	260	1157	1049	760
Stage 1	-	-	-	-	-	-	259	259	-	790	790	-
Stage 2	-	-	-	-	-	-	802	794	-	367	259	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	849	-	-	1306	-	-	202	226	779	173	227	406
Stage 1	-	-	-	-	-	-	746	694	-	383	402	-
Stage 2	-	-	-	-	-	-	378	400	-	653	694	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	846	-	-	1306	-	-	183	221	778	123	222	404
Mov Cap-2 Maneuver	-	-	-	-	-	-	183	221	-	123	222	-
Stage 1	-	-	-	-	-	-	746	694	-	381	392	-
Stage 2	-	-	-	-	-	-	340	390	-	474	694	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			14.7			14.7		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	183	778	846	-	-	1306	-	-	404
HCM Lane V/C Ratio	0.238	0.273	-	-	-	0.011	-	-	0.082
HCM Control Delay (s)	30.7	11.4	0	-	-	7.8	0	-	14.7
HCM Lane LOS	D	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	1.1	0	-	-	0	-	-	0.3

Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↙	↕	↗	↙	↕	↘	↕
Traffic Volume (vph)	95	233	226	471	122	122	532	53	758
Future Volume (vph)	95	233	226	471	122	122	532	53	758
Turn Type	Perm	NA	Split	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4	8	8		5	2	1	6
Permitted Phases	4				8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	36.4	36.4	33.4	33.4	33.4	9.6	29.8	9.6	28.8
Total Split (s)	43.0	43.0	33.4	33.4	33.4	10.0	34.0	9.6	33.6
Total Split (%)	35.8%	35.8%	27.8%	27.8%	27.8%	8.3%	28.3%	8.0%	28.0%
Yellow Time (s)	4.4	4.4	4.4	4.4	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4	5.4	5.4	4.6	5.8	4.6	5.8
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	37.6	37.6	28.0	28.0	28.0	5.4	28.2	5.0	27.8
Actuated g/C Ratio	0.31	0.31	0.23	0.23	0.23	0.04	0.24	0.04	0.23
v/c Ratio	1.77	0.34	0.62	1.23	0.31	1.76	0.88	0.82	1.28
Control Delay	432.9	28.2	48.9	162.9	11.8	421.5	56.3	121.1	173.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	432.9	28.2	48.9	162.9	11.8	421.5	56.3	121.1	173.3
LOS	F	C	D	F	B	F	E	F	F
Approach Delay		120.2		108.8			115.3		170.4
Approach LOS		F		F			F		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.77
 Intersection Signal Delay: 132.2
 Intersection Capacity Utilization 83.5%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service E

Splits and Phases: 3: Iowa Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 3: Iowa Av. & Center St. 03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖	↖	↖	↖↗		↖	↖↗	
Traffic Volume (veh/h)	95	233	90	226	471	122	122	532	102	53	758	155
Future Volume (veh/h)	95	233	90	226	471	122	122	532	102	53	758	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	265	72	257	535	81	139	605	84	60	861	135
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	270	420	112	513	539	456	99	935	130	77	878	138
Arrive On Green	0.15	0.15	0.15	0.29	0.29	0.29	0.06	0.30	0.30	0.04	0.29	0.29
Sat Flow, veh/h	1781	2767	736	1781	1870	1582	1781	3133	434	1781	3066	481
Grp Volume(v), veh/h	108	168	169	257	535	81	139	343	346	60	499	497
Grp Sat Flow(s),veh/h/ln	1781	1777	1726	1781	1870	1582	1781	1777	1791	1781	1777	1770
Q Serve(g_s), s	5.3	8.6	8.9	11.7	27.7	3.7	5.4	16.3	16.3	3.2	27.1	27.1
Cycle Q Clear(g_c), s	5.3	8.6	8.9	11.7	27.7	3.7	5.4	16.3	16.3	3.2	27.1	27.1
Prop In Lane	1.00		0.43	1.00		1.00	1.00		0.24	1.00		0.27
Lane Grp Cap(c), veh/h	270	270	262	513	539	456	99	530	535	77	508	507
V/C Ratio(X)	0.40	0.62	0.64	0.50	0.99	0.18	1.40	0.65	0.65	0.78	0.98	0.98
Avail Cap(c_a), veh/h	689	688	668	513	539	456	99	530	535	92	508	507
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.2	38.6	38.7	28.8	34.5	25.9	45.9	29.6	29.6	46.0	34.4	34.4
Incr Delay (d2), s/veh	1.0	2.4	2.6	0.8	36.7	0.2	231.4	6.0	6.0	24.1	35.5	35.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	3.8	3.8	4.9	17.4	1.4	8.7	7.4	7.5	1.9	15.9	15.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.2	41.0	41.4	29.5	71.2	26.1	277.2	35.6	35.6	70.1	69.9	70.0
LnGrp LOS	D	D	D	C	E	C	F	D	D	E	E	E
Approach Vol, veh/h		445			873			828			1056	
Approach Delay, s/veh		40.4			54.7			76.2			70.0	
Approach LOS		D			D			E			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	34.8		20.1	10.0	33.6		33.4				
Change Period (Y+Rc), s	4.6	5.8		5.4	4.6	5.8		5.4				
Max Green Setting (Gmax), s	5.0	28.2		37.6	5.4	27.8		28.0				
Max Q Clear Time (g_c+11), s	5.2	18.3		10.9	7.4	29.1		29.7				
Green Ext Time (p_c), s	0.0	2.7		2.2	0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				63.3								
HCM 6th LOS				E								

Timings
4: Iowa Av. & W. Citrus St.

Highgrove Town Center Due Diligence (JN:13222)

03/05/2020



Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	Ø4	Ø5
Lane Configurations	↙	↘	↑↑	↗	↙	↘		
Traffic Volume (vph)	6	0	704	28	13	1104		
Future Volume (vph)	6	0	704	28	13	1104		
Turn Type	Perm	NA	NA	Perm	Prot	NA		
Protected Phases		8	2		1	6	4	5
Permitted Phases	8			2				
Detector Phase	8	8	2	2	1	6		
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0
Minimum Split (s)	14.6	14.6	29.8	29.8	9.6	15.8	14.6	9.6
Total Split (s)	19.0	19.0	85.0	85.0	16.0	91.0	19.0	10.0
Total Split (%)	15.8%	15.8%	70.8%	70.8%	13.3%	75.8%	16%	8%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.6	4.6	5.8	5.8	4.6	5.8		
Lead/Lag			Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes	Yes	Yes		Yes
Recall Mode	None	None	Max	Max	None	Max	None	None
Act Effct Green (s)	10.1	10.1	93.0	93.0	5.6	97.2		
Actuated g/C Ratio	0.10	0.10	0.89	0.89	0.05	0.93		
v/c Ratio	0.03	0.03	0.24	0.02	0.15	0.36		
Control Delay	45.3	0.1	3.0	0.0	51.6	1.7		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	45.3	0.1	3.0	0.0	51.6	1.7		
LOS	D	A	A	A	D	A		
Approach Delay		13.1	2.9			2.3		
Approach LOS		B	A			A		

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 104.9	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.36	
Intersection Signal Delay: 2.7	Intersection LOS: A
Intersection Capacity Utilization 47.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Iowa Av. & W. Citrus St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↗		↖	↗	↗	↖	↗	↗
Traffic Volume (veh/h)	0	0	0	6	0	14	0	704	28	13	1104	0
Future Volume (veh/h)	0	0	0	6	0	14	0	704	28	13	1104	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	6	0	14	0	757	29	14	1187	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	80	0	148	0	68	2	2812	1254	29	3033	0
Arrive On Green	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.79	0.79	0.02	0.85	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	3554	1584	1781	3647	0
Grp Volume(v), veh/h	0	0	0	6	0	14	0	757	29	14	1187	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1777	1584	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.9	0.0	5.7	0.4	0.8	7.4	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.3	0.0	0.9	0.0	5.7	0.4	0.8	7.4	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	80	0	148	0	68	2	2812	1254	29	3033	0
V/C Ratio(X)	0.00	0.00	0.00	0.04	0.00	0.21	0.00	0.27	0.02	0.49	0.39	0.00
Avail Cap(c_a), veh/h	0	269	0	328	0	228	96	2812	1254	203	3033	0
HCM 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
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	46.0	0.0	46.3	0.0	2.8	2.2	48.8	1.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	1.5	0.0	0.2	0.0	4.7	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.4	0.0	1.2	0.1	0.4	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	46.1	0.0	47.8	0.0	3.0	2.3	53.5	2.0	0.0
LnGrp LOS	A	A	A	D	A	D	A	A	A	D	A	A
Approach Vol, veh/h		0			20			786			1201	
Approach Delay, s/veh		0.0			47.3			3.0			2.6	
Approach LOS					D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	85.0		8.9	0.0	91.2		8.9				
Change Period (Y+Rc), s	4.6	5.8		4.6	4.6	5.8		4.6				
Max Green Setting (Gmax), s	11.4	79.2		14.4	5.4	85.2		14.4				
Max Q Clear Time (g_c+11), s	2.8	7.7		0.0	0.0	9.4		2.9				
Green Ext Time (p_c), s	0.0	5.7		0.0	0.0	10.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				3.2								
HCM 6th LOS				A								

Timings

Highgrove Town Center Due Diligence (JN:13222)

5: Iowa Av. & E. Citurs St.

03/05/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↙	↕	↘	↘	↕
Traffic Volume (vph)	52	32	699	59	63	1046
Future Volume (vph)	52	32	699	59	63	1046
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.6	14.6	33.8	33.8	15.8	15.8
Total Split (s)	33.0	33.0	87.0	87.0	87.0	87.0
Total Split (%)	27.5%	27.5%	72.5%	72.5%	72.5%	72.5%
Yellow Time (s)	3.6	3.6	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	10.3	10.3	85.3	85.3	85.3	85.3
Actuated g/C Ratio	0.10	0.10	0.84	0.84	0.84	0.84
v/c Ratio	0.32	0.18	0.26	0.05	0.12	0.38
Control Delay	47.7	16.3	2.6	0.7	2.9	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	16.3	2.6	0.7	2.9	3.1
LOS	D	B	A	A	A	A
Approach Delay	35.7		2.5			3.1
Approach LOS	D		A			A

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 102
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.38
 Intersection Signal Delay: 4.3
 Intersection LOS: A
 Intersection Capacity Utilization 53.5%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 5: Iowa Av. & E. Citurs St.





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↕	↷	↷	↘
Traffic Volume (veh/h)	52	32	699	59	63	1046
Future Volume (veh/h)	52	32	699	59	63	1046
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	57	35	760	60	68	1137
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	163	145	2862	1276	573	2862
Arrive On Green	0.09	0.09	0.81	0.81	0.81	0.81
Sat Flow, veh/h	1781	1585	3647	1584	667	3647
Grp Volume(v), veh/h	57	35	760	60	68	1137
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1584	667	1777
Q Serve(g_s), s	3.0	2.1	5.3	0.8	2.8	9.2
Cycle Q Clear(g_c), s	3.0	2.1	5.3	0.8	8.2	9.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	163	145	2862	1276	573	2862
V/C Ratio(X)	0.35	0.24	0.27	0.05	0.12	0.40
Avail Cap(c_a), veh/h	502	446	2862	1276	573	2862
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.0	42.5	2.4	2.0	3.4	2.8
Incr Delay (d2), s/veh	1.3	0.8	0.2	0.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.8	1.0	0.1	0.3	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.3	43.4	2.7	2.1	3.9	3.2
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	92		820			1205
Approach Delay, s/veh	43.9		2.6			3.3
Approach LOS	D		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		87.0			87.0	13.8
Change Period (Y+Rc), s		5.8			5.8	4.6
Max Green Setting (Gmax), s		81.2			81.2	28.4
Max Q Clear Time (g_c+I1), s		7.3			11.2	5.0
Green Ext Time (p_c), s		5.8			11.1	0.2
Intersection Summary						
HCM 6th Ctrl Delay			4.8			
HCM 6th LOS			A			

Timings

Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020

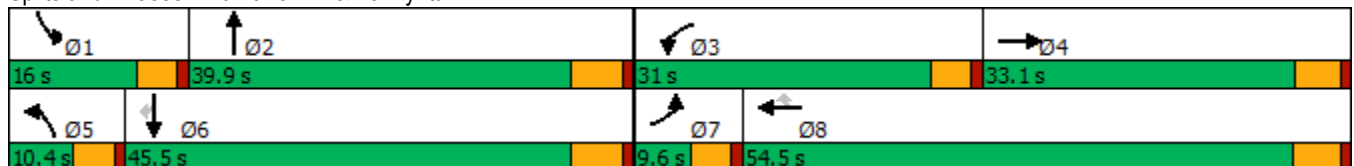


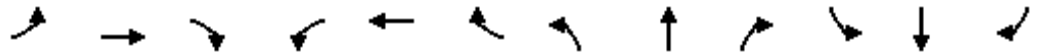
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↕	↖	↕	↗
Traffic Volume (vph)	15	63	399	71	52	31	676	132	927	29
Future Volume (vph)	15	63	399	71	52	31	676	132	927	29
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	39.4	39.4	9.6	31.8	9.6	31.8	31.8
Total Split (s)	9.6	33.1	31.0	54.5	54.5	10.4	39.9	16.0	45.5	45.5
Total Split (%)	8.0%	27.6%	25.8%	45.4%	45.4%	8.7%	33.3%	13.3%	37.9%	37.9%
Yellow Time (s)	3.6	4.1	3.6	4.4	4.4	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.4	5.4	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	5.0	13.6	26.5	40.8	40.8	5.6	34.3	11.1	43.9	43.9
Actuated g/C Ratio	0.05	0.13	0.25	0.39	0.39	0.05	0.32	0.11	0.42	0.42
v/c Ratio	0.20	0.41	1.00	0.11	0.08	0.37	0.91	0.79	0.70	0.04
Control Delay	57.1	39.8	83.5	22.5	0.2	61.9	46.0	76.3	30.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	39.8	83.5	22.5	0.2	61.9	46.0	76.3	30.7	0.1
LOS	E	D	F	C	A	E	D	E	C	A
Approach Delay		42.3		66.8			46.5		35.4	
Approach LOS		D		E			D		D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 105.7
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 45.8
 Intersection LOS: D
 Intersection Capacity Utilization 75.7%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 6: Iowa Av. & Palmyrita Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↖	↗	↖	↖↗		↖	↖↗	↖
Traffic Volume (veh/h)	15	63	26	399	71	52	31	676	241	132	927	29
Future Volume (veh/h)	15	63	26	399	71	52	31	676	241	132	927	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	70	15	443	79	29	34	751	181	147	1030	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	33	147	32	466	639	535	54	955	230	177	1446	630
Arrive On Green	0.02	0.10	0.10	0.26	0.34	0.34	0.03	0.34	0.34	0.10	0.41	0.41
Sat Flow, veh/h	1781	1489	319	1781	1870	1565	1781	2825	681	1781	3554	1548
Grp Volume(v), veh/h	17	0	85	443	79	29	34	472	460	147	1030	22
Grp Sat Flow(s),veh/h/ln	1781	0	1808	1781	1870	1565	1781	1777	1729	1781	1777	1548
Q Serve(g_s), s	1.0	0.0	4.5	24.7	2.9	1.3	1.9	24.2	24.2	8.2	24.4	0.9
Cycle Q Clear(g_c), s	1.0	0.0	4.5	24.7	2.9	1.3	1.9	24.2	24.2	8.2	24.4	0.9
Prop In Lane	1.00		0.18	1.00		1.00	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	33	0	179	466	639	535	54	600	584	177	1446	630
V/C Ratio(X)	0.51	0.00	0.48	0.95	0.12	0.05	0.63	0.79	0.79	0.83	0.71	0.03
Avail Cap(c_a), veh/h	88	0	502	466	910	762	102	600	584	201	1446	630
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.0	0.0	43.0	36.6	22.8	22.3	48.3	30.1	30.1	44.6	25.0	18.0
Incr Delay (d2), s/veh	4.4	0.0	2.0	29.2	0.1	0.0	4.4	10.0	10.3	19.9	3.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.1	14.0	1.3	0.5	0.9	11.3	11.1	4.4	10.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	0.0	45.0	65.8	22.9	22.3	52.7	40.1	40.4	64.5	28.0	18.1
LnGrp LOS	D	A	D	E	C	C	D	D	D	E	C	B
Approach Vol, veh/h		102			551			966			1199	
Approach Delay, s/veh		46.4			57.4			40.7			32.3	
Approach LOS		D			E			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.6	39.9	31.0	15.4	7.7	46.9	6.5	39.9				
Change Period (Y+Rc), s	4.6	5.8	4.6	* 5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	11.4	34.1	26.4	* 28	5.8	39.7	5.0	49.1				
Max Q Clear Time (g_c+11), s	10.2	26.2	26.7	6.5	3.9	26.4	3.0	4.9				
Green Ext Time (p_c), s	0.0	3.4	0.0	0.3	0.0	5.6	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	40.6
HCM 6th LOS	D

Notes

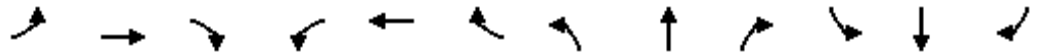
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

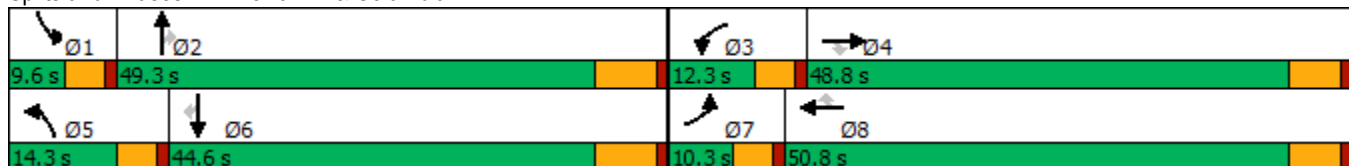


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗
Traffic Volume (vph)	175	229	287	92	147	37	242	831	115	69	1045	205
Future Volume (vph)	175	229	287	92	147	37	242	831	115	69	1045	205
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	47.8	47.8	9.6	50.8	50.8	9.6	42.5	42.5	9.6	44.5	44.5
Total Split (s)	10.3	48.8	48.8	12.3	50.8	50.8	14.3	49.3	49.3	9.6	44.6	44.6
Total Split (%)	8.6%	40.7%	40.7%	10.3%	42.3%	42.3%	11.9%	41.1%	41.1%	8.0%	37.2%	37.2%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	5.5	5.5	3.6	5.5	5.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	6.5	6.5	4.6	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.8	21.5	21.5	6.8	20.3	20.3	9.8	45.6	45.6	5.1	38.7	38.7
Actuated g/C Ratio	0.06	0.22	0.22	0.07	0.21	0.21	0.10	0.47	0.47	0.05	0.40	0.40
v/c Ratio	0.92	0.32	0.66	0.41	0.22	0.09	0.75	0.54	0.16	0.42	0.80	0.31
Control Delay	93.5	32.2	23.6	51.1	30.4	0.4	58.4	22.4	6.3	55.2	32.6	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.5	32.2	23.6	51.1	30.4	0.4	58.4	22.4	6.3	55.2	32.6	9.8
LOS	F	C	C	D	C	A	E	C	A	E	C	A
Approach Delay		44.1			33.3			28.2			30.3	
Approach LOS		D			C			C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 96.4
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 32.6
 Intersection LOS: C
 Intersection Capacity Utilization 69.9%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 7: Iowa Av. & Columbia Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗
Traffic Volume (veh/h)	175	229	287	92	147	37	242	831	115	69	1045	205
Future Volume (veh/h)	175	229	287	92	147	37	242	831	115	69	1045	205
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	249	185	100	160	18	263	903	67	75	1136	146
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	575	256	181	528	236	338	1745	767	166	1568	699
Arrive On Green	0.07	0.16	0.16	0.05	0.15	0.15	0.10	0.49	0.49	0.05	0.44	0.44
Sat Flow, veh/h	3456	3554	1582	3456	3554	1585	3456	3554	1562	3456	3554	1583
Grp Volume(v), veh/h	190	249	185	100	160	18	263	903	67	75	1136	146
Grp Sat Flow(s),veh/h/ln	1728	1777	1582	1728	1777	1585	1728	1777	1562	1728	1777	1583
Q Serve(g_s), s	4.7	5.5	9.7	2.5	3.5	0.9	6.5	15.1	2.0	1.8	22.9	4.9
Cycle Q Clear(g_c), s	4.7	5.5	9.7	2.5	3.5	0.9	6.5	15.1	2.0	1.8	22.9	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	575	256	181	528	236	338	1745	767	166	1568	699
V/C Ratio(X)	0.84	0.43	0.72	0.55	0.30	0.08	0.78	0.52	0.09	0.45	0.72	0.21
Avail Cap(c_a), veh/h	226	1753	781	305	1835	818	385	1745	767	198	1568	699
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.3	32.9	34.7	40.3	33.1	31.9	38.4	15.1	11.8	40.4	20.0	15.0
Incr Delay (d2), s/veh	22.6	0.5	3.8	1.0	0.3	0.1	7.3	1.1	0.2	0.7	2.9	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	2.3	3.8	1.0	1.4	0.3	2.9	5.4	0.7	0.8	8.8	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.9	33.4	38.5	41.3	33.4	32.1	45.6	16.2	12.0	41.1	22.9	15.7
LnGrp LOS	E	C	D	D	C	C	D	B	B	D	C	B
Approach Vol, veh/h		624			278			1233			1357	
Approach Delay, s/veh		43.9			36.1			22.3			23.2	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	49.3	9.2	19.9	13.1	45.0	10.3	18.8				
Change Period (Y+Rc), s	4.6	6.5	4.6	5.8	4.6	6.5	4.6	5.8				
Max Green Setting (Gmax), s	5.0	42.8	7.7	43.0	9.7	38.1	5.7	45.0				
Max Q Clear Time (g_c+1), s	3.8	17.1	4.5	11.7	8.5	24.9	6.7	5.5				
Green Ext Time (p_c), s	0.0	6.3	0.0	2.1	0.1	6.3	0.0	1.0				
Intersection Summary												
HCM 6th Ctrl Delay			27.6									
HCM 6th LOS			C									

Timings

Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020

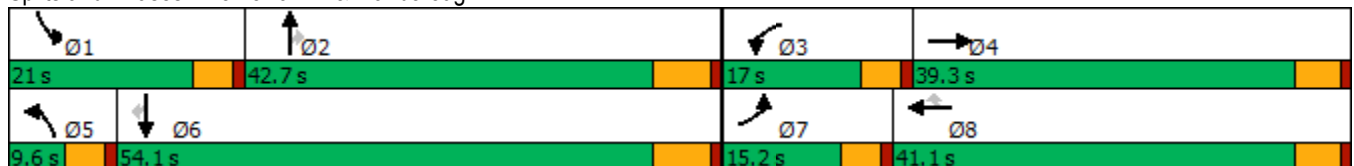


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	154	45	88	14	60	31	1106	109	241	1221	154
Future Volume (vph)	154	45	88	14	60	31	1106	109	241	1221	154
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	41.1	41.1	9.6	31.2	31.2	9.6	25.2	25.2
Total Split (s)	15.2	39.3	17.0	41.1	41.1	9.6	42.7	42.7	21.0	54.1	54.1
Total Split (%)	12.7%	32.8%	14.2%	34.3%	34.3%	8.0%	35.6%	35.6%	17.5%	45.1%	45.1%
Yellow Time (s)	3.6	4.1	3.6	4.1	4.1	3.6	5.2	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.1	5.1	4.6	6.2	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	10.8	14.8	9.2	14.4	14.4	5.1	37.2	37.2	16.7	53.1	53.1
Actuated g/C Ratio	0.11	0.15	0.10	0.15	0.15	0.05	0.39	0.39	0.17	0.55	0.55
v/c Ratio	0.86	0.29	0.58	0.06	0.18	0.37	0.90	0.18	0.88	0.70	0.19
Control Delay	82.0	28.1	58.4	34.6	1.1	60.0	39.8	3.7	69.6	22.1	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.0	28.1	58.4	34.6	1.1	60.0	39.8	3.7	69.6	22.1	8.0
LOS	F	C	E	C	A	E	D	A	E	C	A
Approach Delay		64.4		35.1			37.2			27.8	
Approach LOS		E		D			D			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 96.3	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 34.3	Intersection LOS: C
Intersection Capacity Utilization 72.4%	ICU Level of Service C
Analysis Period (min) 15	

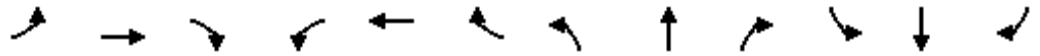
Splits and Phases: 8: Iowa Av. & Marlborough Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↖	↗	↗	↖	↗	↖
Traffic Volume (veh/h)	154	45	30	88	14	60	31	1106	109	241	1221	154
Future Volume (veh/h)	154	45	30	88	14	60	31	1106	109	241	1221	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	171	50	21	98	16	26	34	1229	92	268	1357	129
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	194	81	125	212	178	56	1378	613	300	1866	814
Arrive On Green	0.11	0.16	0.16	0.07	0.11	0.11	0.03	0.39	0.39	0.17	0.53	0.53
Sat Flow, veh/h	1781	1245	523	1781	1870	1577	1781	3554	1581	1781	3554	1551
Grp Volume(v), veh/h	171	0	71	98	16	26	34	1229	92	268	1357	129
Grp Sat Flow(s),veh/h/ln	1781	0	1768	1781	1870	1577	1781	1777	1581	1781	1777	1551
Q Serve(g_s), s	8.9	0.0	3.3	5.1	0.7	1.4	1.8	30.5	3.6	13.9	27.6	4.1
Cycle Q Clear(g_c), s	8.9	0.0	3.3	5.1	0.7	1.4	1.8	30.5	3.6	13.9	27.6	4.1
Prop In Lane	1.00		0.30	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	201	0	275	125	212	178	56	1378	613	300	1866	814
V/C Ratio(X)	0.85	0.00	0.26	0.79	0.08	0.15	0.61	0.89	0.15	0.89	0.73	0.16
Avail Cap(c_a), veh/h	201	0	642	235	715	603	95	1378	613	310	1866	814
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	0.0	34.9	43.1	37.3	37.6	45.0	27.0	18.7	38.3	17.2	11.6
Incr Delay (d2), s/veh	26.9	0.0	0.5	4.1	0.2	0.4	4.0	9.1	0.5	24.6	2.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	1.4	2.3	0.3	0.5	0.8	13.2	1.3	7.7	10.1	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.8	0.0	35.4	47.1	37.5	38.0	49.0	36.0	19.2	62.9	19.7	12.0
LnGrp LOS	E	A	D	D	D	D	D	D	B	E	B	B
Approach Vol, veh/h		242			140			1355			1754	
Approach Delay, s/veh		58.3			44.3			35.2			25.7	
Approach LOS		E			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.5	42.7	11.2	19.8	7.5	55.6	15.2	15.7				
Change Period (Y+Rc), s	4.6	6.2	4.6	5.1	4.6	6.2	4.6	5.1				
Max Green Setting (Gmax), s	16.4	36.5	12.4	34.2	5.0	47.9	10.6	36.0				
Max Q Clear Time (g_c+1), s	15.9	32.5	7.1	5.3	3.8	29.6	10.9	3.4				
Green Ext Time (p_c), s	0.0	2.7	0.0	0.3	0.0	9.2	0.0	0.1				

Intersection Summary												
HCM 6th Ctrl Delay				32.4								
HCM 6th LOS				C								

Timings

Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020

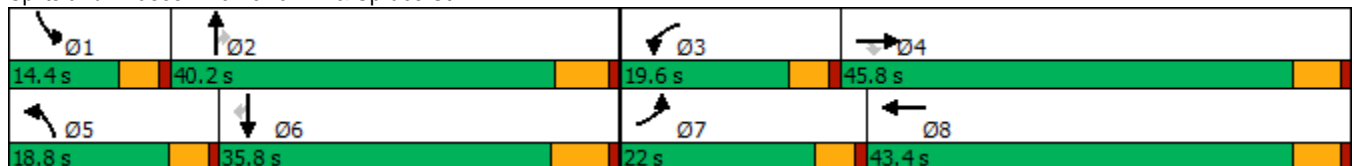


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↗	↘	↕	↗
Traffic Volume (vph)	256	272	118	110	231	155	993	161	152	682	192
Future Volume (vph)	256	272	118	110	231	155	993	161	152	682	192
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	34.4	9.6	43.4	9.6	30.8	30.8	9.6	31.2	31.2
Total Split (s)	22.0	45.8	45.8	19.6	43.4	18.8	40.2	40.2	14.4	35.8	35.8
Total Split (%)	18.3%	38.2%	38.2%	16.3%	36.2%	15.7%	33.5%	33.5%	12.0%	29.8%	29.8%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	3.6	4.8	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	4.6	5.8	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	17.5	26.6	26.6	11.1	20.1	13.3	34.7	34.7	9.9	30.9	30.9
Actuated g/C Ratio	0.17	0.26	0.26	0.11	0.20	0.13	0.34	0.34	0.10	0.30	0.30
v/c Ratio	0.98	0.65	0.27	0.66	0.71	0.78	0.96	0.31	1.04	0.74	0.36
Control Delay	90.6	40.9	6.4	62.1	27.9	68.2	52.3	12.8	125.8	39.0	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	90.6	40.9	6.4	62.1	27.9	68.2	52.3	12.8	125.8	39.0	6.3
LOS	F	D	A	E	C	E	D	B	F	D	A
Approach Delay		54.3			34.1		49.3			45.8	
Approach LOS		D			C		D			D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 102.8
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 46.6
 Intersection LOS: D
 Intersection Capacity Utilization 82.7%
 ICU Level of Service E
 Analysis Period (min) 15

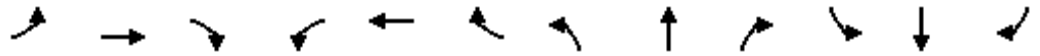
Splits and Phases: 9: Iowa Av. & Spruce St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↕		↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	256	272	118	110	231	269	155	993	161	152	682	192
Future Volume (veh/h)	256	272	118	110	231	269	155	993	161	152	682	192
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	294	313	61	126	266	45	178	1141	184	175	784	218
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	451	374	156	454	76	211	1262	562	180	1202	528
Arrive On Green	0.18	0.24	0.24	0.09	0.15	0.15	0.12	0.36	0.36	0.10	0.34	0.34
Sat Flow, veh/h	1781	1870	1551	1781	3046	508	1781	3554	1583	1781	3554	1561
Grp Volume(v), veh/h	294	313	61	126	154	157	178	1141	184	175	784	218
Grp Sat Flow(s),veh/h/ln	1781	1870	1551	1781	1777	1778	1781	1777	1583	1781	1777	1561
Q Serve(g_s), s	15.7	14.8	3.0	6.7	7.8	8.0	9.5	29.5	8.2	9.5	18.1	10.4
Cycle Q Clear(g_c), s	15.7	14.8	3.0	6.7	7.8	8.0	9.5	29.5	8.2	9.5	18.1	10.4
Prop In Lane	1.00		1.00	1.00		0.29	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	320	451	374	156	265	265	211	1262	562	180	1202	528
V/C Ratio(X)	0.92	0.69	0.16	0.81	0.58	0.59	0.85	0.90	0.33	0.97	0.65	0.41
Avail Cap(c_a), veh/h	320	780	647	276	697	698	261	1262	562	180	1202	528
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.0	33.5	29.0	43.4	38.4	38.5	41.8	29.6	22.8	43.4	27.2	24.6
Incr Delay (d2), s/veh	29.7	1.9	0.2	3.7	2.0	2.1	15.8	10.7	1.5	58.0	2.8	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.2	6.7	1.1	3.0	3.4	3.5	4.9	13.5	3.2	6.9	7.5	4.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.8	35.4	29.2	47.0	40.4	40.6	57.6	40.4	24.3	101.4	30.0	27.0
LnGrp LOS	E	D	C	D	D	D	E	D	C	F	C	C
Approach Vol, veh/h		668			437			1503				1177
Approach Delay, s/veh		49.5			42.4			40.5				40.0
Approach LOS		D			D			D				D
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.4	40.6	13.1	28.7	16.0	39.0	22.0	19.8				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	9.8	* 34	15.0	40.4	14.2	29.6	17.4	38.0				
Max Q Clear Time (g_c+11), s	11.5	31.5	8.7	16.8	11.5	20.1	17.7	10.0				
Green Ext Time (p_c), s	0.0	2.0	0.1	1.9	0.1	3.8	0.0	1.7				

Intersection Summary

HCM 6th Ctrl Delay	42.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection

Intersection Delay, s/veh 14.7
Intersection LOS B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	268	52	20	484	141	57
Future Vol, veh/h	268	52	20	484	141	57
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	335	65	25	605	176	71
Number of Lanes	2	0	0	2	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	12	16.9	13.7
HCM LOS	B	C	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	71%	0%	0%	11%	0%
Vol Thru, %	0%	100%	63%	89%	100%
Vol Right, %	29%	0%	37%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	198	179	141	181	323
LT Vol	141	0	0	20	0
Through Vol	0	179	89	161	323
RT Vol	57	0	52	0	0
Lane Flow Rate	248	223	177	227	403
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.424	0.384	0.291	0.375	0.661
Departure Headway (Hd)	6.171	6.192	5.93	5.96	5.904
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	584	581	604	603	613
Service Time	4.214	3.938	3.676	3.699	3.643
HCM Lane V/C Ratio	0.425	0.384	0.293	0.376	0.657
HCM Control Delay	13.7	12.8	11.1	12.3	19.5
HCM Lane LOS	B	B	B	B	C
HCM 95th-tile Q	2.1	1.8	1.2	1.7	4.9

Intersection

Int Delay, s/veh 5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	141	29	116	48	7	72
Future Vol, veh/h	141	29	116	48	7	72
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	400	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	256	53	211	87	13	131

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	299	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1262	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1261	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	7.1	0	11.4
HCM LOS			B

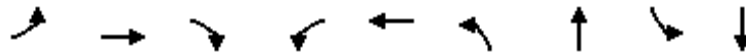
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1261	-	-	-	709
HCM Lane V/C Ratio	0.203	-	-	-	0.203
HCM Control Delay (s)	8.6	0	-	-	11.4
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.8	-	-	-	0.8

Timings

Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕	↗		↕		↕		↕
Traffic Volume (vph)	6	369	157	335	183	78	6	5	5
Future Volume (vph)	6	369	157	335	183	78	6	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	21.6	21.6	22.6	22.6	14.6	14.6
Total Split (s)	40.6	40.6	40.6	40.6	40.6	38.8	38.8	38.8	38.8
Total Split (%)	33.8%	33.8%	33.8%	33.8%	33.8%	32.3%	32.3%	32.3%	32.3%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)		4.6	4.6		4.6		4.6		4.6
Lead/Lag	Lag	Lag	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		25.5	25.5		36.6		15.7		15.7
Actuated g/C Ratio		0.28	0.28		0.40		0.17		0.17
v/c Ratio		0.81	0.31		8.60		0.68		0.05
Control Delay		44.2	6.8		3467.0		40.7		29.4
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		44.2	6.8		3467.0		40.7		29.4
LOS		D	A		F		D		C
Approach Delay		33.1			3467.0		40.7		29.4
Approach LOS		C			F		D		C

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 91.8	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 8.60	
Intersection Signal Delay: 1477.9	Intersection LOS: F
Intersection Capacity Utilization 74.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Stephens Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (veh/h)	6	369	157	335	183	6	78	6	94	5	5	3
Future Volume (veh/h)	6	369	157	335	183	6	78	6	94	5	5	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	405	119	368	201	4	86	7	54	5	5	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	1191	1014	491	237	4	244	41	100	203	174	27
Arrive On Green	0.64	0.64	0.64	0.64	0.64	0.64	0.18	0.18	0.18	0.18	0.18	0.18
Sat Flow, veh/h	7	1861	1585	585	370	7	736	230	561	561	976	154
Grp Volume(v), veh/h	412	0	119	573	0	0	147	0	0	11	0	0
Grp Sat Flow(s),veh/h/ln	1868	0	1585	962	0	0	1527	0	0	1691	0	0
Q Serve(g_s), s	0.0	0.0	1.5	23.1	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.2	0.0	1.5	28.2	0.0	0.0	4.3	0.0	0.0	0.3	0.0	0.0
Prop In Lane	0.02		1.00	0.64		0.01	0.59		0.37	0.45		0.09
Lane Grp Cap(c), veh/h	1268	0	1014	732	0	0	385	0	0	405	0	0
V/C Ratio(X)	0.33	0.00	0.12	0.78	0.00	0.00	0.38	0.00	0.00	0.03	0.00	0.00
Avail Cap(c_a), veh/h	1398	0	1126	808	0	0	1123	0	0	1180	0	0
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	4.2	0.0	3.6	9.8	0.0	0.0	18.8	0.0	0.0	17.2	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	4.6	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.2	4.3	0.0	0.0	1.5	0.0	0.0	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	4.4	0.0	3.6	14.4	0.0	0.0	19.4	0.0	0.0	17.2	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h		531			573			147				11
Approach Delay, s/veh		4.2			14.4			19.4				17.2
Approach LOS		A			B			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		13.6		37.0		13.6		37.0				
Change Period (Y+Rc), s		4.6		4.6		4.6		4.6				
Max Green Setting (Gmax), s		34.2		36.0		34.2		36.0				
Max Q Clear Time (g_c+11), s		6.3		7.2		2.3		30.2				
Green Ext Time (p_c), s		0.9		2.9		0.0		2.2				
Intersection Summary												
HCM 6th Ctrl Delay				10.7								
HCM 6th LOS				B								

Intersection												
Int Delay, s/veh	6.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕	↕		↕	
Traffic Vol, veh/h	2	429	36	6	435	5	52	1	352	8	0	38
Future Vol, veh/h	2	429	36	6	435	5	52	1	352	8	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	447	38	6	453	5	54	1	367	8	0	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	458	0	0	447	0	0	939	921	447	1103	919	456
Stage 1	-	-	-	-	-	-	451	451	-	468	468	-
Stage 2	-	-	-	-	-	-	488	470	-	635	451	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1103	-	-	1113	-	-	244	270	612	189	271	604
Stage 1	-	-	-	-	-	-	588	571	-	575	561	-
Stage 2	-	-	-	-	-	-	561	560	-	467	571	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1103	-	-	1113	-	-	226	268	612	75	269	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	268	-	75	269	-
Stage 1	-	-	-	-	-	-	587	570	-	574	557	-
Stage 2	-	-	-	-	-	-	521	556	-	186	570	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			20.2			21.1		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	227	612	1103	-	-	1113	-	-	271
HCM Lane V/C Ratio	0.243	0.599	0.002	-	-	0.006	-	-	0.177
HCM Control Delay (s)	25.9	19.3	8.3	0	-	8.3	0	-	21.1
HCM Lane LOS	D	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.9	4	0	-	-	0	-	-	0.6

Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↙	↕	↗	↙	↕	↘	↕
Traffic Volume (vph)	229	475	140	237	67	160	782	100	601
Future Volume (vph)	229	475	140	237	67	160	782	100	601
Turn Type	Perm	NA	Split	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4	8	8		5	2	1	6
Permitted Phases	4				8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	36.4	36.4	33.4	33.4	33.4	9.6	29.8	9.6	28.8
Total Split (s)	43.0	43.0	33.4	33.4	33.4	10.0	34.0	9.6	33.6
Total Split (%)	35.8%	35.8%	27.8%	27.8%	27.8%	8.3%	28.3%	8.0%	28.0%
Yellow Time (s)	4.4	4.4	4.4	4.4	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4	5.4	5.4	4.6	5.8	4.6	5.8
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	37.7	37.7	20.0	20.0	20.0	5.4	28.3	5.0	27.9
Actuated g/C Ratio	0.34	0.34	0.18	0.18	0.18	0.05	0.25	0.04	0.25
v/c Ratio	3.58	0.52	0.46	0.73	0.18	1.94	1.13	1.30	0.79
Control Delay	1220.6	31.3	45.6	57.0	2.2	494.7	109.8	248.2	47.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1220.6	31.3	45.6	57.0	2.2	494.7	109.8	248.2	47.5
LOS	F	C	D	E	A	F	F	F	D
Approach Delay		362.3		45.1			164.8		73.5
Approach LOS		F		D			F		E

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 112.2
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 3.58
 Intersection Signal Delay: 177.2
 Intersection Capacity Utilization 77.2%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service D

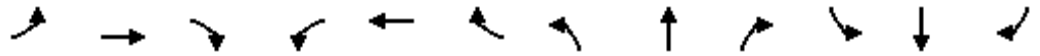
Splits and Phases: 3: Iowa Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖	↖	↖	↖↗		↖	↖↗	
Traffic Volume (veh/h)	229	475	118	140	237	67	160	782	178	100	601	69
Future Volume (veh/h)	229	475	118	140	237	67	160	782	178	100	601	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	236	490	96	144	244	66	165	806	145	103	620	63
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	408	677	132	296	310	263	107	941	169	99	1006	102
Arrive On Green	0.23	0.23	0.23	0.17	0.17	0.17	0.06	0.31	0.31	0.06	0.31	0.31
Sat Flow, veh/h	1781	2954	575	1781	1870	1585	1781	3001	540	1781	3256	330
Grp Volume(v), veh/h	236	294	292	144	244	66	165	477	474	103	338	345
Grp Sat Flow(s),veh/h/ln	1781	1777	1753	1781	1870	1585	1781	1777	1765	1781	1777	1810
Q Serve(g_s), s	10.6	13.7	13.9	6.6	11.3	3.3	5.4	22.7	22.7	5.0	14.6	14.6
Cycle Q Clear(g_c), s	10.6	13.7	13.9	6.6	11.3	3.3	5.4	22.7	22.7	5.0	14.6	14.6
Prop In Lane	1.00		0.33	1.00		1.00	1.00		0.31	1.00		0.18
Lane Grp Cap(c), veh/h	408	407	402	296	310	263	107	557	553	99	549	559
V/C Ratio(X)	0.58	0.72	0.73	0.49	0.79	0.25	1.54	0.86	0.86	1.04	0.62	0.62
Avail Cap(c_a), veh/h	745	743	733	555	582	493	107	557	553	99	549	559
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	32.0	32.1	34.0	36.0	32.6	42.3	29.0	29.0	42.5	26.5	26.5
Incr Delay (d2), s/veh	1.3	2.4	2.5	1.2	4.4	0.5	285.3	15.5	15.6	101.7	5.1	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	5.9	5.9	2.8	5.3	1.2	10.7	11.3	11.2	4.9	6.5	6.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.1	34.4	34.6	35.3	40.4	33.1	327.5	44.5	44.6	144.2	31.6	31.6
LnGrp LOS	C	C	C	D	D	C	F	D	D	F	C	C
Approach Vol, veh/h		822			454			1116				786
Approach Delay, s/veh		33.8			37.7			86.4				46.3
Approach LOS		C			D			F				D
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	34.0		26.0	10.0	33.6		20.3				
Change Period (Y+Rc), s	4.6	5.8		5.4	4.6	5.8		5.4				
Max Green Setting (Gmax), s	5.0	28.2		37.6	5.4	27.8		28.0				
Max Q Clear Time (g_c+11), s	7.0	24.7		15.9	7.4	16.6		13.3				
Green Ext Time (p_c), s	0.0	1.8		4.1	0.0	2.9		1.7				

Intersection Summary

HCM 6th Ctrl Delay	55.9
HCM 6th LOS	E

Timings

Highgrove Town Center Due Diligence (JN:13222)

4: Iowa Av. & W. Citrus St.

03/05/2020



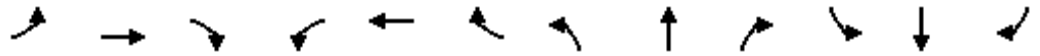
Lane Group	WBL	WBT	NBL	NBT	NBR	SBL	SBT	Ø4
Lane Configurations	↵	↵	↵	↑↑	↵	↵	↑↑	
Traffic Volume (vph)	15	0	1	1044	7	9	830	
Future Volume (vph)	15	0	1	1044	7	9	830	
Turn Type	Perm	NA	Prot	NA	Perm	Prot	NA	
Protected Phases		8	5	2		1	6	4
Permitted Phases	8				2			
Detector Phase	8	8	5	2	2	1	6	
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.6	14.6	9.6	29.8	29.8	9.6	15.8	14.6
Total Split (s)	19.0	19.0	10.0	85.0	85.0	16.0	91.0	19.0
Total Split (%)	15.8%	15.8%	8.3%	70.8%	70.8%	13.3%	75.8%	16%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8	3.6	4.8	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8	5.8	4.6	5.8	
Lead/Lag			Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max	None
Act Effct Green (s)	10.0	10.0	5.0	93.5	93.5	5.4	93.8	
Actuated g/C Ratio	0.09	0.09	0.05	0.87	0.87	0.05	0.87	
v/c Ratio	0.12	0.09	0.01	0.37	0.01	0.11	0.29	
Control Delay	48.6	0.6	51.0	3.3	0.0	52.8	2.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	48.6	0.6	51.0	3.3	0.0	52.8	2.8	
LOS	D	A	D	A	A	D	A	
Approach Delay		17.3		3.3			3.3	
Approach LOS		B		A			A	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 107.7	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.37	
Intersection Signal Delay: 3.6	Intersection LOS: A
Intersection Capacity Utilization 45.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Iowa Av. & W. Citrus St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗		↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	0	0	0	15	0	28	1	1044	7	9	830	0
Future Volume (veh/h)	0	0	0	15	0	28	1	1044	7	9	830	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	16	0	8	1	1123	7	10	892	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	90	0	154	0	76	2	2835	1237	21	2873	0
Arrive On Green	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.80	0.80	0.01	0.81	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	3554	1551	1781	3647	0
Grp Volume(v), veh/h	0	0	0	16	0	8	1	1123	7	10	892	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1777	1551	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.9	0.0	0.5	0.1	9.8	0.1	0.6	6.8	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.9	0.0	0.5	0.1	9.8	0.1	0.6	6.8	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	90	0	154	0	76	2	2835	1237	21	2873	0
V/C Ratio(X)	0.00	0.00	0.00	0.10	0.00	0.11	0.41	0.40	0.01	0.47	0.31	0.00
Avail Cap(c_a), veh/h	0	256	0	312	0	217	91	2835	1237	193	2873	0
HCM 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
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	48.2	0.0	48.0	52.6	3.2	2.2	51.7	2.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.3	0.0	0.6	36.2	0.4	0.0	5.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.4	0.0	0.2	0.1	2.1	0.0	0.3	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	48.5	0.0	48.6	88.8	3.6	2.2	57.5	2.9	0.0
LnGrp LOS	A	A	A	D	A	D	F	A	A	E	A	A
Approach Vol, veh/h		0			24			1131			902	
Approach Delay, s/veh		0.0			48.5			3.6			3.5	
Approach LOS					D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	89.9		9.6	4.7	91.0		9.6				
Change Period (Y+Rc), s	4.6	5.8		4.6	4.6	5.8		4.6				
Max Green Setting (Gmax), s	11.4	79.2		14.4	5.4	85.2		14.4				
Max Q Clear Time (g_c+11), s	2.6	11.8		0.0	2.1	8.8		2.9				
Green Ext Time (p_c), s	0.0	9.8		0.0	0.0	6.9		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				4.1								
HCM 6th LOS				A								

Timings
5: Iowa Av. & E. Citurs St.

Highgrove Town Center Due Diligence (JN:13222)

03/05/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖	↗	↕	↗	↖	↕
Traffic Volume (vph)	100	57	994	40	24	821
Future Volume (vph)	100	57	994	40	24	821
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.6	14.6	33.8	33.8	15.8	15.8
Total Split (s)	20.0	20.0	100.0	100.0	100.0	100.0
Total Split (%)	16.7%	16.7%	83.3%	83.3%	83.3%	83.3%
Yellow Time (s)	3.6	3.6	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	12.5	12.5	94.2	94.2	94.2	94.2
Actuated g/C Ratio	0.11	0.11	0.80	0.80	0.80	0.80
v/c Ratio	0.57	0.27	0.38	0.03	0.07	0.31
Control Delay	62.1	15.1	3.8	0.9	3.2	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	15.1	3.8	0.9	3.2	3.4
LOS	E	B	A	A	A	A
Approach Delay	45.1		3.7			3.4
Approach LOS	D		A			A

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 117.1	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 6.8	Intersection LOS: A
Intersection Capacity Utilization 44.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Iowa Av. & E. Citurs St.





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↕	↷	↶	↕
Traffic Volume (veh/h)	100	57	994	40	24	821
Future Volume (veh/h)	100	57	994	40	24	821
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	21	1069	37	26	883
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	153	136	2925	1275	444	2925
Arrive On Green	0.09	0.09	0.82	0.82	0.82	0.82
Sat Flow, veh/h	1781	1585	3647	1549	510	3647
Grp Volume(v), veh/h	108	21	1069	37	26	883
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1549	510	1777
Q Serve(g_s), s	6.8	1.4	8.7	0.5	1.6	6.7
Cycle Q Clear(g_c), s	6.8	1.4	8.7	0.5	10.3	6.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	153	136	2925	1275	444	2925
V/C Ratio(X)	0.71	0.15	0.37	0.03	0.06	0.30
Avail Cap(c_a), veh/h	240	213	2925	1275	444	2925
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.9	48.4	2.6	1.8	3.9	2.4
Incr Delay (d2), s/veh	5.8	0.5	0.4	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.6	1.7	0.1	0.2	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.7	49.0	2.9	1.9	4.1	2.6
LnGrp LOS	E	D	A	A	A	A
Approach Vol, veh/h	129		1106			909
Approach Delay, s/veh	55.5		2.9			2.7
Approach LOS	E		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		100.0			100.0	14.4
Change Period (Y+Rc), s		5.8			5.8	4.6
Max Green Setting (Gmax), s		94.2			94.2	15.4
Max Q Clear Time (g_c+I1), s		10.7			12.3	8.8
Green Ext Time (p_c), s		9.3			7.3	0.2
Intersection Summary						
HCM 6th Ctrl Delay			6.0			
HCM 6th LOS			A			

Timings

Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020

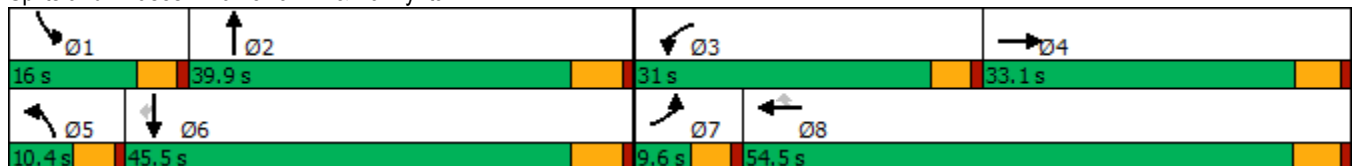


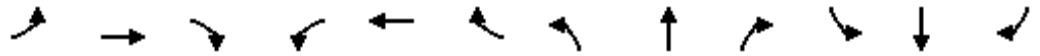
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	18	23	407	70	100	59	898	51	859	26
Future Volume (vph)	18	23	407	70	100	59	898	51	859	26
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	39.4	39.4	9.6	31.8	9.6	31.8	31.8
Total Split (s)	9.6	33.1	31.0	54.5	54.5	10.4	39.9	16.0	45.5	45.5
Total Split (%)	8.0%	27.6%	25.8%	45.4%	45.4%	8.7%	33.3%	13.3%	37.9%	37.9%
Yellow Time (s)	3.6	4.1	3.6	4.4	4.4	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.4	5.4	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	5.1	13.2	27.0	37.1	37.1	5.9	38.5	7.8	40.6	40.6
Actuated g/C Ratio	0.05	0.13	0.27	0.37	0.37	0.06	0.38	0.08	0.40	0.40
v/c Ratio	0.22	0.23	0.96	0.11	0.16	0.63	1.01	0.42	0.68	0.04
Control Delay	57.1	24.3	72.6	22.7	1.9	77.5	60.3	57.0	30.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	24.3	72.6	22.7	1.9	77.5	60.3	57.0	30.1	0.1
LOS	E	C	E	C	A	E	E	E	C	A
Approach Delay		32.8		54.3			61.1		30.7	
Approach LOS		C		D			E		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 100.5
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.01
 Intersection Signal Delay: 49.0
 Intersection LOS: D
 Intersection Capacity Utilization 80.7%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 6: Iowa Av. & Palmyrita Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↖	↗	↖	↖↗		↖	↖↗	↖
Traffic Volume (veh/h)	18	23	28	407	70	100	59	898	288	51	859	26
Future Volume (veh/h)	18	23	28	407	70	100	59	898	288	51	859	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	20	26	12	457	79	48	66	1009	240	57	965	18
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	38	119	55	464	632	535	85	1129	267	73	1393	621
Arrive On Green	0.02	0.10	0.10	0.26	0.34	0.34	0.05	0.40	0.40	0.04	0.39	0.39
Sat Flow, veh/h	1781	1211	559	1781	1870	1585	1781	2833	671	1781	3554	1585
Grp Volume(v), veh/h	20	0	38	457	79	48	66	631	618	57	965	18
Grp Sat Flow(s),veh/h/ln	1781	0	1770	1781	1870	1585	1781	1777	1728	1781	1777	1585
Q Serve(g_s), s	1.1	0.0	2.0	25.8	3.0	2.1	3.7	33.6	33.9	3.2	22.9	0.7
Cycle Q Clear(g_c), s	1.1	0.0	2.0	25.8	3.0	2.1	3.7	33.6	33.9	3.2	22.9	0.7
Prop In Lane	1.00		0.32	1.00		1.00	1.00		0.39	1.00		1.00
Lane Grp Cap(c), veh/h	38	0	174	464	632	535	85	708	688	73	1393	621
V/C Ratio(X)	0.53	0.00	0.22	0.98	0.13	0.09	0.78	0.89	0.90	0.78	0.69	0.03
Avail Cap(c_a), veh/h	88	0	489	464	907	769	102	708	688	201	1393	621
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.1	0.0	42.1	37.2	23.2	22.9	47.7	28.4	28.5	48.1	25.7	18.9
Incr Delay (d2), s/veh	4.2	0.0	0.6	37.4	0.1	0.1	21.5	15.8	16.8	6.4	2.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.9	15.6	1.3	0.8	2.1	16.2	16.1	1.5	9.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.2	0.0	42.7	74.6	23.3	23.0	69.2	44.3	45.3	54.5	28.5	19.0
LnGrp LOS	D	A	D	E	C	C	E	D	D	D	C	B
Approach Vol, veh/h		58			584			1315			1040	
Approach Delay, s/veh		46.3			63.4			46.0			29.8	
Approach LOS		D			E			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	46.1	31.0	15.3	9.4	45.5	6.8	39.6				
Change Period (Y+Rc), s	4.6	5.8	4.6	* 5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	11.4	34.1	26.4	* 28	5.8	39.7	5.0	49.1				
Max Q Clear Time (g_c+11), s	5.2	35.9	27.8	4.0	5.7	24.9	3.1	5.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.0	5.5	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	43.8
HCM 6th LOS	D

Notes

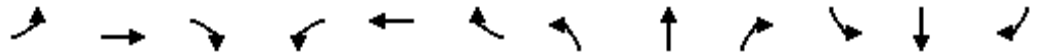
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

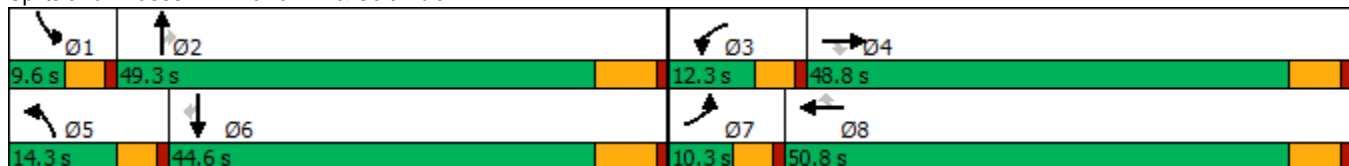


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗
Traffic Volume (vph)	184	146	255	156	252	40	281	934	103	23	1075	203
Future Volume (vph)	184	146	255	156	252	40	281	934	103	23	1075	203
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	47.8	47.8	9.6	50.8	50.8	9.6	42.5	42.5	9.6	44.5	44.5
Total Split (s)	10.3	48.8	48.8	12.3	50.8	50.8	14.3	49.3	49.3	9.6	44.6	44.6
Total Split (%)	8.6%	40.7%	40.7%	10.3%	42.3%	42.3%	11.9%	41.1%	41.1%	8.0%	37.2%	37.2%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	5.5	5.5	3.6	5.5	5.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	6.5	6.5	4.6	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.8	17.6	17.6	7.6	19.4	19.4	9.8	49.7	49.7	5.1	38.7	38.7
Actuated g/C Ratio	0.06	0.18	0.18	0.08	0.20	0.20	0.10	0.52	0.52	0.05	0.41	0.41
v/c Ratio	1.00	0.25	0.68	0.64	0.39	0.10	0.90	0.57	0.13	0.14	0.84	0.31
Control Delay	109.4	32.7	24.0	56.1	33.2	0.5	71.9	20.7	5.3	49.6	34.1	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.4	32.7	24.0	56.1	33.2	0.5	71.9	20.7	5.3	49.6	34.1	9.8
LOS	F	C	C	E	C	A	E	C	A	D	C	A
Approach Delay		53.0			38.3			30.4			30.6	
Approach LOS		D			D			C			C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 95.5
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 35.1
 Intersection LOS: D
 Intersection Capacity Utilization 69.2%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 7: Iowa Av. & Columbia Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	146	255	156	252	40	281	934	103	23	1075	203
Future Volume (veh/h)	184	146	255	156	252	40	281	934	103	23	1075	203
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	164	149	175	283	23	316	1049	65	26	1208	136
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	461	206	249	483	216	386	1861	819	93	1560	696
Arrive On Green	0.07	0.13	0.13	0.07	0.14	0.14	0.11	0.52	0.52	0.03	0.44	0.44
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	3456	3554	1564	3456	3554	1585
Grp Volume(v), veh/h	207	164	149	175	283	23	316	1049	65	26	1208	136
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1728	1777	1564	1728	1777	1585
Q Serve(g_s), s	5.2	3.7	7.8	4.3	6.5	1.1	7.8	17.3	1.8	0.6	25.1	4.6
Cycle Q Clear(g_c), s	5.2	3.7	7.8	4.3	6.5	1.1	7.8	17.3	1.8	0.6	25.1	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	227	461	206	249	483	216	386	1861	819	93	1560	696
V/C Ratio(X)	0.91	0.36	0.72	0.70	0.59	0.11	0.82	0.56	0.08	0.28	0.77	0.20
Avail Cap(c_a), veh/h	227	1760	785	307	1842	822	386	1861	819	199	1560	696
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.3	34.5	36.3	39.4	35.2	32.9	37.7	14.0	10.3	41.4	20.7	14.9
Incr Delay (d2), s/veh	36.1	0.5	4.8	3.5	1.1	0.2	12.2	1.2	0.2	0.6	3.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.5	3.1	1.9	2.7	0.4	3.7	6.0	0.6	0.3	9.8	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.4	34.9	41.1	42.9	36.3	33.1	49.9	15.2	10.5	42.0	24.5	15.6
LnGrp LOS	E	C	D	D	D	C	D	B	B	D	C	B
Approach Vol, veh/h		520			481			1430			1370	
Approach Delay, s/veh		53.2			38.6			22.6			24.0	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.9	52.0	10.8	17.1	14.3	44.6	10.3	17.6				
Change Period (Y+Rc), s	4.6	6.5	4.6	5.8	4.6	6.5	4.6	5.8				
Max Green Setting (Gmax), s	5.0	42.8	7.7	43.0	9.7	38.1	5.7	45.0				
Max Q Clear Time (g_c+1), s	2.6	19.3	6.3	9.8	9.8	27.1	7.2	8.5				
Green Ext Time (p_c), s	0.0	7.4	0.0	1.4	0.0	6.0	0.0	1.8				
Intersection Summary												
HCM 6th Ctrl Delay											29.3	
HCM 6th LOS											C	

Timings

Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020

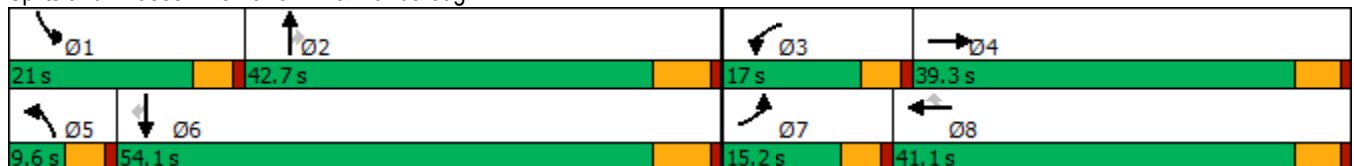


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↑↑	↗	↖	↑↑	↗
Traffic Volume (vph)	77	17	219	43	131	38	976	39	34	1554	57
Future Volume (vph)	77	17	219	43	131	38	976	39	34	1554	57
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	41.1	41.1	9.6	31.2	31.2	9.6	25.2	25.2
Total Split (s)	15.2	39.3	17.0	41.1	41.1	9.6	42.7	42.7	21.0	54.1	54.1
Total Split (%)	12.7%	32.8%	14.2%	34.3%	34.3%	8.0%	35.6%	35.6%	17.5%	45.1%	45.1%
Yellow Time (s)	3.6	4.1	3.6	4.1	4.1	3.6	5.2	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.1	5.1	4.6	6.2	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	8.3	14.1	12.8	17.1	17.1	5.1	47.9	47.9	6.7	49.3	49.3
Actuated g/C Ratio	0.09	0.15	0.14	0.18	0.18	0.05	0.51	0.51	0.07	0.53	0.53
v/c Ratio	0.52	0.18	0.96	0.13	0.33	0.41	0.57	0.05	0.29	0.88	0.07
Control Delay	57.4	19.2	93.5	34.6	6.3	61.9	21.4	0.1	52.1	29.8	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.4	19.2	93.5	34.6	6.3	61.9	21.4	0.1	52.1	29.8	1.0
LOS	E	B	F	C	A	E	C	A	D	C	A
Approach Delay		42.7		58.0			22.1			29.2	
Approach LOS		D		E			C			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 93.8	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 30.9	Intersection LOS: C
Intersection Capacity Utilization 71.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: Iowa Av. & Marlborough Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 8: Iowa Av. & Marlborough Av. 03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↖	↖	↖	↖↖	↖	↖	↖↖	↖
Traffic Volume (veh/h)	77	17	31	219	43	131	38	976	39	34	1554	57
Future Volume (veh/h)	77	17	31	219	43	131	38	976	39	34	1554	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	81	18	14	231	45	45	40	1027	37	36	1636	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	104	105	81	234	339	287	61	1814	808	58	1806	785
Arrive On Green	0.06	0.11	0.11	0.13	0.18	0.18	0.03	0.51	0.51	0.03	0.51	0.51
Sat Flow, veh/h	1781	967	752	1781	1870	1585	1781	3554	1583	1781	3554	1544
Grp Volume(v), veh/h	81	0	32	231	45	45	40	1027	37	36	1636	44
Grp Sat Flow(s),veh/h/ln	1781	0	1720	1781	1870	1585	1781	1777	1583	1781	1777	1544
Q Serve(g_s), s	4.2	0.0	1.6	12.2	1.9	2.3	2.1	18.8	1.1	1.9	39.5	1.4
Cycle Q Clear(g_c), s	4.2	0.0	1.6	12.2	1.9	2.3	2.1	18.8	1.1	1.9	39.5	1.4
Prop In Lane	1.00		0.44	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	104	0	186	234	339	287	61	1814	808	58	1806	785
V/C Ratio(X)	0.78	0.00	0.17	0.99	0.13	0.16	0.65	0.57	0.05	0.62	0.91	0.06
Avail Cap(c_a), veh/h	200	0	624	234	715	606	95	1814	808	310	1806	785
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	0.0	38.2	40.8	32.4	32.5	44.9	15.9	11.6	45.0	21.1	11.7
Incr Delay (d2), s/veh	4.7	0.0	0.4	54.4	0.2	0.3	4.3	1.3	0.1	4.1	8.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.7	8.8	0.9	0.9	1.0	6.8	0.4	0.9	15.8	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.4	0.0	38.6	95.2	32.5	32.8	49.2	17.2	11.7	49.1	29.2	11.9
LnGrp LOS	D	A	D	F	C	C	D	B	B	D	C	B
Approach Vol, veh/h		113			321			1104			1716	
Approach Delay, s/veh		45.6			77.7			18.2			29.1	
Approach LOS		D			E			B			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	54.3	17.0	15.3	7.8	54.1	10.1	22.2				
Change Period (Y+Rc), s	4.6	6.2	4.6	5.1	4.6	6.2	4.6	5.1				
Max Green Setting (Gmax), s	16.4	36.5	12.4	34.2	5.0	47.9	10.6	36.0				
Max Q Clear Time (g_c+1), s	3.9	20.8	14.2	3.6	4.1	41.5	6.2	4.3				
Green Ext Time (p_c), s	0.0	6.0	0.0	0.1	0.0	4.8	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay			30.8									
HCM 6th LOS			C									

Timings

Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020

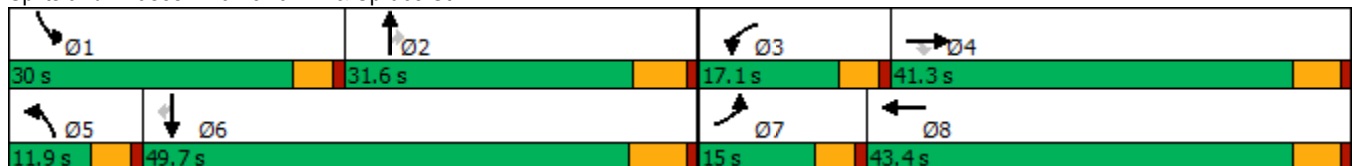


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↗	↘	↕	↗
Traffic Volume (vph)	170	423	253	139	178	95	716	103	398	1144	313
Future Volume (vph)	170	423	253	139	178	95	716	103	398	1144	313
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	34.4	9.6	43.4	9.6	30.8	30.8	9.6	31.2	31.2
Total Split (s)	15.0	41.3	41.3	17.1	43.4	11.9	31.6	31.6	30.0	49.7	49.7
Total Split (%)	12.5%	34.4%	34.4%	14.3%	36.2%	9.9%	26.3%	26.3%	25.0%	41.4%	41.4%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	3.6	4.8	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	4.6	5.8	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	10.4	32.6	32.6	11.9	34.1	7.3	25.9	25.9	25.5	43.6	43.6
Actuated g/C Ratio	0.09	0.28	0.28	0.10	0.29	0.06	0.22	0.22	0.22	0.37	0.37
v/c Ratio	1.20	0.90	0.50	0.85	0.31	0.95	1.01	0.25	1.14	0.96	0.44
Control Delay	179.4	61.9	16.2	89.2	19.1	130.5	80.9	4.1	132.5	53.1	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	179.4	61.9	16.2	89.2	19.1	130.5	80.9	4.1	132.5	53.1	6.1
LOS	F	E	B	F	B	F	F	A	F	D	A
Approach Delay		71.9			41.5		77.4			62.2	
Approach LOS		E			D		E			E	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 116.3
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.20
 Intersection Signal Delay: 65.4
 Intersection LOS: E
 Intersection Capacity Utilization 89.3%
 ICU Level of Service E
 Analysis Period (min) 15

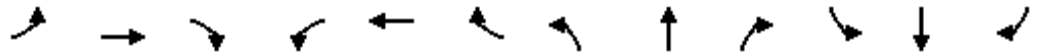
Splits and Phases: 9: Iowa Av. & Spruce St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↕		↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	170	423	253	139	178	118	95	716	103	398	1144	313
Future Volume (veh/h)	170	423	253	139	178	118	95	716	103	398	1144	313
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	189	470	190	154	198	131	106	796	77	442	1271	211
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	515	427	181	601	379	112	793	346	391	1349	602
Arrive On Green	0.09	0.28	0.28	0.10	0.29	0.29	0.06	0.22	0.22	0.22	0.38	0.38
Sat Flow, veh/h	1781	1870	1551	1781	2091	1318	1781	3554	1551	1781	3554	1585
Grp Volume(v), veh/h	189	470	190	154	167	162	106	796	77	442	1271	211
Grp Sat Flow(s),veh/h/ln	1781	1870	1551	1781	1777	1633	1781	1777	1551	1781	1777	1585
Q Serve(g_s), s	10.4	28.1	11.7	9.8	8.5	9.1	6.9	25.8	4.7	25.4	39.9	11.0
Cycle Q Clear(g_c), s	10.4	28.1	11.7	9.8	8.5	9.1	6.9	25.8	4.7	25.4	39.9	11.0
Prop In Lane	1.00		1.00	1.00		0.81	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	160	515	427	181	511	469	112	793	346	391	1349	602
V/C Ratio(X)	1.18	0.91	0.44	0.85	0.33	0.35	0.94	1.00	0.22	1.13	0.94	0.35
Avail Cap(c_a), veh/h	160	581	482	193	584	537	112	793	346	391	1349	602
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.6	40.5	34.6	51.1	32.4	32.6	54.0	44.9	36.7	45.1	34.6	25.7
Incr Delay (d2), s/veh	127.6	17.6	0.7	25.8	0.4	0.4	66.0	32.9	1.5	85.6	14.1	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	15.0	4.4	5.6	3.6	3.6	5.1	14.5	1.9	20.0	18.6	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	180.2	58.1	35.3	76.8	32.8	33.0	120.0	77.8	38.2	130.7	48.7	27.3
LnGrp LOS	F	E	D	E	C	C	F	F	D	F	D	C
Approach Vol, veh/h		849			483			979			1924	
Approach Delay, s/veh		80.2			46.9			79.3			65.2	
Approach LOS		F			D			E			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	32.0	16.4	37.3	11.9	50.1	15.0	38.6				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	25.4	* 26	12.5	35.9	7.3	43.5	10.4	38.0				
Max Q Clear Time (g_c+11), s	27.4	27.8	11.8	30.1	8.9	41.9	12.4	11.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.8	0.0	1.2	0.0	1.9				

Intersection Summary

HCM 6th Ctrl Delay	69.4
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑	
Traffic Vol, veh/h	361	63	20	254	42	29
Future Vol, veh/h	361	63	20	254	42	29
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	401	70	22	282	47	32
Number of Lanes	2	0	0	2	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	10.1	9.5	9.2
HCM LOS	B	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	59%	0%	0%	19%	0%
Vol Thru, %	0%	100%	66%	81%	100%
Vol Right, %	41%	0%	34%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	71	241	183	105	169
LT Vol	42	0	0	20	0
Through Vol	0	241	120	85	169
RT Vol	29	0	63	0	0
Lane Flow Rate	79	267	204	116	188
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.119	0.373	0.271	0.17	0.27
Departure Headway (Hd)	5.411	5.025	4.783	5.265	5.169
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	660	714	750	679	692
Service Time	3.463	2.763	2.521	3.01	2.914
HCM Lane V/C Ratio	0.12	0.374	0.272	0.171	0.272
HCM Control Delay	9.2	10.7	9.3	9.1	9.8
HCM Lane LOS	A	B	A	A	A
HCM 95th-tile Q	0.4	1.7	1.1	0.6	1.1

Intersection

Int Delay, s/veh 4.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑	↑	
Traffic Vol, veh/h	52	63	44	18	8	64
Future Vol, veh/h	52	63	44	18	8	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	400	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	69	48	20	9	70

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	68	0	0 231 48
Stage 1	-	-	- 48 -
Stage 2	-	-	- 183 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1533	-	- 757 1021
Stage 1	-	-	- 974 -
Stage 2	-	-	- 848 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1533	-	- 727 1021
Mov Cap-2 Maneuver	-	-	- 727 -
Stage 1	-	-	- 936 -
Stage 2	-	-	- 848 -

Approach	EB	WB	SB
HCM Control Delay, s	3.4	0	9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1533	-	-	-	977
HCM Lane V/C Ratio	0.037	-	-	-	0.081
HCM Control Delay (s)	7.4	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

APPENDIX 6.2:

EAP (2027) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **EAP (2027) Conditions - Weekday AM Peak Hour**

Major Street Name = **Center Street**

Total of Both Approaches (VPH) = **824**

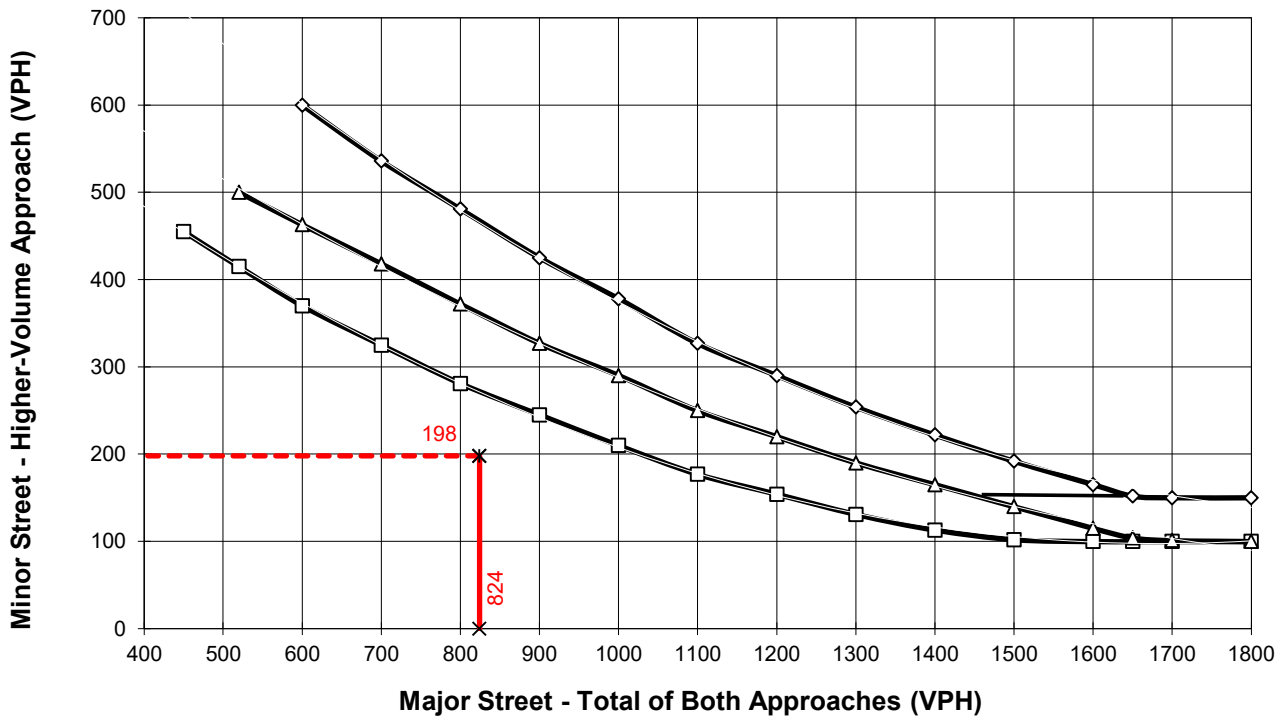
Number of Approach Lanes on Major Street = **2**

Minor Street Name = **Garfield Avenue**

High Volume Approach (VPH) = **198**

Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



- 1 Lane (Major) & 1 Lane (Minor)
- △— 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- ◇— 2+ Lanes (Major) & 2+ Lanes (Minor)
- x— Major Street Approaches
- - - Minor Street Approaches

*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = EAP (2027) Conditions - Weekday AM Peak Hour

Major Street Name = Spring Street

Total of Both Approaches (VPH) = 335

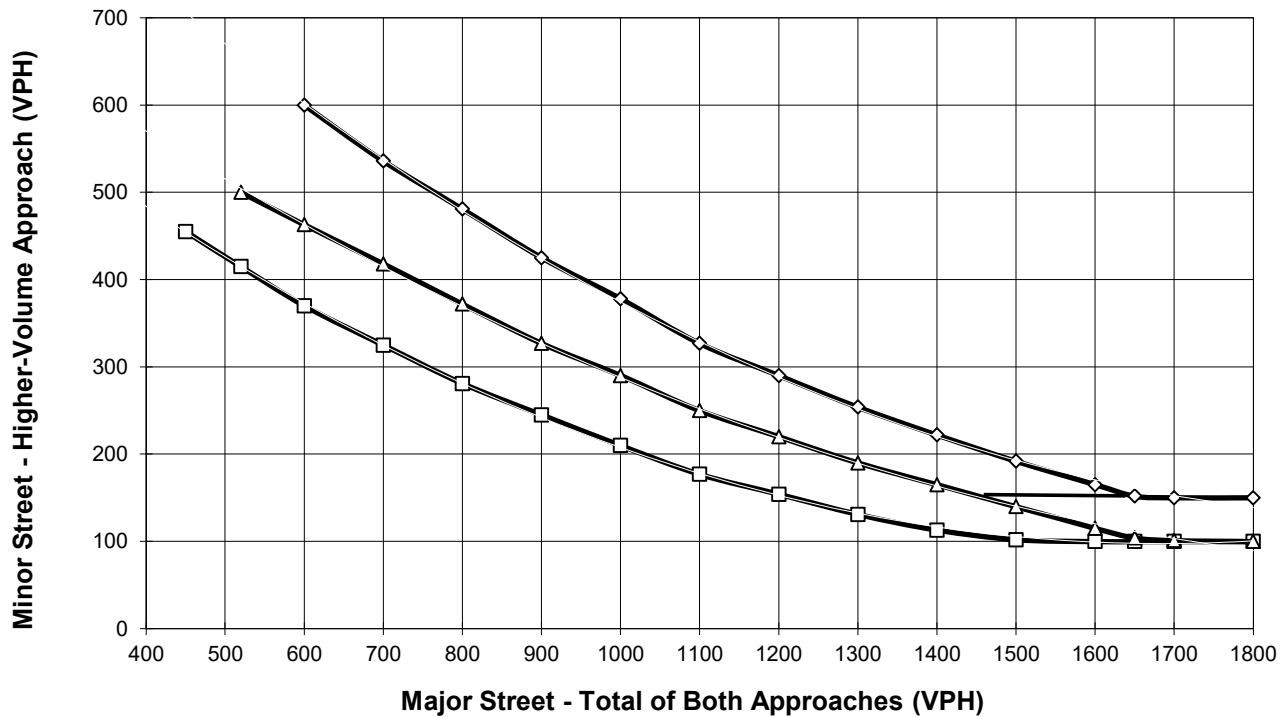
Number of Approach Lanes on Major Street = 1

Minor Street Name = Garfield Avenue

High Volume Approach (VPH) = 79

Number of Approach Lanes On Minor Street = 1

SIGNAL WARRANT NOT SATISFIED



- 1 Lane (Major) & 1 Lane (Minor)
- △— 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- ◇— 2+ Lanes (Major) & 2+ Lanes (Minor)
- x— Major Street Approaches
- x— Minor Street Approaches

*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

APPENDIX 6.3:

**EAP (2027) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS WITH
IMPROVEMENTS**

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Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020

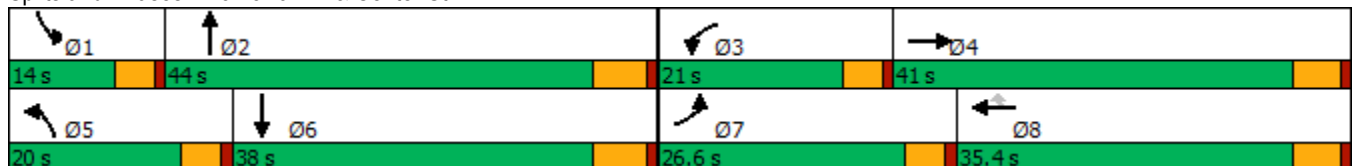


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↙	↕	↗	↙	↕	↙	↕
Traffic Volume (vph)	95	233	226	471	122	122	532	53	758
Future Volume (vph)	95	233	226	471	122	122	532	53	758
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	36.4	9.6	33.4	33.4	9.6	29.8	9.6	28.8
Total Split (s)	26.6	41.0	21.0	35.4	35.4	20.0	44.0	14.0	38.0
Total Split (%)	22.2%	34.2%	17.5%	29.5%	29.5%	16.7%	36.7%	11.7%	31.7%
Yellow Time (s)	3.6	4.4	3.6	4.4	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	4.6	5.4	5.4	4.6	5.8	4.6	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	11.9	25.6	16.5	30.2	30.2	12.2	39.7	7.6	33.0
Actuated g/C Ratio	0.11	0.24	0.15	0.28	0.28	0.11	0.37	0.07	0.31
v/c Ratio	0.56	0.44	0.95	1.03	0.24	0.69	0.56	0.48	0.97
Control Delay	57.0	32.0	90.9	86.1	2.4	65.1	29.8	62.4	58.6
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.0	32.2	90.9	86.1	2.4	65.1	29.8	62.4	58.6
LOS	E	C	F	F	A	E	C	E	E
Approach Delay		37.8		74.9			35.5		58.8
Approach LOS		D		E			D		E

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 107.7
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 54.4
 Intersection LOS: D
 Intersection Capacity Utilization 79.7%
 ICU Level of Service D
 Analysis Period (min) 15

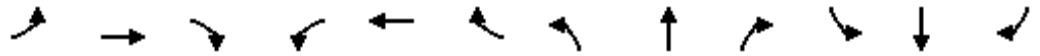
Splits and Phases: 3: Iowa Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



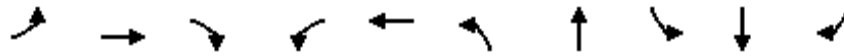
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖	↖	↖	↖↗		↖	↖↗	
Traffic Volume (veh/h)	95	233	90	226	471	122	122	532	102	53	758	155
Future Volume (veh/h)	95	233	90	226	471	122	122	532	102	53	758	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	265	72	257	535	81	139	605	84	60	861	135
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	592	157	287	557	471	170	1188	165	77	1005	158
Arrive On Green	0.08	0.21	0.21	0.16	0.30	0.30	0.10	0.38	0.38	0.04	0.33	0.33
Sat Flow, veh/h	1781	2769	737	1781	1870	1582	1781	3134	434	1781	3071	482
Grp Volume(v), veh/h	108	168	169	257	535	81	139	343	346	60	498	498
Grp Sat Flow(s),veh/h/ln	1781	1777	1729	1781	1870	1582	1781	1777	1791	1781	1777	1776
Q Serve(g_s), s	6.0	8.3	8.6	14.2	28.4	3.8	7.7	14.9	15.0	3.4	26.4	26.4
Cycle Q Clear(g_c), s	6.0	8.3	8.6	14.2	28.4	3.8	7.7	14.9	15.0	3.4	26.4	26.4
Prop In Lane	1.00		0.43	1.00		1.00	1.00		0.24	1.00		0.27
Lane Grp Cap(c), veh/h	138	380	370	287	557	471	170	674	679	77	582	581
V/C Ratio(X)	0.78	0.44	0.46	0.89	0.96	0.17	0.82	0.51	0.51	0.78	0.86	0.86
Avail Cap(c_a), veh/h	389	628	611	290	557	471	272	674	679	166	582	581
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	34.4	34.5	41.4	34.8	26.2	44.7	24.1	24.1	47.7	31.7	31.7
Incr Delay (d2), s/veh	9.3	0.8	0.9	26.8	28.5	0.2	4.6	2.7	2.7	6.1	15.0	15.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	3.6	3.6	8.2	16.6	1.4	3.5	6.4	6.4	1.6	13.0	13.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.0	35.2	35.4	68.2	63.3	26.4	49.3	26.8	26.8	53.8	46.7	46.7
LnGrp LOS	D	D	D	E	E	C	D	C	C	D	D	D
Approach Vol, veh/h		445			873			828			1056	
Approach Delay, s/veh		40.1			61.3			30.6			47.1	
Approach LOS		D			E			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	44.0	20.9	26.9	14.2	38.8	12.4	35.4				
Change Period (Y+Rc), s	4.6	5.8	4.6	5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	9.4	38.2	16.4	35.6	15.4	32.2	22.0	30.0				
Max Q Clear Time (g_c+11), s	5.4	17.0	16.2	10.6	9.7	28.4	8.0	30.4				
Green Ext Time (p_c), s	0.0	3.8	0.0	1.8	0.1	2.0	0.2	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			45.7									
HCM 6th LOS			D									

Timings

Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/06/2020

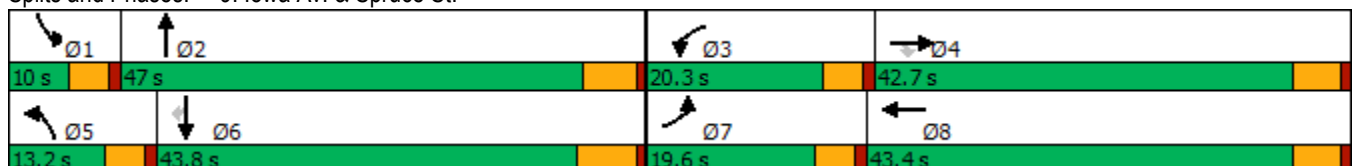


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↗	↕	↗
Traffic Volume (vph)	256	272	118	110	231	155	993	152	682	192
Future Volume (vph)	256	272	118	110	231	155	993	152	682	192
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	34.4	9.6	43.4	9.6	30.8	9.6	31.2	31.2
Total Split (s)	19.6	42.7	42.7	20.3	43.4	13.2	47.0	10.0	43.8	43.8
Total Split (%)	16.3%	35.6%	35.6%	16.9%	36.2%	11.0%	39.2%	8.3%	36.5%	36.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	3.6	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	4.6	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	15.1	26.4	26.4	11.4	22.7	8.7	41.4	5.4	37.8	37.8
Actuated g/C Ratio	0.14	0.25	0.25	0.11	0.22	0.08	0.39	0.05	0.36	0.36
v/c Ratio	1.16	0.67	0.28	0.66	0.73	1.23	0.97	0.99	0.62	0.32
Control Delay	148.0	43.4	6.7	62.7	35.1	190.6	49.8	117.1	31.5	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	148.0	43.4	6.7	62.7	35.1	190.6	49.8	117.1	31.5	5.1
LOS	F	D	A	E	D	F	D	F	C	A
Approach Delay		78.1			40.1		66.5		39.3	
Approach LOS		E			D		E		D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 105.2
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.23
 Intersection Signal Delay: 56.3
 Intersection LOS: E
 Intersection Capacity Utilization 83.8%
 ICU Level of Service E
 Analysis Period (min) 15

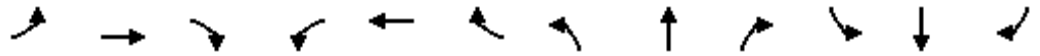
Splits and Phases: 9: Iowa Av. & Spruce St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/06/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↕		↖	↕		↖↗	↕	↗
Traffic Volume (veh/h)	256	272	118	110	231	269	155	993	161	152	682	192
Future Volume (veh/h)	256	272	118	110	231	269	155	993	161	152	682	192
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	294	313	61	126	266	45	178	1141	116	175	784	218
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	276	404	335	156	454	76	158	1386	141	193	1395	613
Arrive On Green	0.15	0.22	0.22	0.09	0.15	0.15	0.09	0.43	0.43	0.06	0.39	0.39
Sat Flow, veh/h	1781	1870	1549	1781	3046	508	1781	3257	331	3456	3554	1562
Grp Volume(v), veh/h	294	313	61	126	154	157	178	622	635	175	784	218
Grp Sat Flow(s),veh/h/ln	1781	1870	1549	1781	1777	1778	1781	1777	1811	1728	1777	1562
Q Serve(g_s), s	15.0	15.3	3.1	6.7	7.8	8.0	8.6	29.9	30.1	4.9	16.7	9.5
Cycle Q Clear(g_c), s	15.0	15.3	3.1	6.7	7.8	8.0	8.6	29.9	30.1	4.9	16.7	9.5
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.18	1.00		1.00
Lane Grp Cap(c), veh/h	276	404	335	156	265	265	158	756	770	193	1395	613
V/C Ratio(X)	1.07	0.77	0.18	0.81	0.58	0.59	1.13	0.82	0.82	0.91	0.56	0.36
Avail Cap(c_a), veh/h	276	720	597	289	697	698	158	756	770	193	1395	613
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	35.7	31.0	43.4	38.4	38.5	44.1	24.6	24.6	45.5	22.9	20.8
Incr Delay (d2), s/veh	72.6	3.2	0.3	3.7	2.0	2.1	109.1	9.8	9.8	39.3	1.6	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.9	7.0	1.1	3.0	3.4	3.5	8.4	13.4	13.7	3.0	6.6	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	113.5	38.9	31.2	47.0	40.4	40.6	153.2	34.4	34.4	84.8	24.6	22.4
LnGrp LOS	F	D	C	D	D	D	F	C	C	F	C	C
Approach Vol, veh/h		668			437			1435			1177	
Approach Delay, s/veh		71.0			42.4			49.1			33.1	
Approach LOS		E			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.0	47.4	13.1	26.3	13.2	44.2	19.6	19.8				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	5.4	* 41	15.7	37.3	8.6	37.6	15.0	38.0				
Max Q Clear Time (g_c+11), s	6.9	32.1	8.7	17.3	10.6	18.7	17.0	10.0				
Green Ext Time (p_c), s	0.0	5.0	0.1	1.8	0.0	5.4	0.0	1.7				

Intersection Summary

HCM 6th Ctrl Delay	47.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020

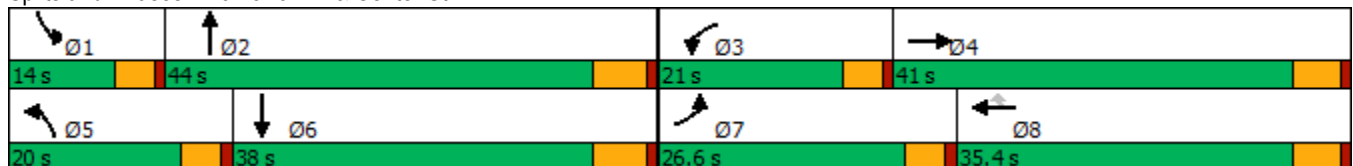


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↙	↕	↗	↙	↕	↘	↕
Traffic Volume (vph)	229	475	140	237	67	160	782	100	601
Future Volume (vph)	229	475	140	237	67	160	782	100	601
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	36.4	9.6	33.4	33.4	9.6	29.8	9.6	28.8
Total Split (s)	26.6	41.0	21.0	35.4	35.4	20.0	44.0	14.0	38.0
Total Split (%)	22.2%	34.2%	17.5%	29.5%	29.5%	16.7%	36.7%	11.7%	31.7%
Yellow Time (s)	3.6	4.4	3.6	4.4	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	4.6	5.4	5.4	4.6	5.8	4.6	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	18.2	25.0	12.4	19.2	19.2	13.2	38.6	8.8	34.2
Actuated g/C Ratio	0.17	0.24	0.12	0.18	0.18	0.13	0.37	0.08	0.32
v/c Ratio	0.77	0.74	0.69	0.72	0.16	0.75	0.78	0.70	0.61
Control Delay	60.0	41.4	63.5	53.6	0.7	67.1	35.7	73.9	34.3
Queue Delay	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.9	42.0	63.5	53.6	0.7	67.1	35.7	73.9	34.3
LOS	E	D	E	D	A	E	D	E	C
Approach Delay		47.2		48.8			40.2		39.5
Approach LOS		D		D			D		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 105.4
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 43.1
 Intersection LOS: D
 Intersection Capacity Utilization 76.0%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Iowa Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 3: Iowa Av. & Center St. 03/05/2020



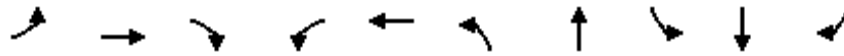
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖	↖	↖	↖↗		↖	↖↗	
Traffic Volume (veh/h)	229	475	118	140	237	67	160	782	178	100	601	69
Future Volume (veh/h)	229	475	118	140	237	67	160	782	178	100	601	69
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	236	490	96	144	244	66	165	806	145	103	620	63
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	651	127	179	314	266	198	1185	213	130	1162	118
Arrive On Green	0.15	0.22	0.22	0.10	0.17	0.17	0.11	0.39	0.39	0.07	0.36	0.36
Sat Flow, veh/h	1781	2954	575	1781	1870	1585	1781	3002	540	1781	3257	330
Grp Volume(v), veh/h	236	294	292	144	244	66	165	477	474	103	338	345
Grp Sat Flow(s),veh/h/ln	1781	1777	1752	1781	1870	1585	1781	1777	1765	1781	1777	1810
Q Serve(g_s), s	12.5	14.9	15.1	7.6	12.1	3.5	8.8	21.5	21.5	5.5	14.6	14.7
Cycle Q Clear(g_c), s	12.5	14.9	15.1	7.6	12.1	3.5	8.8	21.5	21.5	5.5	14.6	14.7
Prop In Lane	1.00		0.33	1.00		1.00	1.00		0.31	1.00		0.18
Lane Grp Cap(c), veh/h	274	392	386	179	314	266	198	702	697	130	634	646
V/C Ratio(X)	0.86	0.75	0.76	0.80	0.78	0.25	0.83	0.68	0.68	0.79	0.53	0.53
Avail Cap(c_a), veh/h	405	654	645	302	580	492	284	702	697	173	634	646
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.9	35.2	35.3	42.5	38.5	35.0	42.1	24.2	24.2	44.1	24.7	24.7
Incr Delay (d2), s/veh	11.9	2.9	3.0	3.2	4.2	0.5	9.4	5.3	5.3	12.0	3.2	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	6.5	6.5	3.4	5.7	1.3	4.2	9.3	9.3	2.8	6.3	6.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.9	38.1	38.3	45.7	42.7	35.4	51.5	29.5	29.5	56.1	27.9	27.9
LnGrp LOS	D	D	D	D	D	D	D	C	C	E	C	C
Approach Vol, veh/h		822			454			1116			786	
Approach Delay, s/veh		42.1			42.6			32.7			31.6	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.6	44.0	14.3	26.7	15.3	40.3	19.5	21.6				
Change Period (Y+Rc), s	4.6	5.8	4.6	5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	9.4	38.2	16.4	35.6	15.4	32.2	22.0	30.0				
Max Q Clear Time (g_c+1), s	7.5	23.5	9.6	17.1	10.8	16.7	14.5	14.1				
Green Ext Time (p_c), s	0.0	4.9	0.1	3.2	0.1	3.4	0.4	1.3				
Intersection Summary												
HCM 6th Ctrl Delay			36.3									
HCM 6th LOS			D									

Timings

Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/06/2020

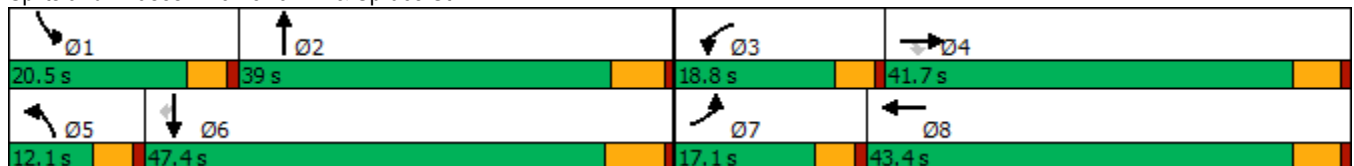


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↗	↕	↗
Traffic Volume (vph)	170	423	253	139	178	95	716	398	1144	313
Future Volume (vph)	170	423	253	139	178	95	716	398	1144	313
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2	1	6	
Permitted Phases			4							6
Detector Phase	7	4	4	3	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	34.4	9.6	43.4	9.6	30.8	9.6	31.2	31.2
Total Split (s)	17.1	41.7	41.7	18.8	43.4	12.1	39.0	20.5	47.4	47.4
Total Split (%)	14.3%	34.8%	34.8%	15.7%	36.2%	10.1%	32.5%	17.1%	39.5%	39.5%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	3.6	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	4.6	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	12.6	32.5	32.5	12.7	32.6	7.5	33.3	16.0	41.4	41.4
Actuated g/C Ratio	0.11	0.28	0.28	0.11	0.28	0.07	0.29	0.14	0.36	0.36
v/c Ratio	0.98	0.89	0.49	0.79	0.32	0.92	0.90	0.93	1.00	0.45
Control Delay	112.7	60.2	14.1	78.4	19.3	119.6	52.2	77.0	62.7	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.7	60.2	14.1	78.4	19.3	119.6	52.2	77.0	62.7	7.0
LOS	F	E	B	E	B	F	D	E	E	A
Approach Delay		57.0			38.1		59.2		56.3	
Approach LOS		E			D		E		E	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 115
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.00
 Intersection Signal Delay: 55.2
 Intersection LOS: E
 Intersection Capacity Utilization 84.6%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 9: Iowa Av. & Spruce St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 9: Iowa Av. & Spruce St. 03/06/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↕		↖	↕		↖↗	↕	↗
Traffic Volume (veh/h)	170	423	253	139	178	118	95	716	103	398	1144	313
Future Volume (veh/h)	170	423	253	139	178	118	95	716	103	398	1144	313
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	189	470	190	154	198	131	106	796	77	442	1271	211
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	197	520	431	182	563	355	118	963	93	487	1311	585
Arrive On Green	0.11	0.28	0.28	0.10	0.27	0.27	0.07	0.29	0.29	0.14	0.37	0.37
Sat Flow, veh/h	1781	1870	1551	1781	2091	1318	1781	3269	316	3456	3554	1585
Grp Volume(v), veh/h	189	470	190	154	167	162	106	433	440	442	1271	211
Grp Sat Flow(s),veh/h/ln	1781	1870	1551	1781	1777	1633	1781	1777	1809	1728	1777	1585
Q Serve(g_s), s	11.9	27.3	11.4	9.6	8.5	9.1	6.7	25.6	25.6	14.2	39.6	10.9
Cycle Q Clear(g_c), s	11.9	27.3	11.4	9.6	8.5	9.1	6.7	25.6	25.6	14.2	39.6	10.9
Prop In Lane	1.00		1.00	1.00		0.81	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	197	520	431	182	478	440	118	523	533	487	1311	585
V/C Ratio(X)	0.96	0.90	0.44	0.85	0.35	0.37	0.89	0.83	0.83	0.91	0.97	0.36
Avail Cap(c_a), veh/h	197	602	499	224	599	550	118	523	533	487	1311	585
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.9	39.3	33.5	49.7	33.2	33.4	52.2	37.1	37.1	47.7	35.0	25.9
Incr Delay (d2), s/veh	51.3	15.8	0.7	18.1	0.4	0.5	50.4	13.9	13.7	20.2	18.5	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	14.4	4.3	5.1	3.6	3.6	4.6	12.6	12.8	7.2	19.2	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	101.1	55.0	34.2	67.9	33.7	33.9	102.7	51.0	50.8	67.9	53.5	27.6
LnGrp LOS	F	E	C	E	C	C	F	D	D	E	D	C
Approach Vol, veh/h		849			483			979			1924	
Approach Delay, s/veh		60.6			44.7			56.5			54.0	
Approach LOS		E			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.5	39.4	16.1	36.7	12.1	47.8	17.1	35.8				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	15.9	* 33	14.2	36.3	7.5	41.2	12.5	38.0				
Max Q Clear Time (g_c+11), s	16.2	27.6	11.6	29.3	8.7	41.6	13.9	11.1				
Green Ext Time (p_c), s	0.0	2.4	0.0	2.0	0.0	0.0	0.0	1.9				

Intersection Summary												
HCM 6th Ctrl Delay			54.8									
HCM 6th LOS			D									

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX 7.1:

EAPC (2027) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

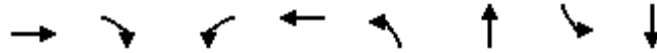
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Timings

Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020

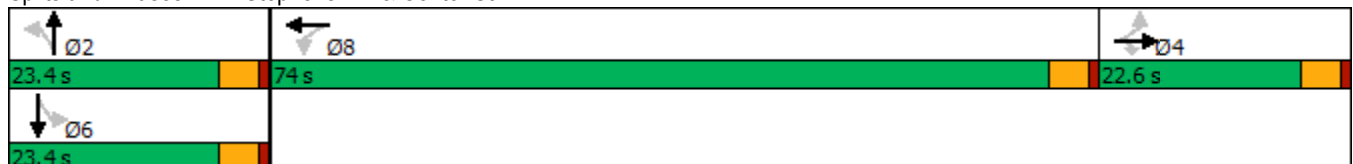


Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↕	↗		↕		↕		↕
Traffic Volume (vph)	200	76	662	308	63	5	5	9
Future Volume (vph)	200	76	662	308	63	5	5	9
Turn Type	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4			8		2		6
Permitted Phases		4	8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	21.6	21.6	22.6	22.6	14.6	14.6
Total Split (s)	22.6	22.6	74.0	74.0	23.4	23.4	23.4	23.4
Total Split (%)	18.8%	18.8%	61.7%	61.7%	19.5%	19.5%	19.5%	19.5%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)	4.6	4.6		4.6		4.6		4.6
Lead/Lag	Lag	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	None	None
Act Effct Green (s)	16.6	16.6		69.6		15.5		15.5
Actuated g/C Ratio	0.14	0.14		0.60		0.13		0.13
v/c Ratio	0.82	0.29		20.23		0.79		0.09
Control Delay	73.1	12.2		8656.0		56.3		36.7
Queue Delay	0.0	0.0		0.0		0.0		0.0
Total Delay	73.1	12.2		8656.0		56.3		36.7
LOS	E	B		F		E		D
Approach Delay	56.3			8656.0		56.3		36.7
Approach LOS	E			F		E		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 115.5
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 20.23
 Intersection Signal Delay: 5839.5
 Intersection LOS: F
 Intersection Capacity Utilization 91.4%
 ICU Level of Service F
 Analysis Period (min) 15

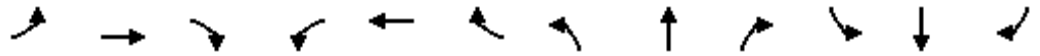
Splits and Phases: 1: Stephens Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (veh/h)	0	200	76	662	308	6	63	5	113	5	9	5
Future Volume (veh/h)	0	200	76	662	308	6	63	5	113	5	9	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	220	69	727	338	6	69	5	73	5	10	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	1452	1230	705	296	5	134	17	91	95	158	13
Arrive On Green	0.00	0.78	0.78	0.78	0.78	0.78	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	0	1870	1584	821	382	7	620	142	752	348	1309	110
Grp Volume(v), veh/h	0	220	69	1071	0	0	147	0	0	16	0	0
Grp Sat Flow(s),veh/h/ln	0	1870	1584	1209	0	0	1514	0	0	1767	0	0
Q Serve(g_s), s	0.0	2.7	0.9	66.7	0.0	0.0	7.2	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	2.7	0.9	69.4	0.0	0.0	8.4	0.0	0.0	0.7	0.0	0.0
Prop In Lane	0.00		1.00	0.68		0.01	0.47		0.50	0.31		0.06
Lane Grp Cap(c), veh/h	0	1452	1230	1007	0	0	242	0	0	266	0	0
V/C Ratio(X)	0.00	0.15	0.06	1.06	0.00	0.00	0.61	0.00	0.00	0.06	0.00	0.00
Avail Cap(c_a), veh/h	0	1452	1230	1007	0	0	376	0	0	413	0	0
HCM 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
Upstream Filter(I)	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	2.5	2.3	13.6	0.0	0.0	38.2	0.0	0.0	34.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	47.0	0.0	0.0	2.5	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.6	0.2	28.1	0.0	0.0	3.3	0.0	0.0	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	2.6	2.4	60.6	0.0	0.0	40.7	0.0	0.0	35.0	0.0	0.0
LnGrp LOS	A	A	A	F	A	A	D	A	A	C	A	A
Approach Vol, veh/h		289		1071			147				16	
Approach Delay, s/veh		2.5		60.6			40.7				35.0	
Approach LOS		A		E			D				C	
Timer - Assigned Phs		2		4			6				8	
Phs Duration (G+Y+Rc), s		15.4		74.0			15.4				74.0	
Change Period (Y+Rc), s		4.6		4.6			4.6				4.6	
Max Green Setting (Gmax), s		18.8		18.0			18.8				69.4	
Max Q Clear Time (g_c+11), s		10.4		4.7			2.7				71.4	
Green Ext Time (p_c), s		0.5		1.1			0.0				0.0	
Intersection Summary												
HCM 6th Ctrl Delay				47.4								
HCM 6th LOS				D								

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕			↕	↕		↕	
Traffic Vol, veh/h	0	295	23	14	893	8	51	0	248	0	0	31
Future Vol, veh/h	0	295	23	14	893	8	51	0	248	0	0	31
Conflicting Peds, #/hr	0	0	0	0	0	4	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	314	24	15	950	9	54	0	264	0	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	963	0	0	314	0	0	1315	1307	315	1436	1303	959
Stage 1	-	-	-	-	-	-	314	314	-	989	989	-
Stage 2	-	-	-	-	-	-	1001	993	-	447	314	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	715	-	-	1246	-	-	135	160	725	111	161	312
Stage 1	-	-	-	-	-	-	697	656	-	297	325	-
Stage 2	-	-	-	-	-	-	293	323	-	591	656	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	712	-	-	1246	-	-	118	155	724	69	156	311
Mov Cap-2 Maneuver	-	-	-	-	-	-	118	155	-	69	156	-
Stage 1	-	-	-	-	-	-	697	656	-	296	315	-
Stage 2	-	-	-	-	-	-	255	313	-	375	656	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			20.7			17.9		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	118	724	712	-	-	1246	-	-	311
HCM Lane V/C Ratio	0.46	0.364	-	-	-	0.012	-	-	0.106
HCM Control Delay (s)	59.2	12.8	0	-	-	7.9	0	-	17.9
HCM Lane LOS	F	B	A	-	-	A	A	-	C
HCM 95th %tile Q(veh)	2	1.7	0	-	-	0	-	-	0.4

Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↙	↕	↗	↙	↕	↘	↕
Traffic Volume (vph)	97	331	268	658	220	122	532	53	758
Future Volume (vph)	97	331	268	658	220	122	532	53	758
Turn Type	Perm	NA	Split	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4	8	8		5	2	1	6
Permitted Phases	4				8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	36.4	36.4	33.4	33.4	33.4	9.6	29.8	9.6	28.8
Total Split (s)	43.0	43.0	33.4	33.4	33.4	10.0	34.0	9.6	33.6
Total Split (%)	35.8%	35.8%	27.8%	27.8%	27.8%	8.3%	28.3%	8.0%	28.0%
Yellow Time (s)	4.4	4.4	4.4	4.4	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4	5.4	5.4	4.6	5.8	4.6	5.8
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	37.6	37.6	28.0	28.0	28.0	5.4	28.2	5.0	27.8
Actuated g/C Ratio	0.31	0.31	0.23	0.23	0.23	0.04	0.24	0.04	0.23
v/c Ratio	1.80	0.44	0.74	1.72	0.53	1.76	0.90	0.82	1.28
Control Delay	446.3	32.1	54.6	365.3	21.2	421.5	58.1	121.1	173.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	446.3	32.1	54.6	365.3	21.2	421.5	58.1	121.1	173.3
LOS	F	C	D	F	C	F	E	F	F
Approach Delay		109.6		226.5			115.8		170.4
Approach LOS		F		F			F		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.80
 Intersection Signal Delay: 167.7
 Intersection Capacity Utilization 93.3%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service F

Splits and Phases: 3: Iowa Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕		↖	↕	↗	↖	↕		↖	↕	
Traffic Volume (veh/h)	97	331	90	268	658	220	122	532	116	53	758	155
Future Volume (veh/h)	97	331	90	268	658	220	122	532	116	53	758	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	110	376	72	305	748	192	139	605	100	60	861	135
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	322	538	102	496	521	440	96	875	144	77	847	133
Arrive On Green	0.18	0.18	0.18	0.28	0.28	0.28	0.05	0.29	0.29	0.04	0.28	0.28
Sat Flow, veh/h	1781	2974	564	1781	1870	1582	1781	3051	503	1781	3066	481
Grp Volume(v), veh/h	110	223	225	305	748	192	139	352	353	60	499	497
Grp Sat Flow(s),veh/h/ln	1781	1777	1761	1781	1870	1582	1781	1777	1778	1781	1777	1770
Q Serve(g_s), s	5.4	11.8	12.1	15.0	28.0	10.0	5.4	17.7	17.8	3.4	27.8	27.8
Cycle Q Clear(g_c), s	5.4	11.8	12.1	15.0	28.0	10.0	5.4	17.7	17.8	3.4	27.8	27.8
Prop In Lane	1.00		0.32	1.00		1.00	1.00		0.28	1.00		0.27
Lane Grp Cap(c), veh/h	322	322	319	496	521	440	96	509	510	77	491	489
V/C Ratio(X)	0.34	0.69	0.71	0.62	1.44	0.44	1.45	0.69	0.69	0.78	1.02	1.02
Avail Cap(c_a), veh/h	666	664	658	496	521	440	96	509	510	89	491	489
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	38.6	38.7	31.6	36.3	29.8	47.6	31.9	31.9	47.6	36.4	36.4
Incr Delay (d2), s/veh	0.6	2.7	2.9	2.3	207.4	0.7	252.9	7.5	7.6	26.4	44.7	44.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	5.2	5.3	6.5	42.1	3.8	9.0	8.2	8.3	2.0	17.4	17.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.6	41.3	41.6	33.9	243.7	30.5	300.5	39.4	39.5	74.0	81.1	81.2
LnGrp LOS	D	D	D	C	F	C	F	D	D	E	F	F
Approach Vol, veh/h		558			1245			844			1056	
Approach Delay, s/veh		40.5			159.4			82.4			80.8	
Approach LOS		D			F			F			F	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	34.6		23.6	10.0	33.6		33.4				
Change Period (Y+Rc), s	4.6	5.8		5.4	4.6	5.8		5.4				
Max Green Setting (Gmax), s	5.0	28.2		37.6	5.4	27.8		28.0				
Max Q Clear Time (g_c+11), s	5.4	19.8		14.1	7.4	29.8		30.0				
Green Ext Time (p_c), s	0.0	2.6		2.8	0.0	0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay	101.5											
HCM 6th LOS	F											

Timings
4: Iowa Av. & W. Citrus St.

Highgrove Town Center Due Diligence (JN:13222)

03/05/2020



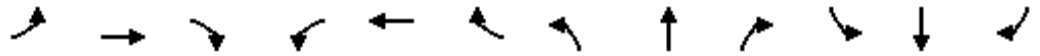
Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	Ø4	Ø5
Lane Configurations	↙	↘	↕	↗	↖	↗↘		
Traffic Volume (vph)	6	0	718	28	13	1146		
Future Volume (vph)	6	0	718	28	13	1146		
Turn Type	Perm	NA	NA	Perm	Prot	NA		
Protected Phases		8	2		1	6	4	5
Permitted Phases	8			2				
Detector Phase	8	8	2	2	1	6		
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	10.0	10.0	5.0
Minimum Split (s)	14.6	14.6	29.8	29.8	9.6	15.8	14.6	9.6
Total Split (s)	19.0	19.0	85.0	85.0	16.0	91.0	19.0	10.0
Total Split (%)	15.8%	15.8%	70.8%	70.8%	13.3%	75.8%	16%	8%
Yellow Time (s)	3.6	3.6	4.8	4.8	3.6	4.8	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.6	4.6	5.8	5.8	4.6	5.8		
Lead/Lag			Lag	Lag	Lead	Lag		Lead
Lead-Lag Optimize?			Yes	Yes	Yes	Yes		Yes
Recall Mode	None	None	Max	Max	None	Max	None	None
Act Effct Green (s)	10.1	10.1	93.0	93.0	5.6	97.2		
Actuated g/C Ratio	0.10	0.10	0.89	0.89	0.05	0.93		
v/c Ratio	0.03	0.04	0.25	0.02	0.15	0.38		
Control Delay	45.3	0.1	3.1	0.0	51.6	1.8		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	45.3	0.1	3.1	0.0	51.6	1.8		
LOS	D	A	A	A	D	A		
Approach Delay		13.1	2.9			2.3		
Approach LOS		B	A			A		

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 104.9	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.38	
Intersection Signal Delay: 2.7	Intersection LOS: A
Intersection Capacity Utilization 48.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Iowa Av. & W. Citrus St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↗		↖	↑↑	↗	↖	↗↔	
Traffic Volume (veh/h)	0	0	0	6	0	14	0	718	28	13	1146	0
Future Volume (veh/h)	0	0	0	6	0	14	0	718	28	13	1146	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	6	0	14	0	772	29	14	1232	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	80	0	148	0	68	2	2812	1254	29	3033	0
Arrive On Green	0.00	0.00	0.00	0.04	0.00	0.04	0.00	0.79	0.79	0.02	0.85	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	3554	1584	1781	3647	0
Grp Volume(v), veh/h	0	0	0	6	0	14	0	772	29	14	1232	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1777	1584	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.9	0.0	5.8	0.4	0.8	7.8	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.3	0.0	0.9	0.0	5.8	0.4	0.8	7.8	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	80	0	148	0	68	2	2812	1254	29	3033	0
V/C Ratio(X)	0.00	0.00	0.00	0.04	0.00	0.21	0.00	0.27	0.02	0.49	0.41	0.00
Avail Cap(c_a), veh/h	0	269	0	328	0	228	96	2812	1254	203	3033	0
HCM 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
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	46.0	0.0	46.3	0.0	2.8	2.2	48.8	1.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	1.5	0.0	0.2	0.0	4.7	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.4	0.0	1.2	0.1	0.4	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	46.1	0.0	47.8	0.0	3.0	2.3	53.5	2.1	0.0
LnGrp LOS	A	A	A	D	A	D	A	A	A	D	A	A
Approach Vol, veh/h		0			20			801			1246	
Approach Delay, s/veh		0.0			47.3			3.0			2.6	
Approach LOS					D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.2	85.0		8.9	0.0	91.2		8.9				
Change Period (Y+Rc), s	4.6	5.8		4.6	4.6	5.8		4.6				
Max Green Setting (Gmax), s	11.4	79.2		14.4	5.4	85.2		14.4				
Max Q Clear Time (g_c+11), s	2.8	7.8		0.0	0.0	9.8		2.9				
Green Ext Time (p_c), s	0.0	5.8		0.0	0.0	11.5		0.0				

Intersection Summary

HCM 6th Ctrl Delay	3.2
HCM 6th LOS	A

Timings

Highgrove Town Center Due Diligence (JN:13222)

5: Iowa Av. & E. Citurs St.

03/05/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↙	↕	↘	↘	↕
Traffic Volume (vph)	52	32	713	59	63	1088
Future Volume (vph)	52	32	713	59	63	1088
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.6	14.6	33.8	33.8	15.8	15.8
Total Split (s)	33.0	33.0	87.0	87.0	87.0	87.0
Total Split (%)	27.5%	27.5%	72.5%	72.5%	72.5%	72.5%
Yellow Time (s)	3.6	3.6	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	10.3	10.3	85.3	85.3	85.3	85.3
Actuated g/C Ratio	0.10	0.10	0.84	0.84	0.84	0.84
v/c Ratio	0.32	0.18	0.26	0.05	0.12	0.40
Control Delay	47.7	16.3	2.6	0.7	3.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	16.3	2.6	0.7	3.0	3.2
LOS	D	B	A	A	A	A
Approach Delay	35.7		2.5			3.2
Approach LOS	D		A			A

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 102
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.40
 Intersection Signal Delay: 4.3
 Intersection LOS: A
 Intersection Capacity Utilization 53.5%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 5: Iowa Av. & E. Citurs St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 5: Iowa Av. & E. Citurs St. 03/05/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↑↑	↷	↷	↓↓
Traffic Volume (veh/h)	52	32	713	59	63	1088
Future Volume (veh/h)	52	32	713	59	63	1088
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	57	35	775	60	68	1183
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	163	145	2862	1276	565	2862
Arrive On Green	0.09	0.09	0.81	0.81	0.81	0.81
Sat Flow, veh/h	1781	1585	3647	1584	658	3647
Grp Volume(v), veh/h	57	35	775	60	68	1183
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1584	658	1777
Q Serve(g_s), s	3.0	2.1	5.5	0.8	2.9	9.8
Cycle Q Clear(g_c), s	3.0	2.1	5.5	0.8	8.4	9.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	163	145	2862	1276	565	2862
V/C Ratio(X)	0.35	0.24	0.27	0.05	0.12	0.41
Avail Cap(c_a), veh/h	502	446	2862	1276	565	2862
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.0	42.5	2.4	2.0	3.5	2.9
Incr Delay (d2), s/veh	1.3	0.8	0.2	0.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.8	1.0	0.1	0.3	1.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.3	43.4	2.7	2.1	3.9	3.3
LnGrp LOS	D	D	A	A	A	A
Approach Vol, veh/h	92		835			1251
Approach Delay, s/veh	43.9		2.6			3.3
Approach LOS	D		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		87.0			87.0	13.8
Change Period (Y+Rc), s		5.8			5.8	4.6
Max Green Setting (Gmax), s		81.2			81.2	28.4
Max Q Clear Time (g_c+11), s		7.5			11.8	5.0
Green Ext Time (p_c), s		5.9			11.8	0.2
Intersection Summary						
HCM 6th Ctrl Delay			4.8			
HCM 6th LOS			A			

Timings

Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020

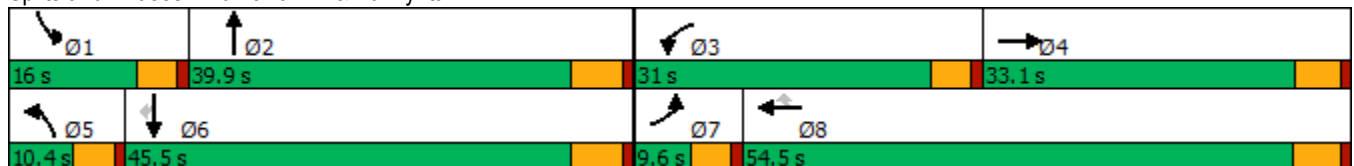


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	15	63	581	71	52	31	690	132	969	29
Future Volume (vph)	15	63	581	71	52	31	690	132	969	29
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	39.4	39.4	9.6	31.8	9.6	31.8	31.8
Total Split (s)	9.6	33.1	31.0	54.5	54.5	10.4	39.9	16.0	45.5	45.5
Total Split (%)	8.0%	27.6%	25.8%	45.4%	45.4%	8.7%	33.3%	13.3%	37.9%	37.9%
Yellow Time (s)	3.6	4.1	3.6	4.4	4.4	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.4	5.4	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	5.0	13.6	26.5	40.8	40.8	5.6	34.3	11.1	43.9	43.9
Actuated g/C Ratio	0.05	0.13	0.25	0.39	0.39	0.05	0.32	0.11	0.42	0.42
v/c Ratio	0.20	0.41	1.45	0.11	0.08	0.37	0.98	0.79	0.73	0.04
Control Delay	57.1	39.8	249.0	22.5	0.2	61.9	56.8	76.3	31.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	39.8	249.0	22.5	0.2	61.9	56.8	76.3	31.6	0.1
LOS	E	D	F	C	A	E	E	E	C	A
Approach Delay		42.3		207.7			57.0		36.0	
Approach LOS		D		F			E		D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 105.7
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.45
 Intersection Signal Delay: 84.3
 Intersection LOS: F
 Intersection Capacity Utilization 88.1%
 ICU Level of Service E
 Analysis Period (min) 15

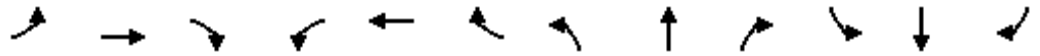
Splits and Phases: 6: Iowa Av. & Palmyrita Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↖	↕		↖	↗	↖
Traffic Volume (veh/h)	15	63	26	581	71	52	31	690	301	132	969	29
Future Volume (veh/h)	15	63	26	581	71	52	31	690	301	132	969	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	70	15	646	79	29	34	767	247	147	1077	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	33	147	32	466	639	535	54	888	286	177	1446	630
Arrive On Green	0.02	0.10	0.10	0.26	0.34	0.34	0.03	0.34	0.34	0.10	0.41	0.41
Sat Flow, veh/h	1781	1489	319	1781	1870	1565	1781	2626	846	1781	3554	1548
Grp Volume(v), veh/h	17	0	85	646	79	29	34	519	495	147	1077	22
Grp Sat Flow(s),veh/h/ln	1781	0	1808	1781	1870	1565	1781	1777	1695	1781	1777	1548
Q Serve(g_s), s	1.0	0.0	4.5	26.4	2.9	1.3	1.9	27.6	27.6	8.2	26.0	0.9
Cycle Q Clear(g_c), s	1.0	0.0	4.5	26.4	2.9	1.3	1.9	27.6	27.6	8.2	26.0	0.9
Prop In Lane	1.00		0.18	1.00		1.00	1.00		0.50	1.00		1.00
Lane Grp Cap(c), veh/h	33	0	179	466	639	535	54	600	573	177	1446	630
V/C Ratio(X)	0.51	0.00	0.48	1.39	0.12	0.05	0.63	0.86	0.86	0.83	0.74	0.03
Avail Cap(c_a), veh/h	88	0	502	466	910	762	102	600	573	201	1446	630
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.0	0.0	43.0	37.3	22.8	22.3	48.3	31.2	31.2	44.6	25.5	18.0
Incr Delay (d2), s/veh	4.4	0.0	2.0	186.6	0.1	0.0	4.4	15.3	15.9	19.9	3.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.1	35.1	1.3	0.5	0.9	13.5	13.0	4.4	10.8	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.4	0.0	45.0	223.9	22.9	22.3	52.7	46.5	47.1	64.5	29.0	18.1
LnGrp LOS	D	A	D	F	C	C	D	D	D	E	C	B
Approach Vol, veh/h		102			754			1048			1246	
Approach Delay, s/veh		46.4			195.1			47.0			33.0	
Approach LOS		D			F			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.6	39.9	31.0	15.4	7.7	46.9	6.5	39.9				
Change Period (Y+Rc), s	4.6	5.8	4.6	* 5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	11.4	34.1	26.4	* 28	5.8	39.7	5.0	49.1				
Max Q Clear Time (g_c+11), s	10.2	29.6	28.4	6.5	3.9	28.0	3.0	4.9				
Green Ext Time (p_c), s	0.0	2.4	0.0	0.3	0.0	5.4	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	76.9
HCM 6th LOS	E

Notes

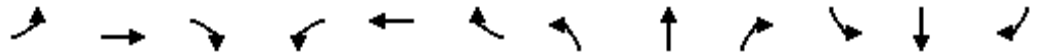
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

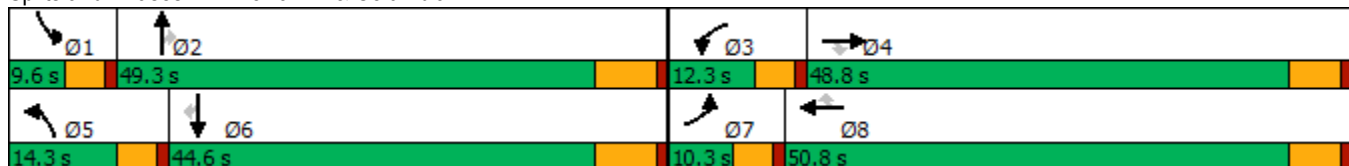


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗
Traffic Volume (vph)	193	352	287	102	203	37	242	887	137	69	1216	258
Future Volume (vph)	193	352	287	102	203	37	242	887	137	69	1216	258
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	47.8	47.8	9.6	50.8	50.8	9.6	42.5	42.5	9.6	44.5	44.5
Total Split (s)	10.3	48.8	48.8	12.3	50.8	50.8	14.3	49.3	49.3	9.6	44.6	44.6
Total Split (%)	8.6%	40.7%	40.7%	10.3%	42.3%	42.3%	11.9%	41.1%	41.1%	8.0%	37.2%	37.2%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	5.5	5.5	3.6	5.5	5.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	6.5	6.5	4.6	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.8	20.3	20.3	7.0	21.5	21.5	9.8	45.6	45.6	5.1	38.6	38.6
Actuated g/C Ratio	0.06	0.21	0.21	0.07	0.22	0.22	0.10	0.47	0.47	0.05	0.40	0.40
v/c Ratio	1.03	0.52	0.69	0.45	0.28	0.09	0.76	0.58	0.19	0.42	0.94	0.39
Control Delay	119.6	35.9	25.0	52.2	31.1	0.4	59.6	23.6	7.8	55.8	44.2	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.6	35.9	25.0	52.2	31.1	0.4	59.6	23.6	7.8	55.8	44.2	13.0
LOS	F	D	C	D	C	A	E	C	A	E	D	B
Approach Delay		51.6			34.1			28.8			39.5	
Approach LOS		D			C			C			D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 97.5
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 38.1
 Intersection LOS: D
 Intersection Capacity Utilization 73.2%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 7: Iowa Av. & Columbia Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↔↔	↑↑	↗	↔↔	↑↑	↗	↔↔	↑↑	↗
Traffic Volume (veh/h)	193	352	287	102	203	37	242	887	137	69	1216	258
Future Volume (veh/h)	193	352	287	102	203	37	242	887	137	69	1216	258
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	210	383	185	111	221	18	263	964	91	75	1322	203
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	605	269	183	564	251	337	1725	758	165	1547	689
Arrive On Green	0.06	0.17	0.17	0.05	0.16	0.16	0.10	0.49	0.49	0.05	0.44	0.44
Sat Flow, veh/h	3456	3554	1582	3456	3554	1585	3456	3554	1561	3456	3554	1583
Grp Volume(v), veh/h	210	383	185	111	221	18	263	964	91	75	1322	203
Grp Sat Flow(s),veh/h/ln	1728	1777	1582	1728	1777	1585	1728	1777	1561	1728	1777	1583
Q Serve(g_s), s	5.3	8.8	9.7	2.8	4.9	0.9	6.6	16.9	2.8	1.9	29.5	7.3
Cycle Q Clear(g_c), s	5.3	8.8	9.7	2.8	4.9	0.9	6.6	16.9	2.8	1.9	29.5	7.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	223	605	269	183	564	251	337	1725	758	165	1547	689
V/C Ratio(X)	0.94	0.63	0.69	0.61	0.39	0.07	0.78	0.56	0.12	0.46	0.85	0.29
Avail Cap(c_a), veh/h	223	1733	771	302	1813	809	380	1725	758	196	1547	689
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	34.0	34.4	40.9	33.3	31.6	38.9	16.0	12.4	40.9	22.4	16.1
Incr Delay (d2), s/veh	43.3	1.1	3.1	1.2	0.4	0.1	7.6	1.3	0.3	0.7	6.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	3.7	3.7	1.2	2.0	0.3	3.0	6.2	0.9	0.8	11.9	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.4	35.1	37.5	42.1	33.7	31.7	46.5	17.3	12.7	41.6	28.6	17.2
LnGrp LOS	F	D	D	D	C	C	D	B	B	D	C	B
Approach Vol, veh/h		778			350			1318			1600	
Approach Delay, s/veh		49.0			36.3			22.8			27.8	
Approach LOS		D			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	49.3	9.3	20.8	13.2	44.9	10.3	19.8				
Change Period (Y+Rc), s	4.6	6.5	4.6	5.8	4.6	6.5	4.6	5.8				
Max Green Setting (Gmax), s	5.0	42.8	7.7	43.0	9.7	38.1	5.7	45.0				
Max Q Clear Time (g_c+11), s	3.9	18.9	4.8	11.7	8.6	31.5	7.3	6.9				
Green Ext Time (p_c), s	0.0	6.8	0.0	3.0	0.1	4.5	0.0	1.4				
Intersection Summary												
HCM 6th Ctrl Delay				31.0								
HCM 6th LOS				C								

Timings

Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020

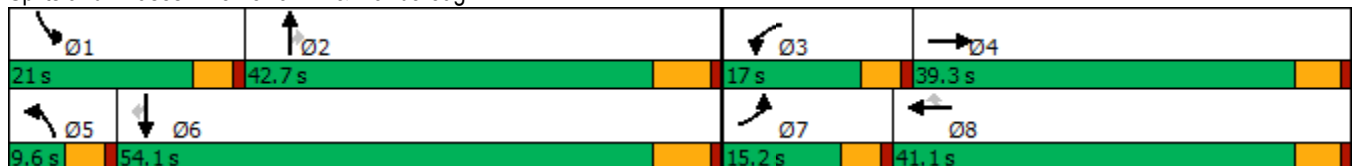


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↑↑	↗	↖	↑↑	↗
Traffic Volume (vph)	154	45	88	14	60	31	1184	109	241	1402	154
Future Volume (vph)	154	45	88	14	60	31	1184	109	241	1402	154
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	41.1	41.1	9.6	31.2	31.2	9.6	25.2	25.2
Total Split (s)	15.2	39.3	17.0	41.1	41.1	9.6	42.7	42.7	21.0	54.1	54.1
Total Split (%)	12.7%	32.8%	14.2%	34.3%	34.3%	8.0%	35.6%	35.6%	17.5%	45.1%	45.1%
Yellow Time (s)	3.6	4.1	3.6	4.1	4.1	3.6	5.2	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.1	5.1	4.6	6.2	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	10.8	14.8	9.2	14.4	14.4	5.1	37.2	37.2	16.7	53.1	53.1
Actuated g/C Ratio	0.11	0.15	0.10	0.15	0.15	0.05	0.39	0.39	0.17	0.55	0.55
v/c Ratio	0.86	0.29	0.58	0.06	0.18	0.37	0.96	0.18	0.88	0.80	0.19
Control Delay	82.0	28.1	58.4	34.6	1.1	60.0	48.2	3.7	69.6	25.1	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.0	28.1	58.4	34.6	1.1	60.0	48.2	3.7	69.6	25.1	8.0
LOS	F	C	E	C	A	E	D	A	E	C	A
Approach Delay		64.4		35.1			44.8			29.6	
Approach LOS		E		D			D			C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 96.3	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 37.8	Intersection LOS: D
Intersection Capacity Utilization 74.5%	ICU Level of Service D
Analysis Period (min) 15	

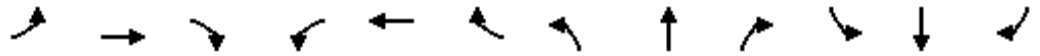
Splits and Phases: 8: Iowa Av. & Marlborough Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷	↷	↶	↷↷	↷	↶	↷↷	↷
Traffic Volume (veh/h)	154	45	30	88	14	60	31	1184	109	241	1402	154
Future Volume (veh/h)	154	45	30	88	14	60	31	1184	109	241	1402	154
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	171	50	21	98	16	26	34	1316	92	268	1558	129
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	194	81	125	212	178	56	1378	613	300	1866	814
Arrive On Green	0.11	0.16	0.16	0.07	0.11	0.11	0.03	0.39	0.39	0.17	0.53	0.53
Sat Flow, veh/h	1781	1245	523	1781	1870	1577	1781	3554	1581	1781	3554	1551
Grp Volume(v), veh/h	171	0	71	98	16	26	34	1316	92	268	1558	129
Grp Sat Flow(s),veh/h/ln	1781	0	1768	1781	1870	1577	1781	1777	1581	1781	1777	1551
Q Serve(g_s), s	8.9	0.0	3.3	5.1	0.7	1.4	1.8	33.9	3.6	13.9	34.9	4.1
Cycle Q Clear(g_c), s	8.9	0.0	3.3	5.1	0.7	1.4	1.8	33.9	3.6	13.9	34.9	4.1
Prop In Lane	1.00		0.30	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	201	0	275	125	212	178	56	1378	613	300	1866	814
V/C Ratio(X)	0.85	0.00	0.26	0.79	0.08	0.15	0.61	0.95	0.15	0.89	0.83	0.16
Avail Cap(c_a), veh/h	201	0	642	235	715	603	95	1378	613	310	1866	814
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	0.0	34.9	43.1	37.3	37.6	45.0	28.0	18.7	38.3	18.9	11.6
Incr Delay (d2), s/veh	26.9	0.0	0.5	4.1	0.2	0.4	4.0	15.6	0.5	24.6	4.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	0.0	1.4	2.3	0.3	0.5	0.8	15.8	1.3	7.7	13.1	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	67.8	0.0	35.4	47.1	37.5	38.0	49.0	43.6	19.2	62.9	23.5	12.0
LnGrp LOS	E	A	D	D	D	D	D	D	B	E	C	B
Approach Vol, veh/h		242			140			1442			1955	
Approach Delay, s/veh		58.3			44.3			42.2			28.1	
Approach LOS		E			D			D			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	20.5	42.7	11.2	19.8	7.5	55.6	15.2	15.7				
Change Period (Y+Rc), s	4.6	6.2	4.6	5.1	4.6	6.2	4.6	5.1				
Max Green Setting (Gmax), s	16.4	36.5	12.4	34.2	5.0	47.9	10.6	36.0				
Max Q Clear Time (g_c+1), s	15.9	35.9	7.1	5.3	3.8	36.9	10.9	3.4				
Green Ext Time (p_c), s	0.0	0.5	0.0	0.3	0.0	7.4	0.0	0.1				
Intersection Summary												
HCM 6th Ctrl Delay			36.0									
HCM 6th LOS			D									

Timings

Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020

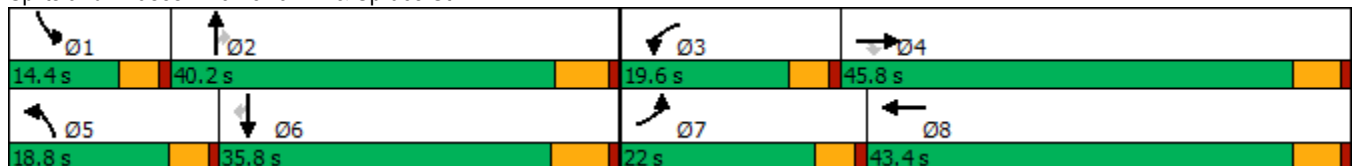


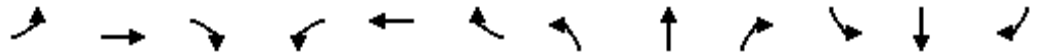
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↕	↖	↕	↗	↖	↕	↗
Traffic Volume (vph)	268	272	118	110	231	155	1050	161	179	799	229
Future Volume (vph)	268	272	118	110	231	155	1050	161	179	799	229
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	34.4	9.6	43.4	9.6	30.8	30.8	9.6	31.2	31.2
Total Split (s)	22.0	45.8	45.8	19.6	43.4	18.8	40.2	40.2	14.4	35.8	35.8
Total Split (%)	18.3%	38.2%	38.2%	16.3%	36.2%	15.7%	33.5%	33.5%	12.0%	29.8%	29.8%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	3.6	4.8	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	4.6	5.8	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	17.5	26.8	26.8	11.1	20.4	13.3	34.6	34.6	9.9	30.8	30.8
Actuated g/C Ratio	0.17	0.26	0.26	0.11	0.20	0.13	0.34	0.34	0.10	0.30	0.30
v/c Ratio	1.02	0.65	0.27	0.66	0.72	0.78	1.01	0.31	1.22	0.87	0.41
Control Delay	102.2	40.7	6.4	62.3	28.7	68.5	65.0	13.7	181.4	45.7	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.2	40.7	6.4	62.3	28.7	68.5	65.0	13.7	181.4	45.7	6.2
LOS	F	D	A	E	C	E	E	B	F	D	A
Approach Delay		59.5			34.6		59.3			58.3	
Approach LOS		E			C		E			E	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 103
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.22
 Intersection Signal Delay: 55.1
 Intersection LOS: E
 Intersection Capacity Utilization 86.7%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 9: Iowa Av. & Spruce St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↕		↖	↕	↗	↖	↕	↗
Traffic Volume (veh/h)	268	272	118	110	231	278	155	1050	161	179	799	229
Future Volume (veh/h)	268	272	118	110	231	278	155	1050	161	179	799	229
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	308	313	61	126	266	56	178	1207	184	206	918	260
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	456	378	156	447	93	210	1257	560	180	1196	525
Arrive On Green	0.18	0.24	0.24	0.09	0.15	0.15	0.12	0.35	0.35	0.10	0.34	0.34
Sat Flow, veh/h	1781	1870	1551	1781	2930	607	1781	3554	1583	1781	3554	1561
Grp Volume(v), veh/h	308	313	61	126	160	162	178	1207	184	206	918	260
Grp Sat Flow(s),veh/h/ln	1781	1870	1551	1781	1777	1760	1781	1777	1583	1781	1777	1561
Q Serve(g_s), s	16.7	14.8	3.0	6.8	8.1	8.4	9.5	32.3	8.3	9.8	22.5	12.9
Cycle Q Clear(g_c), s	16.7	14.8	3.0	6.8	8.1	8.4	9.5	32.3	8.3	9.8	22.5	12.9
Prop In Lane	1.00		1.00	1.00		0.34	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	319	456	378	156	271	269	210	1257	560	180	1196	525
V/C Ratio(X)	0.97	0.69	0.16	0.81	0.59	0.60	0.85	0.96	0.33	1.15	0.77	0.50
Avail Cap(c_a), veh/h	319	777	644	275	694	688	260	1257	560	180	1196	525
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.6	33.4	28.9	43.5	38.4	38.5	42.0	30.7	23.0	43.7	28.9	25.7
Incr Delay (d2), s/veh	41.0	1.8	0.2	3.7	2.0	2.2	16.0	17.5	1.6	112.4	4.8	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	6.6	1.1	3.0	3.6	3.7	4.9	15.7	3.2	9.7	9.5	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.6	35.2	29.1	47.2	40.4	40.6	58.0	48.2	24.5	156.1	33.6	29.0
LnGrp LOS	F	D	C	D	D	D	E	D	C	F	C	C
Approach Vol, veh/h		682			448			1569			1384	
Approach Delay, s/veh		55.2			42.4			46.6			51.0	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.4	40.6	13.1	29.1	16.1	38.9	22.0	20.2				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	9.8	* 34	15.0	40.4	14.2	29.6	17.4	38.0				
Max Q Clear Time (g_c+1), s	11.8	34.3	8.8	16.8	11.5	24.5	18.7	10.4				
Green Ext Time (p_c), s	0.0	0.1	0.1	1.9	0.1	2.8	0.0	1.8				

Intersection Summary

HCM 6th Ctrl Delay	49.0
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection

Intersection Delay, s/veh	50.9
Intersection LOS	F

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Vol, veh/h	358	68	20	762	189	57
Future Vol, veh/h	358	68	20	762	189	57
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	448	85	25	953	236	71
Number of Lanes	2	0	0	2	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	17.1	79.5	18.8
HCM LOS	C	F	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	77%	0%	0%	7%	0%
Vol Thru, %	0%	100%	64%	93%	100%
Vol Right, %	23%	0%	36%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	246	239	187	274	508
LT Vol	189	0	0	20	0
Through Vol	0	239	119	254	508
RT Vol	57	0	68	0	0
Lane Flow Rate	308	298	234	342	635
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.572	0.572	0.433	0.626	1.154
Departure Headway (Hd)	6.931	7.141	6.881	6.578	6.54
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	523	507	527	551	559
Service Time	4.931	4.841	4.581	4.294	4.256
HCM Lane V/C Ratio	0.589	0.588	0.444	0.621	1.136
HCM Control Delay	18.8	19	14.7	19.7	111.8
HCM Lane LOS	C	C	B	C	F
HCM 95th-tile Q	3.6	3.5	2.2	4.3	21.6

Intersection

Int Delay, s/veh 5.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑	↑	↑	↑	↑
Traffic Vol, veh/h	141	43	159	96	23	72
Future Vol, veh/h	141	43	159	96	23	72
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	400	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	55	55	55	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	256	78	289	175	42	131

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	465	0	880
Stage 1	-	-	290
Stage 2	-	-	590
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1096	-	749
Stage 1	-	-	759
Stage 2	-	-	554
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1095	-	748
Mov Cap-2 Maneuver	-	-	240
Stage 1	-	-	573
Stage 2	-	-	553

Approach	EB	WB	SB
HCM Control Delay, s	7.1	0	16.1
HCM LOS			C

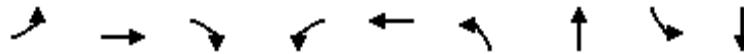
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1095	-	-	-	495
HCM Lane V/C Ratio	0.234	-	-	-	0.349
HCM Control Delay (s)	9.3	0	-	-	16.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.9	-	-	-	1.5

Timings

Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020

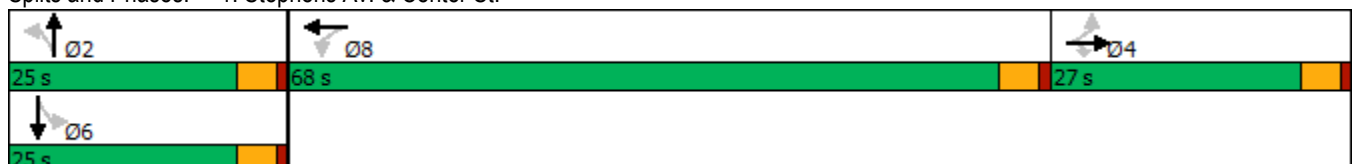


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕	↗		↕		↕		↕
Traffic Volume (vph)	6	429	157	431	218	78	6	5	5
Future Volume (vph)	6	429	157	431	218	78	6	5	5
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4			8		2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	4	4	4	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.6	22.6	22.6	21.6	21.6	22.6	22.6	14.6	14.6
Total Split (s)	27.0	27.0	27.0	68.0	68.0	25.0	25.0	25.0	25.0
Total Split (%)	22.5%	22.5%	22.5%	56.7%	56.7%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0
Total Lost Time (s)		4.6	4.6		4.6		4.6		4.6
Lead/Lag	Lag	Lag	Lag	Lead	Lead				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		22.4	22.4		63.4		20.4		20.4
Actuated g/C Ratio		0.19	0.19		0.53		0.17		0.17
v/c Ratio		1.39	0.44		14.14		0.97		0.05
Control Delay		231.3	18.6		5953.6		79.6		35.9
Queue Delay		0.0	0.0		0.0		0.0		0.0
Total Delay		231.3	18.6		5953.6		79.6		35.9
LOS		F	B		F		E		D
Approach Delay		174.8			5953.6		79.6		35.9
Approach LOS		F			F		E		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Natural Cycle: 70
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 14.14
 Intersection Signal Delay: 2601.1
 Intersection LOS: F
 Intersection Capacity Utilization 90.5%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 1: Stephens Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

1: Stephens Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	
Traffic Volume (veh/h)	6	429	157	431	218	6	78	6	206	5	5	3
Future Volume (veh/h)	6	429	157	431	218	6	78	6	206	5	5	3
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	471	119	474	240	4	86	7	177	5	5	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	45	1305	1112	469	204	3	135	22	200	152	138	23
Arrive On Green	0.70	0.70	0.70	0.70	0.70	0.70	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	7	1860	1585	575	291	5	421	112	1014	476	700	118
Grp Volume(v), veh/h	478	0	119	718	0	0	270	0	0	11	0	0
Grp Sat Flow(s),veh/h/ln	1867	0	1585	870	0	0	1547	0	0	1294	0	0
Q Serve(g_s), s	0.0	0.0	2.2	54.1	0.0	0.0	12.9	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	9.3	0.0	2.2	63.4	0.0	0.0	15.3	0.0	0.0	0.4	0.0	0.0
Prop In Lane	0.01		1.00	0.66		0.01	0.32		0.66	0.45		0.09
Lane Grp Cap(c), veh/h	1350	0	1112	677	0	0	357	0	0	312	0	0
V/C Ratio(X)	0.35	0.00	0.11	1.06	0.00	0.00	0.76	0.00	0.00	0.04	0.00	0.00
Avail Cap(c_a), veh/h	1350	0	1112	677	0	0	401	0	0	355	0	0
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.4	0.0	4.4	20.8	0.0	0.0	35.2	0.0	0.0	29.3	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	52.0	0.0	0.0	7.2	0.0	0.0	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.5	23.3	0.0	0.0	6.4	0.0	0.0	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.6	0.0	4.4	72.8	0.0	0.0	42.4	0.0	0.0	29.4	0.0	0.0
LnGrp LOS	A	A	A	F	A	A	D	A	A	C	A	A
Approach Vol, veh/h		597			718			270				11
Approach Delay, s/veh		5.3			72.8			42.4				29.4
Approach LOS		A			E			D				C
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.4		68.0		22.4		68.0				
Change Period (Y+Rc), s		4.6		4.6		4.6		4.6				
Max Green Setting (Gmax), s		20.4		22.4		20.4		63.4				
Max Q Clear Time (g_c+11), s		17.3		11.3		2.4		65.4				
Green Ext Time (p_c), s		0.5		2.5		0.0		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				42.1								
HCM 6th LOS				D								

Intersection												
Int Delay, s/veh	26.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔		↔			↔	↔		↔	
Traffic Vol, veh/h	2	597	40	6	560	5	58	1	501	8	0	38
Future Vol, veh/h	2	597	40	6	560	5	58	1	501	8	0	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	622	42	6	583	5	60	1	522	8	0	40

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	588	0	0	622	0	0	1244	1226	622	1486	1224	586
Stage 1	-	-	-	-	-	-	626	626	-	598	598	-
Stage 2	-	-	-	-	-	-	618	600	-	888	626	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	987	-	-	959	-	-	151	179	~ 487	103	179	510
Stage 1	-	-	-	-	-	-	472	477	-	489	491	-
Stage 2	-	-	-	-	-	-	477	490	-	338	477	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	987	-	-	959	-	-	138	177	~ 487	-	177	510
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	177	-	-	177	-
Stage 1	-	-	-	-	-	-	471	476	-	488	487	-
Stage 2	-	-	-	-	-	-	436	486	-	-	476	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			86.1					
HCM LOS							F			-		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	139	487	987	-	-	959	-	-	-
HCM Lane V/C Ratio	0.442	1.072	0.002	-	-	0.007	-	-	-
HCM Control Delay (s)	50	90.3	8.7	0	-	8.8	0	-	-
HCM Lane LOS	F	F	A	A	-	A	A	-	-
HCM 95th %tile Q(veh)	2	16.3	0	-	-	0	-	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↙	↕	↗	↙	↕	↘	↕
Traffic Volume (vph)	230	791	169	360	131	160	782	100	601
Future Volume (vph)	230	791	169	360	131	160	782	100	601
Turn Type	Perm	NA	Split	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4	8	8		5	2	1	6
Permitted Phases	4				8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	36.4	36.4	33.4	33.4	33.4	9.6	29.8	9.6	28.8
Total Split (s)	43.0	43.0	33.4	33.4	33.4	10.0	34.0	9.6	33.6
Total Split (%)	35.8%	35.8%	27.8%	27.8%	27.8%	8.3%	28.3%	8.0%	28.0%
Yellow Time (s)	4.4	4.4	4.4	4.4	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4	5.4	5.4	4.6	5.8	4.6	5.8
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	37.6	37.6	26.4	26.4	26.4	5.4	28.2	5.0	27.8
Actuated g/C Ratio	0.32	0.32	0.22	0.22	0.22	0.05	0.24	0.04	0.23
v/c Ratio	3.82	0.85	0.44	0.90	0.30	2.06	1.24	1.39	0.84
Control Delay	1322.7	45.8	43.5	69.6	8.0	544.4	157.7	280.1	53.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1322.7	45.8	43.5	69.6	8.0	544.4	157.7	280.1	53.4
LOS	F	D	D	E	A	F	F	F	D
Approach Delay		303.6		50.7			210.8		82.8
Approach LOS		F		D			F		F

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 118.4
 Natural Cycle: 110
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 3.82
 Intersection Signal Delay: 184.3
 Intersection Capacity Utilization 87.1%
 Analysis Period (min) 15
 Intersection LOS: F
 ICU Level of Service E

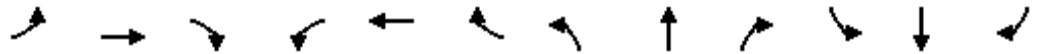
Splits and Phases: 3: Iowa Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖	↖	↖	↖↗		↖	↖↗	
Traffic Volume (veh/h)	230	791	118	169	360	131	160	782	225	100	601	71
Future Volume (veh/h)	230	791	118	169	360	131	160	782	225	100	601	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	237	815	96	174	371	132	165	806	193	103	620	65
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	525	941	111	395	415	352	86	711	170	79	802	84
Arrive On Green	0.29	0.29	0.29	0.22	0.22	0.22	0.05	0.25	0.25	0.04	0.25	0.25
Sat Flow, veh/h	1781	3195	376	1781	1870	1585	1781	2835	679	1781	3245	340
Grp Volume(v), veh/h	237	453	458	174	371	132	165	505	494	103	339	346
Grp Sat Flow(s),veh/h/ln	1781	1777	1794	1781	1870	1585	1781	1777	1737	1781	1777	1808
Q Serve(g_s), s	12.2	27.2	27.2	9.5	21.7	8.0	5.4	28.2	28.2	5.0	20.0	20.0
Cycle Q Clear(g_c), s	12.2	27.2	27.2	9.5	21.7	8.0	5.4	28.2	28.2	5.0	20.0	20.0
Prop In Lane	1.00		0.21	1.00		1.00	1.00		0.39	1.00		0.19
Lane Grp Cap(c), veh/h	525	523	528	395	415	352	86	445	435	79	439	447
V/C Ratio(X)	0.45	0.87	0.87	0.44	0.89	0.38	1.93	1.13	1.13	1.30	0.77	0.77
Avail Cap(c_a), veh/h	595	594	600	443	466	395	86	445	435	79	439	447
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.3	37.6	37.6	37.7	42.5	37.1	53.5	42.1	42.1	53.7	39.4	39.4
Incr Delay (d2), s/veh	0.6	11.7	11.6	0.8	18.1	0.7	458.1	84.6	85.1	201.4	12.4	12.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	13.1	13.2	4.1	11.8	3.1	13.2	22.3	21.8	6.6	9.9	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	49.3	49.2	38.5	60.5	37.8	511.7	126.8	127.2	255.2	51.8	51.7
LnGrp LOS	C	D	D	D	E	D	F	F	F	F	D	D
Approach Vol, veh/h		1148			677			1164			788	
Approach Delay, s/veh		45.9			50.4			181.5			78.3	
Approach LOS		D			D			F			E	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	34.0		38.5	10.0	33.6		30.4				
Change Period (Y+Rc), s	4.6	5.8		5.4	4.6	5.8		5.4				
Max Green Setting (Gmax), s	5.0	28.2		37.6	5.4	27.8		28.0				
Max Q Clear Time (g_c+11), s	7.0	30.2		29.2	7.4	22.0		23.7				
Green Ext Time (p_c), s	0.0	0.0		3.9	0.0	1.9		1.3				
Intersection Summary												
HCM 6th Ctrl Delay				95.3								
HCM 6th LOS				F								

Timings

Highgrove Town Center Due Diligence (JN:13222)

4: Iowa Av. & W. Citrus St.

03/05/2020



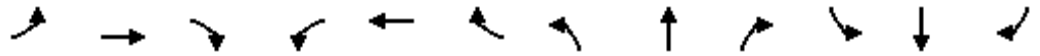
Lane Group	WBL	WBT	NBL	NBT	NBR	SBL	SBT	Ø4
Lane Configurations	↶	↷	↶	↶↶	↷	↶	↶↷	
Traffic Volume (vph)	15	0	1	1091	7	9	859	
Future Volume (vph)	15	0	1	1091	7	9	859	
Turn Type	Perm	NA	Prot	NA	Perm	Prot	NA	
Protected Phases		8	5	2		1	6	4
Permitted Phases	8				2			
Detector Phase	8	8	5	2	2	1	6	
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	14.6	14.6	9.6	29.8	29.8	9.6	15.8	14.6
Total Split (s)	19.0	19.0	10.0	85.0	85.0	16.0	91.0	19.0
Total Split (%)	15.8%	15.8%	8.3%	70.8%	70.8%	13.3%	75.8%	16%
Yellow Time (s)	3.6	3.6	3.6	4.8	4.8	3.6	4.8	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	5.8	5.8	4.6	5.8	
Lead/Lag			Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None	None	Max	Max	None	Max	None
Act Effct Green (s)	10.0	10.0	5.0	93.5	93.5	5.4	93.8	
Actuated g/C Ratio	0.09	0.09	0.05	0.87	0.87	0.05	0.87	
v/c Ratio	0.12	0.10	0.01	0.38	0.01	0.11	0.30	
Control Delay	48.6	0.6	51.0	3.4	0.0	52.8	2.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	48.6	0.6	51.0	3.4	0.0	52.8	2.8	
LOS	D	A	D	A	A	D	A	
Approach Delay		17.3		3.4			3.4	
Approach LOS		B		A			A	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 107.7
 Natural Cycle: 55
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.38
 Intersection Signal Delay: 3.7
 Intersection LOS: A
 Intersection Capacity Utilization 47.2%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 4: Iowa Av. & W. Citrus St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↖	↗		↖	↑↑	↗	↖	↗	
Traffic Volume (veh/h)	0	0	0	15	0	28	1	1091	7	9	859	0
Future Volume (veh/h)	0	0	0	15	0	28	1	1091	7	9	859	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	16	0	8	1	1173	7	10	924	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	90	0	154	0	76	2	2835	1237	21	2873	0
Arrive On Green	0.00	0.00	0.00	0.05	0.00	0.05	0.00	0.80	0.80	0.01	0.81	0.00
Sat Flow, veh/h	0	1870	0	1781	0	1585	1781	3554	1551	1781	3647	0
Grp Volume(v), veh/h	0	0	0	16	0	8	1	1173	7	10	924	0
Grp Sat Flow(s),veh/h/ln	0	1870	0	1781	0	1585	1781	1777	1551	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.9	0.0	0.5	0.1	10.5	0.1	0.6	7.1	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.9	0.0	0.5	0.1	10.5	0.1	0.6	7.1	0.0
Prop In Lane	0.00		0.00	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	90	0	154	0	76	2	2835	1237	21	2873	0
V/C Ratio(X)	0.00	0.00	0.00	0.10	0.00	0.11	0.41	0.41	0.01	0.47	0.32	0.00
Avail Cap(c_a), veh/h	0	256	0	312	0	217	91	2835	1237	193	2873	0
HCM 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
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	48.2	0.0	48.0	52.6	3.2	2.2	51.7	2.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.3	0.0	0.6	36.2	0.4	0.0	5.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.4	0.0	0.2	0.1	2.3	0.0	0.3	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	48.5	0.0	48.6	88.8	3.7	2.2	57.5	2.9	0.0
LnGrp LOS	A	A	A	D	A	D	F	A	A	E	A	A
Approach Vol, veh/h		0			24			1181			934	
Approach Delay, s/veh		0.0			48.5			3.7			3.5	
Approach LOS					D			A			A	
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.9	89.9		9.6	4.7	91.0		9.6				
Change Period (Y+Rc), s	4.6	5.8		4.6	4.6	5.8		4.6				
Max Green Setting (Gmax), s	11.4	79.2		14.4	5.4	85.2		14.4				
Max Q Clear Time (g_c+11), s	2.6	12.5		0.0	2.1	9.1		2.9				
Green Ext Time (p_c), s	0.0	10.5		0.0	0.0	7.3		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				4.1								
HCM 6th LOS				A								

Timings

Highgrove Town Center Due Diligence (JN:13222)

5: Iowa Av. & E. Citurs St.

03/05/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↙	↕	↘	↘	↕
Traffic Volume (vph)	100	57	1041	40	24	850
Future Volume (vph)	100	57	1041	40	24	850
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	14.6	14.6	33.8	33.8	15.8	15.8
Total Split (s)	18.0	18.0	102.0	102.0	102.0	102.0
Total Split (%)	15.0%	15.0%	85.0%	85.0%	85.0%	85.0%
Yellow Time (s)	3.6	3.6	4.8	4.8	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	5.8	5.8	5.8	5.8
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	11.9	11.9	96.2	96.2	96.2	96.2
Actuated g/C Ratio	0.10	0.10	0.81	0.81	0.81	0.81
v/c Ratio	0.61	0.29	0.39	0.03	0.07	0.32
Control Delay	66.0	15.7	3.6	0.8	3.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.0	15.7	3.6	0.8	3.0	3.2
LOS	E	B	A	A	A	A
Approach Delay	47.9		3.5			3.2
Approach LOS	D		A			A

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 118.6	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 6.7	Intersection LOS: A
Intersection Capacity Utilization 45.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Iowa Av. & E. Citurs St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 5: Iowa Av. & E. Citurs St. 03/05/2020



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↶	↶	↕↗	↶	↶	↕↗
Traffic Volume (veh/h)	100	57	1041	40	24	850
Future Volume (veh/h)	100	57	1041	40	24	850
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	108	21	1119	37	26	914
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	151	134	2936	1279	424	2936
Arrive On Green	0.08	0.08	0.83	0.83	0.83	0.83
Sat Flow, veh/h	1781	1585	3647	1549	486	3647
Grp Volume(v), veh/h	108	21	1119	37	26	914
Grp Sat Flow(s),veh/h/ln	1781	1585	1777	1549	486	1777
Q Serve(g_s), s	6.9	1.4	9.3	0.5	1.7	7.0
Cycle Q Clear(g_c), s	6.9	1.4	9.3	0.5	11.0	7.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	151	134	2936	1279	424	2936
V/C Ratio(X)	0.72	0.16	0.38	0.03	0.06	0.31
Avail Cap(c_a), veh/h	205	182	2936	1279	424	2936
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	49.4	2.6	1.8	4.0	2.4
Incr Delay (d2), s/veh	7.4	0.5	0.4	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.6	1.8	0.1	0.2	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	59.3	50.0	2.9	1.8	4.2	2.6
LnGrp LOS	E	D	A	A	A	A
Approach Vol, veh/h	129		1156			940
Approach Delay, s/veh	57.8		2.9			2.7
Approach LOS	E		A			A
Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		102.0			102.0	14.4
Change Period (Y+Rc), s		5.8			5.8	4.6
Max Green Setting (Gmax), s		96.2			96.2	13.4
Max Q Clear Time (g_c+I1), s		11.3			13.0	8.9
Green Ext Time (p_c), s		10.0			7.7	0.1
Intersection Summary						
HCM 6th Ctrl Delay			6.0			
HCM 6th LOS			A			

Timings

Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020

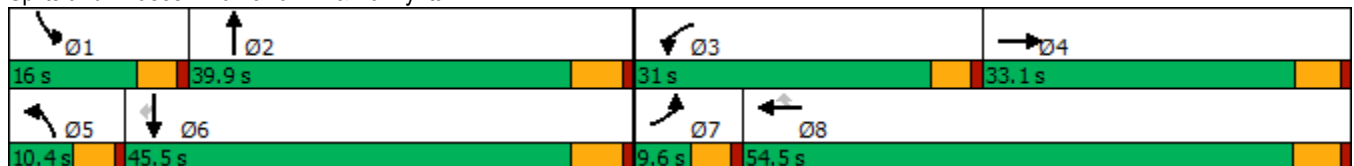


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↗↖	↖	↗↗	↗
Traffic Volume (vph)	18	23	525	70	100	59	945	51	888	26
Future Volume (vph)	18	23	525	70	100	59	945	51	888	26
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	39.4	39.4	9.6	31.8	9.6	31.8	31.8
Total Split (s)	9.6	33.1	31.0	54.5	54.5	10.4	39.9	16.0	45.5	45.5
Total Split (%)	8.0%	27.6%	25.8%	45.4%	45.4%	8.7%	33.3%	13.3%	37.9%	37.9%
Yellow Time (s)	3.6	4.1	3.6	4.4	4.4	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.4	5.4	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	5.1	13.2	27.0	37.1	37.1	5.9	38.5	7.8	40.6	40.6
Actuated g/C Ratio	0.05	0.13	0.27	0.37	0.37	0.06	0.38	0.08	0.40	0.40
v/c Ratio	0.22	0.23	1.24	0.11	0.16	0.63	1.22	0.42	0.70	0.04
Control Delay	57.1	24.3	160.5	22.7	1.9	77.5	136.1	57.0	30.7	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	24.3	160.5	22.7	1.9	77.5	136.1	57.0	30.7	0.1
LOS	E	C	F	C	A	E	F	E	C	A
Approach Delay		32.8		123.8			133.8		31.3	
Approach LOS		C		F			F		C	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 100.5	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.24	
Intersection Signal Delay: 98.8	Intersection LOS: F
Intersection Capacity Utilization 94.1%	ICU Level of Service F
Analysis Period (min) 15	

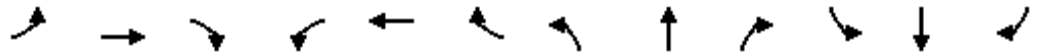
Splits and Phases: 6: Iowa Av. & Palmyrita Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↖	↖	↖	↖↗		↖	↖↗	↖
Traffic Volume (veh/h)	18	23	28	525	70	100	59	945	490	51	888	26
Future Volume (veh/h)	18	23	28	525	70	100	59	945	490	51	888	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	20	26	12	590	79	48	66	1062	467	57	998	18
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	38	119	55	464	632	535	85	957	409	73	1393	621
Arrive On Green	0.02	0.10	0.10	0.26	0.34	0.34	0.05	0.40	0.40	0.04	0.39	0.39
Sat Flow, veh/h	1781	1211	559	1781	1870	1585	1781	2402	1027	1781	3554	1585
Grp Volume(v), veh/h	20	0	38	590	79	48	66	777	752	57	998	18
Grp Sat Flow(s),veh/h/ln	1781	0	1770	1781	1870	1585	1781	1777	1652	1781	1777	1585
Q Serve(g_s), s	1.1	0.0	2.0	26.4	3.0	2.1	3.7	40.3	40.3	3.2	24.0	0.7
Cycle Q Clear(g_c), s	1.1	0.0	2.0	26.4	3.0	2.1	3.7	40.3	40.3	3.2	24.0	0.7
Prop In Lane	1.00		0.32	1.00		1.00	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	38	0	174	464	632	535	85	708	658	73	1393	621
V/C Ratio(X)	0.53	0.00	0.22	1.27	0.13	0.09	0.78	1.10	1.14	0.78	0.72	0.03
Avail Cap(c_a), veh/h	88	0	489	464	907	769	102	708	658	201	1393	621
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.1	0.0	42.1	37.4	23.2	22.9	47.7	30.5	30.5	48.1	26.0	18.9
Incr Delay (d2), s/veh	4.2	0.0	0.6	137.8	0.1	0.1	21.5	63.9	81.1	6.4	3.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.9	28.7	1.3	0.8	2.1	28.3	29.5	1.5	10.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.2	0.0	42.7	175.2	23.3	23.0	69.2	94.4	111.6	54.5	29.2	19.0
LnGrp LOS	D	A	D	F	C	C	E	F	F	D	C	B
Approach Vol, veh/h		58			717			1595			1073	
Approach Delay, s/veh		46.3			148.3			101.4			30.4	
Approach LOS		D			F			F			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	46.1	31.0	15.3	9.4	45.5	6.8	39.6				
Change Period (Y+Rc), s	4.6	5.8	4.6	* 5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	11.4	34.1	26.4	* 28	5.8	39.7	5.0	49.1				
Max Q Clear Time (g_c+I1), s	5.2	42.3	28.4	4.0	5.7	26.0	3.1	5.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.0	5.5	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	88.1
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

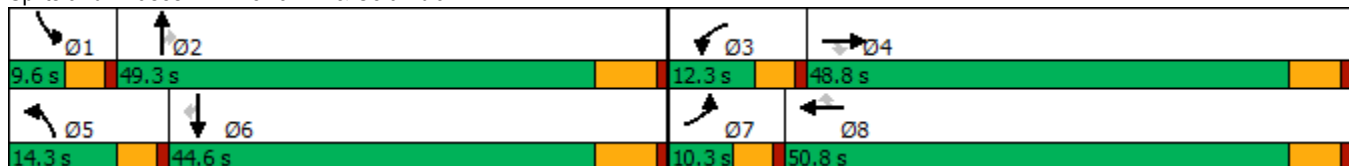


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗	↖↗	↕	↗
Traffic Volume (vph)	244	206	255	180	386	40	281	1123	114	23	1187	238
Future Volume (vph)	244	206	255	180	386	40	281	1123	114	23	1187	238
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	47.8	47.8	9.6	50.8	50.8	9.6	42.5	42.5	9.6	44.5	44.5
Total Split (s)	10.3	48.8	48.8	12.3	50.8	50.8	14.3	49.3	49.3	9.6	44.6	44.6
Total Split (%)	8.6%	40.7%	40.7%	10.3%	42.3%	42.3%	11.9%	41.1%	41.1%	8.0%	37.2%	37.2%
Yellow Time (s)	3.6	4.8	4.8	3.6	4.8	4.8	3.6	5.5	5.5	3.6	5.5	5.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	4.6	5.8	5.8	4.6	6.5	6.5	4.6	6.5	6.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	5.8	18.6	18.6	7.8	20.6	20.6	9.8	49.6	49.6	5.1	38.6	38.6
Actuated g/C Ratio	0.06	0.19	0.19	0.08	0.21	0.21	0.10	0.51	0.51	0.05	0.40	0.40
v/c Ratio	1.34	0.34	0.67	0.73	0.57	0.10	0.91	0.69	0.15	0.14	0.94	0.37
Control Delay	217.8	33.7	23.0	61.3	36.2	0.4	74.5	23.7	6.1	50.0	43.6	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	217.8	33.7	23.0	61.3	36.2	0.4	74.5	23.7	6.1	50.0	43.6	12.0
LOS	F	C	C	E	D	A	E	C	A	D	D	B
Approach Delay		93.5			41.3			31.8			38.5	
Approach LOS		F			D			C			D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 96.6
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.34
 Intersection Signal Delay: 45.6
 Intersection LOS: D
 Intersection Capacity Utilization 76.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 7: Iowa Av. & Columbia Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

7: Iowa Av. & Columbia Av.

03/05/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	206	255	180	386	40	281	1123	114	23	1187	238
Future Volume (veh/h)	244	206	255	180	386	40	281	1123	114	23	1187	238
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	274	231	149	202	434	23	316	1262	77	26	1334	175
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	544	243	273	600	268	371	1788	787	92	1500	669
Arrive On Green	0.06	0.15	0.15	0.08	0.17	0.17	0.11	0.50	0.50	0.03	0.42	0.42
Sat Flow, veh/h	3456	3554	1585	3456	3554	1585	3456	3554	1564	3456	3554	1585
Grp Volume(v), veh/h	274	231	149	202	434	23	316	1262	77	26	1334	175
Grp Sat Flow(s),veh/h/ln	1728	1777	1585	1728	1777	1585	1728	1777	1564	1728	1777	1585
Q Serve(g_s), s	5.7	5.3	7.9	5.2	10.4	1.1	8.1	24.7	2.3	0.7	31.3	6.5
Cycle Q Clear(g_c), s	5.7	5.3	7.9	5.2	10.4	1.1	8.1	24.7	2.3	0.7	31.3	6.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	218	544	243	273	600	268	371	1788	787	92	1500	669
V/C Ratio(X)	1.26	0.42	0.61	0.74	0.72	0.09	0.85	0.71	0.10	0.28	0.89	0.26
Avail Cap(c_a), veh/h	218	1693	755	295	1772	790	371	1788	787	191	1500	669
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.3	34.6	35.7	40.6	35.5	31.6	39.6	17.3	11.7	43.1	24.1	16.9
Incr Delay (d2), s/veh	146.7	0.5	2.5	7.4	1.7	0.1	16.2	2.4	0.2	0.6	8.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	2.2	3.1	2.4	4.4	0.4	4.1	9.1	0.8	0.3	13.1	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	188.9	35.1	38.2	48.0	37.2	31.8	55.7	19.6	12.0	43.7	32.4	17.9
LnGrp LOS	F	D	D	D	D	C	E	B	B	D	C	B
Approach Vol, veh/h		654			659			1655			1535	
Approach Delay, s/veh		100.3			40.3			26.2			30.9	
Approach LOS		F			D			C			C	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.0	51.9	11.7	19.6	14.3	44.6	10.3	21.0				
Change Period (Y+Rc), s	4.6	6.5	4.6	5.8	4.6	6.5	4.6	5.8				
Max Green Setting (Gmax), s	5.0	42.8	7.7	43.0	9.7	38.1	5.7	45.0				
Max Q Clear Time (g_c+1), s	2.7	26.7	7.2	9.9	10.1	33.3	7.7	12.4				
Green Ext Time (p_c), s	0.0	7.7	0.0	1.8	0.0	3.4	0.0	2.8				
Intersection Summary												
HCM 6th Ctrl Delay			40.6									
HCM 6th LOS			D									

Timings

Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020

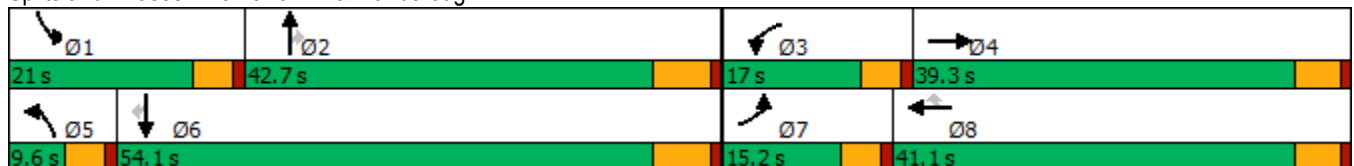


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	77	17	219	43	131	38	1176	39	34	1690	57
Future Volume (vph)	77	17	219	43	131	38	1176	39	34	1690	57
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2		1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	41.1	41.1	9.6	31.2	31.2	9.6	25.2	25.2
Total Split (s)	15.2	39.3	17.0	41.1	41.1	9.6	42.7	42.7	21.0	54.1	54.1
Total Split (%)	12.7%	32.8%	14.2%	34.3%	34.3%	8.0%	35.6%	35.6%	17.5%	45.1%	45.1%
Yellow Time (s)	3.6	4.1	3.6	4.1	4.1	3.6	5.2	5.2	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.1	5.1	4.6	6.2	6.2	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	8.3	14.1	12.8	17.1	17.1	5.1	47.9	47.9	6.7	49.3	49.3
Actuated g/C Ratio	0.09	0.15	0.14	0.18	0.18	0.05	0.51	0.51	0.07	0.53	0.53
v/c Ratio	0.52	0.18	0.96	0.13	0.33	0.41	0.69	0.05	0.29	0.96	0.07
Control Delay	57.4	19.2	93.5	34.6	6.3	61.9	23.9	0.1	52.1	37.8	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.4	19.2	93.5	34.6	6.3	61.9	23.9	0.1	52.1	37.8	1.0
LOS	E	B	F	C	A	E	C	A	D	D	A
Approach Delay		42.7		58.0			24.3			36.9	
Approach LOS		D		E			C			D	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 93.8	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 35.0	Intersection LOS: C
Intersection Capacity Utilization 74.9%	ICU Level of Service D
Analysis Period (min) 15	

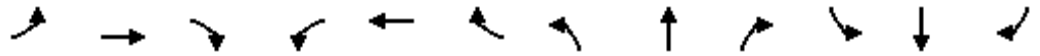
Splits and Phases: 8: Iowa Av. & Marlborough Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

8: Iowa Av. & Marlborough Av.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↖	↗	↗	↖	↗	↖
Traffic Volume (veh/h)	77	17	31	219	43	131	38	1176	39	34	1690	57
Future Volume (veh/h)	77	17	31	219	43	131	38	1176	39	34	1690	57
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	81	18	14	231	45	45	40	1238	37	36	1779	44
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	104	105	81	234	339	287	61	1814	808	58	1806	785
Arrive On Green	0.06	0.11	0.11	0.13	0.18	0.18	0.03	0.51	0.51	0.03	0.51	0.51
Sat Flow, veh/h	1781	967	752	1781	1870	1585	1781	3554	1583	1781	3554	1544
Grp Volume(v), veh/h	81	0	32	231	45	45	40	1238	37	36	1779	44
Grp Sat Flow(s),veh/h/ln	1781	0	1720	1781	1870	1585	1781	1777	1583	1781	1777	1544
Q Serve(g_s), s	4.2	0.0	1.6	12.2	1.9	2.3	2.1	24.7	1.1	1.9	46.4	1.4
Cycle Q Clear(g_c), s	4.2	0.0	1.6	12.2	1.9	2.3	2.1	24.7	1.1	1.9	46.4	1.4
Prop In Lane	1.00		0.44	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	104	0	186	234	339	287	61	1814	808	58	1806	785
V/C Ratio(X)	0.78	0.00	0.17	0.99	0.13	0.16	0.65	0.68	0.05	0.62	0.98	0.06
Avail Cap(c_a), veh/h	200	0	624	234	715	606	95	1814	808	310	1806	785
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	0.0	38.2	40.8	32.4	32.5	44.9	17.3	11.6	45.0	22.8	11.7
Incr Delay (d2), s/veh	4.7	0.0	0.4	54.4	0.2	0.3	4.3	2.1	0.1	4.1	17.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	0.7	8.8	0.9	0.9	1.0	9.1	0.4	0.9	20.7	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.4	0.0	38.6	95.2	32.5	32.8	49.2	19.4	11.7	49.1	40.7	11.9
LnGrp LOS	D	A	D	F	C	C	D	B	B	D	D	B
Approach Vol, veh/h		113			321			1315			1859	
Approach Delay, s/veh		45.6			77.7			20.1			40.2	
Approach LOS		D			E			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.7	54.3	17.0	15.3	7.8	54.1	10.1	22.2				
Change Period (Y+Rc), s	4.6	6.2	4.6	5.1	4.6	6.2	4.6	5.1				
Max Green Setting (Gmax), s	16.4	36.5	12.4	34.2	5.0	47.9	10.6	36.0				
Max Q Clear Time (g_c+1), s	3.9	26.7	14.2	3.6	4.1	48.4	6.2	4.3				
Green Ext Time (p_c), s	0.0	5.4	0.0	0.1	0.0	0.0	0.0	0.3				
Intersection Summary												
HCM 6th Ctrl Delay				36.4								
HCM 6th LOS				D								

Timings

Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/05/2020

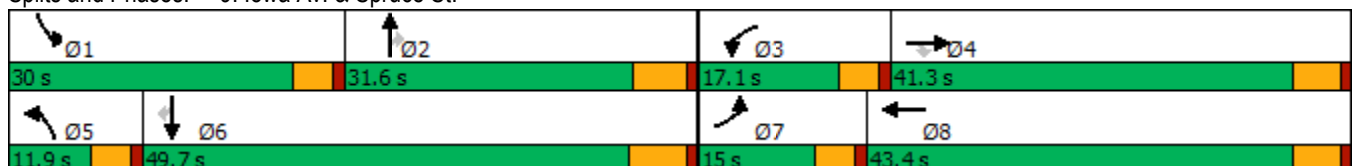


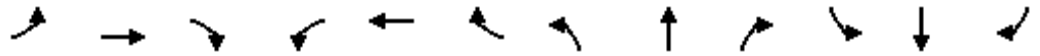
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↕	↘	↕	↗	↘	↕	↗
Traffic Volume (vph)	212	423	253	139	178	95	845	103	416	1237	338
Future Volume (vph)	212	423	253	139	178	95	845	103	416	1237	338
Turn Type	Prot	NA	Perm	Prot	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	5	2		1	6	
Permitted Phases			4					2			6
Detector Phase	7	4	4	3	8	5	2	2	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	34.4	9.6	43.4	9.6	30.8	30.8	9.6	31.2	31.2
Total Split (s)	15.0	41.3	41.3	17.1	43.4	11.9	31.6	31.6	30.0	49.7	49.7
Total Split (%)	12.5%	34.4%	34.4%	14.3%	36.2%	9.9%	26.3%	26.3%	25.0%	41.4%	41.4%
Yellow Time (s)	3.6	4.4	4.4	3.6	4.4	3.6	4.8	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	5.4	4.6	5.4	4.6	5.8	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	10.4	32.6	32.6	11.9	34.1	7.3	25.9	25.9	25.5	43.6	43.6
Actuated g/C Ratio	0.09	0.28	0.28	0.10	0.29	0.06	0.22	0.22	0.22	0.37	0.37
v/c Ratio	1.49	0.90	0.50	0.85	0.33	0.95	1.19	0.25	1.19	1.04	0.47
Control Delay	288.9	61.9	16.5	89.2	17.6	130.5	139.9	4.1	150.6	71.2	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	288.9	61.9	16.5	89.2	17.6	130.5	139.9	4.1	150.6	71.2	7.5
LOS	F	E	B	F	B	F	F	A	F	E	A
Approach Delay		103.2			39.0		125.7			76.9	
Approach LOS		F			D		F			E	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 116.3
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.49
 Intersection Signal Delay: 89.8
 Intersection LOS: F
 Intersection Capacity Utilization 93.8%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 9: Iowa Av. & Spruce St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑	↗	↘	↕		↘	↕	↗	↘	↕	↗
Traffic Volume (veh/h)	212	423	253	139	178	147	95	845	103	416	1237	338
Future Volume (veh/h)	212	423	253	139	178	147	95	845	103	416	1237	338
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	236	470	190	154	198	163	106	939	77	462	1374	239
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	515	427	181	546	426	112	793	346	391	1349	602
Arrive On Green	0.09	0.28	0.28	0.10	0.29	0.29	0.06	0.22	0.22	0.22	0.38	0.38
Sat Flow, veh/h	1781	1870	1551	1781	1899	1481	1781	3554	1551	1781	3554	1585
Grp Volume(v), veh/h	236	470	190	154	185	176	106	939	77	462	1374	239
Grp Sat Flow(s),veh/h/ln	1781	1870	1551	1781	1777	1604	1781	1777	1551	1781	1777	1585
Q Serve(g_s), s	10.4	28.1	11.7	9.8	9.5	10.2	6.9	25.8	4.7	25.4	43.9	12.7
Cycle Q Clear(g_c), s	10.4	28.1	11.7	9.8	9.5	10.2	6.9	25.8	4.7	25.4	43.9	12.7
Prop In Lane	1.00		1.00	1.00		0.92	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	160	515	427	181	511	461	112	793	346	391	1349	602
V/C Ratio(X)	1.47	0.91	0.44	0.85	0.36	0.38	0.94	1.18	0.22	1.18	1.02	0.40
Avail Cap(c_a), veh/h	160	581	482	193	584	527	112	793	346	391	1349	602
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.6	40.5	34.6	51.1	32.8	33.0	54.0	44.9	36.7	45.1	35.9	26.2
Incr Delay (d2), s/veh	243.4	17.6	0.7	25.8	0.4	0.5	66.0	95.5	1.5	104.6	29.2	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.4	15.0	4.4	5.6	4.1	3.9	5.1	21.4	1.9	22.0	23.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	296.0	58.1	35.3	76.8	33.2	33.5	120.0	140.4	38.2	149.7	65.0	28.2
LnGrp LOS	F	E	D	E	C	C	F	F	D	F	F	C
Approach Vol, veh/h		896			515			1122			2075	
Approach Delay, s/veh		115.9			46.3			131.5			79.7	
Approach LOS		F			D			F			E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	30.0	32.0	16.4	37.3	11.9	50.1	15.0	38.6				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	25.4	* 26	12.5	35.9	7.3	43.5	10.4	38.0				
Max Q Clear Time (g_c+11), s	27.4	27.8	11.8	30.1	8.9	45.9	12.4	12.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	1.8	0.0	0.0	0.0	2.1				

Intersection Summary

HCM 6th Ctrl Delay	95.6
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection

Intersection Delay, s/veh	17
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Vol, veh/h	668	116	20	431	73	29
Future Vol, veh/h	668	116	20	431	73	29
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	742	129	22	479	81	32
Number of Lanes	2	0	0	2	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	19.7	13.7	11.2
HCM LOS	C	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	72%	0%	0%	12%	0%
Vol Thru, %	0%	100%	66%	88%	100%
Vol Right, %	28%	0%	34%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	102	445	339	164	287
LT Vol	73	0	0	20	0
Through Vol	0	445	223	144	287
RT Vol	29	0	116	0	0
Lane Flow Rate	113	495	376	182	319
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.205	0.76	0.553	0.303	0.526
Departure Headway (Hd)	6.498	5.532	5.29	5.997	5.935
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	553	653	685	600	607
Service Time	4.527	3.256	3.014	3.728	3.667
HCM Lane V/C Ratio	0.204	0.758	0.549	0.303	0.526
HCM Control Delay	11.2	23.7	14.4	11.3	15.1
HCM Lane LOS	B	C	B	B	C
HCM 95th-tile Q	0.8	7	3.4	1.3	3.1

Intersection

Int Delay, s/veh 4.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	52	111	72	49	61	64
Future Vol, veh/h	52	111	72	49	61	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	400	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	122	79	54	67	70

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	133	0	0
Stage 1	-	-	79
Stage 2	-	-	236
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1452	-	678
Stage 1	-	-	944
Stage 2	-	-	803
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1452	-	650
Mov Cap-2 Maneuver	-	-	650
Stage 1	-	-	904
Stage 2	-	-	803

Approach	EB	WB	SB
HCM Control Delay, s	2.4	0	10.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1452	-	-	-	786
HCM Lane V/C Ratio	0.039	-	-	-	0.175
HCM Control Delay (s)	7.6	0	-	-	10.5
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.6

APPENDIX 7.2:

EAPC (2027) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **EAPC (2027) Conditions - Weekday AM Peak Hour**

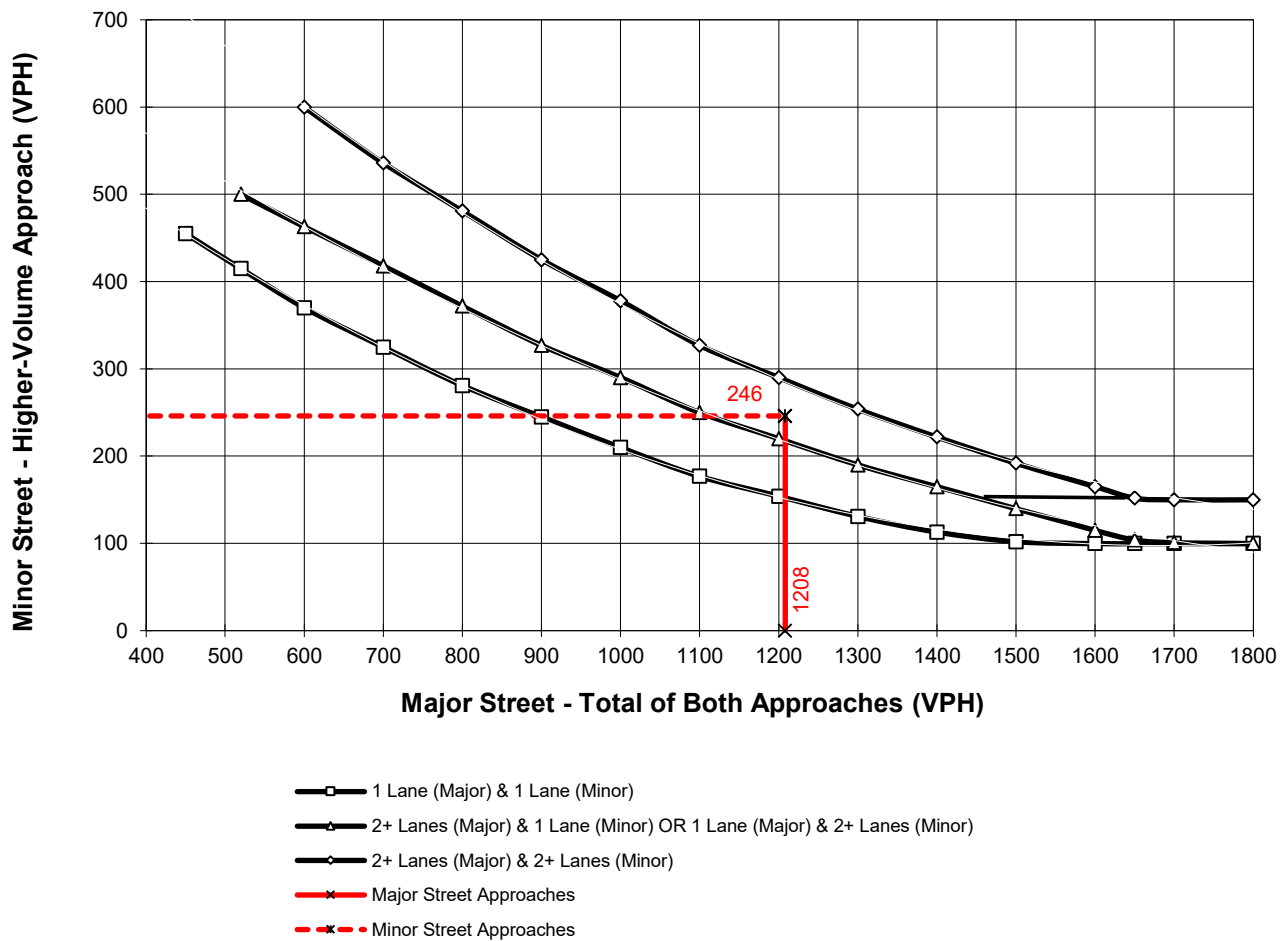
Major Street Name = **Center Street**

Total of Both Approaches (VPH) = **1208**
Number of Approach Lanes on Major Street = **2**

Minor Street Name = **Garfield Avenue**

High Volume Approach (VPH) = **246**
Number of Approach Lanes On Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **EAPC (2027) Conditions - Weekday PM Peak Hour**

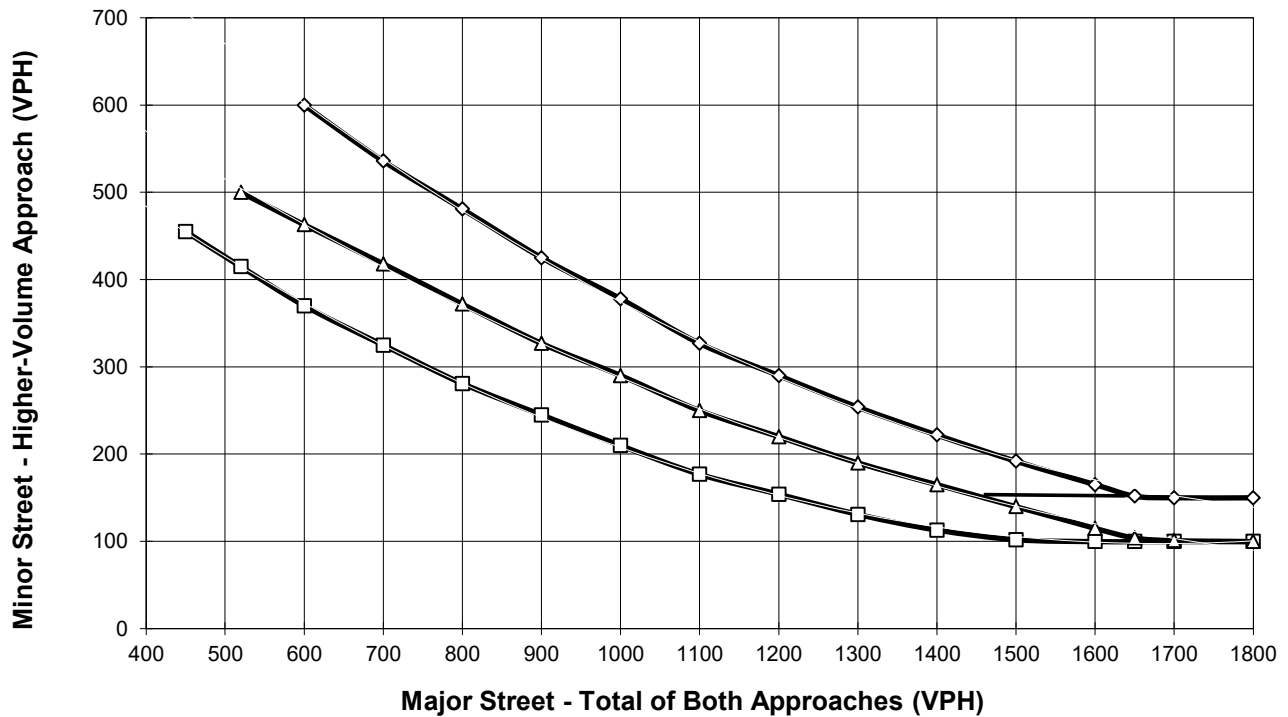
Major Street Name = **Spring Street**

Total of Both Approaches (VPH) = **285**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Garfield Avenue**

High Volume Approach (VPH) = **125**
Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



- 1 Lane (Major) & 1 Lane (Minor)
- △— 2+ Lanes (Major) & 1 Lane (Minor) OR 1 Lane (Major) & 2+ Lanes (Minor)
- ◇— 2+ Lanes (Major) & 2+ Lanes (Minor)
- x— Major Street Approaches
- x— Minor Street Approaches

*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

APPENDIX 7.3:

**EAPC (2027) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS
WITH IMPROVEMENTS**

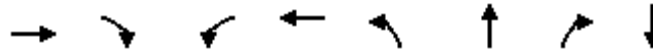
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Timings

Highgrove Town Center Due Diligence (JN:13222)

2: Highgrove Pl. & Center St.

03/05/2020



Lane Group	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBT
Lane Configurations	↑	↗	↖	↗		↖	↗	↕
Traffic Volume (vph)	295	23	14	893	51	0	248	0
Future Volume (vph)	295	23	14	893	51	0	248	0
Turn Type	NA	Perm	Perm	NA	Perm	NA	Perm	NA
Protected Phases	4			8		2		6
Permitted Phases		4	8		2		2	
Detector Phase	4	4	8	8	2	2	2	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.4	22.4	22.4	22.4	14.6	14.6	14.6	14.6
Total Split (s)	68.0	68.0	68.0	68.0	22.0	22.0	22.0	22.0
Total Split (%)	75.6%	75.6%	75.6%	75.6%	24.4%	24.4%	24.4%	24.4%
Yellow Time (s)	4.4	4.4	4.4	4.4	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4	5.4		4.6	4.6	4.6
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effct Green (s)	40.9	40.9	40.9	40.9		18.0	18.0	18.0
Actuated g/C Ratio	0.59	0.59	0.59	0.59		0.26	0.26	0.26
v/c Ratio	0.29	0.03	0.02	0.87		0.15	0.44	0.06
Control Delay	7.0	2.0	4.9	21.1		26.6	6.8	0.2
Queue Delay	0.0	0.0	0.0	0.6		0.0	0.0	0.0
Total Delay	7.0	2.0	4.9	21.6		26.6	6.8	0.2
LOS	A	A	A	C		C	A	A
Approach Delay	6.6			21.4		10.2		0.2
Approach LOS	A			C		B		A

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 69.3
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 15.8
 Intersection LOS: B
 Intersection Capacity Utilization 65.3%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 2: Highgrove Pl. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 2: Highgrove Pl. & Center St. 03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗			↑	↗		↕	
Traffic Volume (veh/h)	0	295	23	14	893	8	51	0	248	0	0	31
Future Volume (veh/h)	0	295	23	14	893	8	51	0	248	0	0	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	314	0	15	950	9	54	0	264	0	0	33
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	1105		649	1093	10	443	0	411	0	0	412
Arrive On Green	0.00	0.59	0.00	0.59	0.59	0.59	0.26	0.00	0.26	0.00	0.00	0.26
Sat Flow, veh/h	586	1870	1585	1066	1849	18	1293	0	1583	0	0	1585
Grp Volume(v), veh/h	0	314	0	15	0	959	54	0	264	0	0	33
Grp Sat Flow(s),veh/h/ln	586	1870	1585	1066	0	1867	1293	0	1583	0	0	1585
Q Serve(g_s), s	0.0	5.5	0.0	0.5	0.0	28.9	2.1	0.0	9.9	0.0	0.0	1.1
Cycle Q Clear(g_c), s	0.0	5.5	0.0	6.0	0.0	28.9	3.1	0.0	9.9	0.0	0.0	1.1
Prop In Lane	1.00		1.00	1.00		0.01	1.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	107	1105		649	0	1103	443	0	411	0	0	412
V/C Ratio(X)	0.00	0.28		0.02	0.00	0.87	0.12	0.00	0.64	0.00	0.00	0.08
Avail Cap(c_a), veh/h	309	1748		1015	0	1745	443	0	411	0	0	412
HCM 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
Upstream Filter(I)	0.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	6.7	0.0	8.2	0.0	11.5	19.9	0.0	22.0	0.0	0.0	18.7
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.0	0.0	3.0	0.6	0.0	7.5	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.7	0.0	0.1	0.0	9.4	0.7	0.0	4.4	0.0	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.9	0.0	8.2	0.0	14.6	20.5	0.0	29.5	0.0	0.0	19.1
LnGrp LOS	A	A		A	A	B	C	A	C	A	A	B
Approach Vol, veh/h		314	A		974			318				33
Approach Delay, s/veh		6.9			14.5			28.0				19.1
Approach LOS		A			B			C				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.0		45.0		22.0		45.0				
Change Period (Y+Rc), s		4.6		5.4		4.6		5.4				
Max Green Setting (Gmax), s		17.4		62.6		17.4		62.6				
Max Q Clear Time (g_c+I1), s		11.9		7.5		3.1		30.9				
Green Ext Time (p_c), s		0.6		1.9		0.1		8.6				

Intersection Summary

HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↗		↕↕				↗			↗
Traffic Vol, veh/h	0	295	23	14	893	8	0	0	248	0	0	82
Future Vol, veh/h	0	295	23	14	893	8	0	0	248	0	0	82
Conflicting Peds, #/hr	0	0	0	0	0	4	0	0	1	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	314	24	15	950	9	0	0	264	0	0	87

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	963	0	0	314	0	0	-	-	158	-	-	484
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	711	-	-	1243	-	-	0	0	859	0	0	529
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	708	-	-	1243	-	-	-	-	858	-	-	527
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.2			11			13.2		
HCM LOS							B			B		

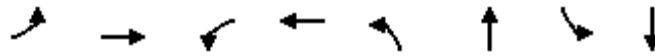
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	858	708	-	-	1243	-	-	527
HCM Lane V/C Ratio	0.307	-	-	-	0.012	-	-	0.166
HCM Control Delay (s)	11	0	-	-	7.9	0.1	-	13.2
HCM Lane LOS	B	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	1.3	0	-	-	0	-	-	0.6

Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020

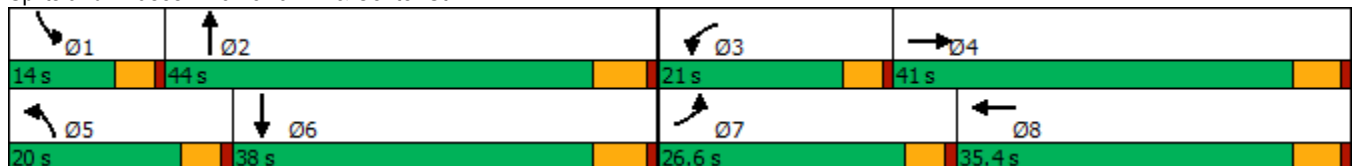


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↘	↕	↘	↕	↘	↕
Traffic Volume (vph)	97	331	268	658	122	532	53	758
Future Volume (vph)	97	331	268	658	122	532	53	758
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	36.4	9.6	33.4	9.6	29.8	9.6	28.8
Total Split (s)	26.6	41.0	21.0	35.4	20.0	44.0	14.0	38.0
Total Split (%)	22.2%	34.2%	17.5%	29.5%	16.7%	36.7%	11.7%	31.7%
Yellow Time (s)	3.6	4.4	3.6	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	4.6	5.4	4.6	5.8	4.6	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	12.0	25.7	16.5	30.2	12.2	39.7	7.6	33.0
Actuated g/C Ratio	0.11	0.24	0.15	0.28	0.11	0.37	0.07	0.31
v/c Ratio	0.56	0.57	1.13	1.02	0.69	0.58	0.48	0.97
Control Delay	57.1	37.1	137.8	73.2	65.1	30.0	62.5	58.8
Queue Delay	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	37.3	137.8	73.2	65.1	30.0	62.5	58.8
LOS	E	D	F	E	E	C	E	E
Approach Delay		41.0		88.3		35.6		59.0
Approach LOS		D		F		D		E

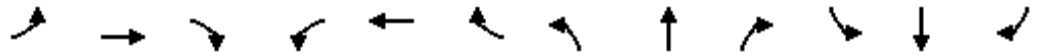
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 107.8
 Natural Cycle: 120
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.13
 Intersection Signal Delay: 60.8
 Intersection LOS: E
 Intersection Capacity Utilization 80.3%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Iowa Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 3: Iowa Av. & Center St. 03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↕		↖	↕		↗	↕		↖	↕	
Traffic Volume (veh/h)	97	331	90	268	658	220	122	532	116	53	758	155
Future Volume (veh/h)	97	331	90	268	658	220	122	532	116	53	758	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	110	376	72	305	748	192	139	605	100	60	861	135
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	611	116	293	814	209	170	1168	193	77	1016	159
Arrive On Green	0.08	0.21	0.21	0.16	0.29	0.29	0.10	0.38	0.38	0.04	0.33	0.33
Sat Flow, veh/h	1781	2975	564	1781	2798	718	1781	3052	503	1781	3071	482
Grp Volume(v), veh/h	110	223	225	305	475	465	139	352	353	60	498	498
Grp Sat Flow(s),veh/h/ln	1781	1777	1762	1781	1777	1739	1781	1777	1778	1781	1777	1776
Q Serve(g_s), s	6.1	11.4	11.6	16.4	25.8	25.8	7.6	15.2	15.3	3.3	26.0	26.0
Cycle Q Clear(g_c), s	6.1	11.4	11.6	16.4	25.8	25.8	7.6	15.2	15.3	3.3	26.0	26.0
Prop In Lane	1.00		0.32	1.00		0.41	1.00		0.28	1.00		0.27
Lane Grp Cap(c), veh/h	140	365	362	293	517	506	170	680	681	77	588	587
V/C Ratio(X)	0.78	0.61	0.62	1.04	0.92	0.92	0.82	0.52	0.52	0.78	0.85	0.85
Avail Cap(c_a), veh/h	393	634	628	293	534	523	275	680	681	168	588	587
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.1	36.0	36.1	41.7	34.3	34.3	44.3	23.7	23.7	47.3	31.1	31.1
Incr Delay (d2), s/veh	9.2	1.7	1.8	64.0	20.8	21.2	4.1	2.8	2.8	6.1	14.1	14.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	4.9	5.0	12.1	13.6	13.3	3.4	6.5	6.5	1.6	12.7	12.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.4	37.7	37.9	105.7	55.1	55.4	48.5	26.5	26.6	53.4	45.2	45.2
LnGrp LOS	D	D	D	F	E	E	D	C	C	D	D	D
Approach Vol, veh/h		558			1245			844			1056	
Approach Delay, s/veh		41.1			67.6			30.1			45.6	
Approach LOS		D			E			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.9	44.0	21.0	25.9	14.1	38.8	12.5	34.4				
Change Period (Y+Rc), s	4.6	5.8	4.6	5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	9.4	38.2	16.4	35.6	15.4	32.2	22.0	30.0				
Max Q Clear Time (g_c+1), s	5.3	17.3	18.4	13.6	9.6	28.0	8.1	27.8				
Green Ext Time (p_c), s	0.0	3.9	0.0	2.4	0.1	2.2	0.2	1.2				
Intersection Summary												
HCM 6th Ctrl Delay			48.8									
HCM 6th LOS			D									

Timings

Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020

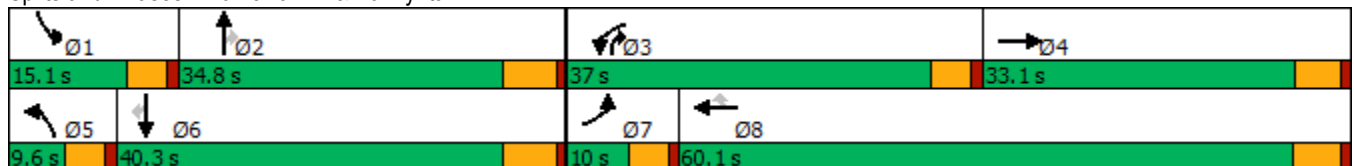


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↕	↗	↖	↕	↗
Traffic Volume (vph)	15	63	581	71	52	31	690	301	132	969	29
Future Volume (vph)	15	63	581	71	52	31	690	301	132	969	29
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	3	1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	39.4	39.4	9.6	31.8	9.6	9.6	31.8	31.8
Total Split (s)	10.0	33.1	37.0	60.1	60.1	9.6	34.8	37.0	15.1	40.3	40.3
Total Split (%)	8.3%	27.6%	30.8%	50.1%	50.1%	8.0%	29.0%	30.8%	12.6%	33.6%	33.6%
Yellow Time (s)	3.6	4.1	3.6	4.4	4.4	3.6	4.8	3.6	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.4	5.4	4.6	5.8	4.6	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	None	Max	Max
Act Effct Green (s)	5.3	13.6	32.5	46.7	46.7	5.0	29.1	62.9	10.5	38.6	38.6
Actuated g/C Ratio	0.05	0.13	0.31	0.44	0.44	0.05	0.27	0.59	0.10	0.36	0.36
v/c Ratio	0.20	0.41	1.19	0.10	0.08	0.41	0.79	0.31	0.84	0.84	0.05
Control Delay	56.3	39.8	137.2	18.8	0.2	66.0	43.3	2.0	84.2	39.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.3	39.8	137.2	18.8	0.2	66.0	43.3	2.0	84.2	39.4	0.1
LOS	E	D	F	B	A	E	D	A	F	D	A
Approach Delay		42.2		115.1			31.8			43.6	
Approach LOS		D		F			C			D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 106
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.19
 Intersection Signal Delay: 56.5
 Intersection LOS: E
 Intersection Capacity Utilization 83.0%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 6: Iowa Av. & Palmyrita Av.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗	↖	↖	↗	↗	↖	↗	↖
Traffic Volume (veh/h)	15	63	26	581	71	52	31	690	301	132	969	29
Future Volume (veh/h)	15	63	26	581	71	52	31	690	301	132	969	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	17	70	15	646	79	29	34	767	247	147	1077	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	33	146	31	567	743	622	54	1012	945	177	1256	547
Arrive On Green	0.02	0.10	0.10	0.32	0.40	0.40	0.03	0.28	0.28	0.10	0.35	0.35
Sat Flow, veh/h	1781	1489	319	1781	1870	1565	1781	3554	1549	1781	3554	1547
Grp Volume(v), veh/h	17	0	85	646	79	29	34	767	247	147	1077	22
Grp Sat Flow(s),veh/h/ln	1781	0	1807	1781	1870	1565	1781	1777	1549	1781	1777	1547
Q Serve(g_s), s	1.0	0.0	4.5	32.4	2.7	1.2	1.9	20.1	7.7	8.3	28.6	0.9
Cycle Q Clear(g_c), s	1.0	0.0	4.5	32.4	2.7	1.2	1.9	20.1	7.7	8.3	28.6	0.9
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	33	0	177	567	743	622	54	1012	945	177	1256	547
V/C Ratio(X)	0.51	0.00	0.48	1.14	0.11	0.05	0.63	0.76	0.26	0.83	0.86	0.04
Avail Cap(c_a), veh/h	94	0	497	567	1004	840	87	1012	945	184	1256	547
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	0.0	43.5	34.7	19.3	18.9	48.8	33.2	9.6	45.1	30.5	21.6
Incr Delay (d2), s/veh	4.4	0.0	2.0	82.8	0.1	0.0	4.4	5.3	0.7	24.3	7.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	2.1	26.3	1.1	0.4	0.9	8.9	2.5	4.7	12.7	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.9	0.0	45.5	117.5	19.4	18.9	53.2	38.6	10.2	69.3	38.2	21.7
LnGrp LOS	D	A	D	F	B	B	D	D	B	E	D	C
Approach Vol, veh/h		102			754			1048			1246	
Approach Delay, s/veh		46.9			103.5			32.4			41.6	
Approach LOS		D			F			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.7	34.8	37.0	15.4	7.7	41.8	6.5	45.9				
Change Period (Y+Rc), s	4.6	5.8	4.6	* 5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	10.5	29.0	32.4	* 28	5.0	34.5	5.4	54.7				
Max Q Clear Time (g_c+11), s	10.3	22.1	34.4	6.5	3.9	30.6	3.0	4.7				
Green Ext Time (p_c), s	0.0	3.2	0.0	0.3	0.0	2.3	0.0	0.5				

Intersection Summary

HCM 6th Ctrl Delay	53.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings

Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/06/2020

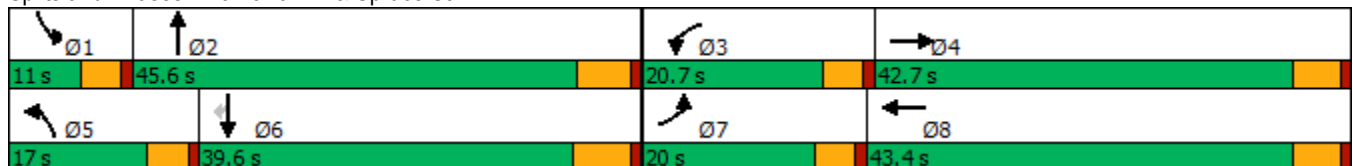


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↙	↕	↙	↕	↙	↕	↙	↕	↙
Traffic Volume (vph)	268	272	110	231	155	1050	179	799	229
Future Volume (vph)	268	272	110	231	155	1050	179	799	229
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	9.6	43.4	9.6	30.8	9.6	31.2	31.2
Total Split (s)	20.0	42.7	20.7	43.4	17.0	45.6	11.0	39.6	39.6
Total Split (%)	16.7%	35.6%	17.3%	36.2%	14.2%	38.0%	9.2%	33.0%	33.0%
Yellow Time (s)	3.6	4.4	3.6	4.4	3.6	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	4.6	5.4	4.6	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	15.5	26.2	11.4	22.1	12.5	40.0	6.4	33.6	33.6
Actuated g/C Ratio	0.15	0.25	0.11	0.21	0.12	0.38	0.06	0.32	0.32
v/c Ratio	1.18	0.51	0.66	0.74	0.84	1.04	0.98	0.81	0.39
Control Delay	152.9	31.2	61.9	34.6	79.5	69.5	107.3	40.3	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	152.9	31.2	61.9	34.6	79.5	69.5	107.3	40.3	5.7
LOS	F	C	E	C	E	E	F	D	A
Approach Delay		80.7		39.4		70.6		43.7	
Approach LOS		F		D		E		D	

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 104.6	
Natural Cycle: 115	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 58.9	Intersection LOS: E
Intersection Capacity Utilization 87.0%	ICU Level of Service E
Analysis Period (min) 15	

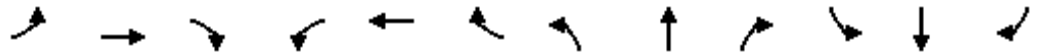
Splits and Phases: 9: Iowa Av. & Spruce St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/06/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↗↘		↗	↗↘		↗	↗↘		↗↘	↗↘	↗
Traffic Volume (veh/h)	268	272	118	110	231	278	155	1050	161	179	799	229
Future Volume (veh/h)	268	272	118	110	231	278	155	1050	161	179	799	229
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	308	313	61	126	266	56	178	1207	184	206	918	260
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	282	661	127	156	447	93	210	1266	192	227	1270	558
Arrive On Green	0.16	0.22	0.22	0.09	0.15	0.15	0.12	0.41	0.41	0.07	0.36	0.36
Sat Flow, veh/h	1781	2961	569	1781	2930	607	1781	3093	469	3456	3554	1561
Grp Volume(v), veh/h	308	186	188	126	160	162	178	691	700	206	918	260
Grp Sat Flow(s),veh/h/ln	1781	1777	1753	1781	1777	1760	1781	1777	1785	1728	1777	1561
Q Serve(g_s), s	15.4	8.8	9.1	6.8	8.1	8.4	9.5	36.5	37.1	5.8	21.8	12.5
Cycle Q Clear(g_c), s	15.4	8.8	9.1	6.8	8.1	8.4	9.5	36.5	37.1	5.8	21.8	12.5
Prop In Lane	1.00		0.32	1.00		0.34	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	282	397	391	156	271	269	210	727	731	227	1270	558
V/C Ratio(X)	1.09	0.47	0.48	0.81	0.59	0.60	0.85	0.95	0.96	0.91	0.72	0.47
Avail Cap(c_a), veh/h	282	682	672	295	694	688	227	727	731	227	1270	558
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	32.8	32.9	43.5	38.4	38.5	42.0	27.8	27.9	45.1	27.1	24.1
Incr Delay (d2), s/veh	80.3	0.9	0.9	3.7	2.0	2.2	21.9	23.2	24.5	34.6	3.6	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.8	3.8	3.8	3.0	3.6	3.7	5.3	18.7	19.2	3.4	9.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	121.3	33.6	33.8	47.2	40.4	40.6	63.9	50.9	52.4	79.7	30.7	26.9
LnGrp LOS	F	C	C	D	D	D	E	D	D	E	C	C
Approach Vol, veh/h		682			448			1569			1384	
Approach Delay, s/veh		73.2			42.4			53.1			37.3	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	46.0	13.1	27.1	16.1	40.9	20.0	20.2				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	6.4	* 40	16.1	37.3	12.4	33.4	15.4	38.0				
Max Q Clear Time (g_c+11), s	7.8	39.1	8.8	11.1	11.5	23.8	17.4	10.4				
Green Ext Time (p_c), s	0.0	0.6	0.1	2.1	0.0	4.5	0.0	1.8				

Intersection Summary

HCM 6th Ctrl Delay	49.9
HCM 6th LOS	D

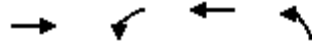
Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings
10: Garfield Av. & Center St.

Highgrove Town Center Due Diligence (JN:13222)

03/05/2020

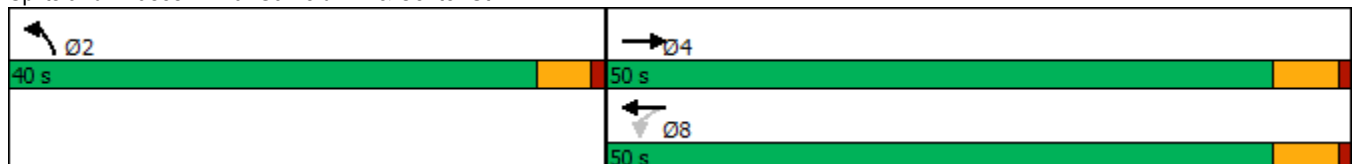


Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↑↑	↑	↑↑	↑
Traffic Volume (vph)	358	20	762	189
Future Volume (vph)	358	20	762	189
Turn Type	NA	Perm	NA	Prot
Protected Phases	4		8	2
Permitted Phases		8		
Detector Phase	4	8	8	2
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	22.4	15.4	15.4	26.6
Total Split (s)	50.0	50.0	50.0	40.0
Total Split (%)	55.6%	55.6%	55.6%	44.4%
Yellow Time (s)	4.4	4.4	4.4	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4	4.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	Max	None
Act Effct Green (s)	44.8	44.8	44.8	17.3
Actuated g/C Ratio	0.62	0.62	0.62	0.24
v/c Ratio	0.25	0.05	0.43	0.73
Control Delay	6.8	7.2	8.6	33.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	6.8	7.2	8.6	33.8
LOS	A	A	A	C
Approach Delay	6.8		8.6	33.8
Approach LOS	A		A	C

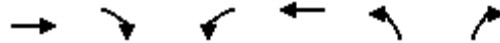
Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 72.1
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 12.3
 Intersection LOS: B
 Intersection Capacity Utilization 47.3%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 10: Garfield Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 10: Garfield Av. & Center St. 03/05/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↵	↑↑	↵	
Traffic Volume (veh/h)	358	68	20	762	189	57
Future Volume (veh/h)	358	68	20	762	189	57
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.95	0.98		1.00	0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	448	85	25	952	236	71
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1809	340	563	2176	325	98
Arrive On Green	0.61	0.61	0.61	0.61	0.25	0.25
Sat Flow, veh/h	3047	555	856	3647	1298	390
Grp Volume(v), veh/h	268	265	25	952	308	0
Grp Sat Flow(s),veh/h/ln	1777	1732	856	1777	1694	0
Q Serve(g_s), s	5.0	5.1	1.0	10.3	12.1	0.0
Cycle Q Clear(g_c), s	5.0	5.1	6.1	10.3	12.1	0.0
Prop In Lane		0.32	1.00		0.77	0.23
Lane Grp Cap(c), veh/h	1088	1061	563	2176	424	0
V/C Ratio(X)	0.25	0.25	0.04	0.44	0.73	0.00
Avail Cap(c_a), veh/h	1088	1061	563	2176	823	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	6.4	6.5	7.9	7.5	25.0	0.0
Incr Delay (d2), s/veh	0.5	0.6	0.1	0.6	2.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	1.6	0.2	3.1	5.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	7.0	7.0	8.0	8.1	27.4	0.0
LnGrp LOS	A	A	A	A	C	A
Approach Vol, veh/h	533			977	308	
Approach Delay, s/veh	7.0			8.1	27.4	
Approach LOS	A			A	C	
Timer - Assigned Phs		2		4		8
Phs Duration (G+Y+Rc), s		22.8		50.0		50.0
Change Period (Y+Rc), s		4.6		5.4		5.4
Max Green Setting (Gmax), s		35.4		44.6		44.6
Max Q Clear Time (g_c+I1), s		14.1		7.1		12.3
Green Ext Time (p_c), s		1.0		3.3		7.6

Intersection Summary

HCM 6th Ctrl Delay	11.1
HCM 6th LOS	B

Notes

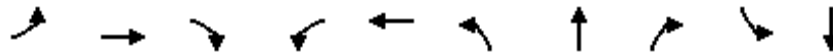
User approved volume balancing among the lanes for turning movement.

Timings

Highgrove Town Center Due Diligence (JN:13222)

2: Highgrove Pl. & Center St.

03/05/2020

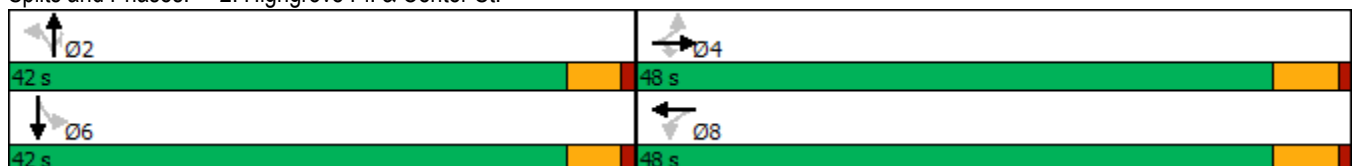


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↶	↷	↶	↶	↷		↶	↶		↷
Traffic Volume (vph)	2	597	40	6	560	58	1	501	8	0
Future Volume (vph)	2	597	40	6	560	58	1	501	8	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	NA	Perm	Perm	NA
Protected Phases		4			8		2			6
Permitted Phases	4		4	8		2		2	6	
Detector Phase	4	4	4	8	8	2	2	2	6	6
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	22.4	22.4	22.4	22.4	22.4	14.6	14.6	14.6	14.6	14.6
Total Split (s)	48.0	48.0	48.0	48.0	48.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	53.3%	53.3%	53.3%	53.3%	53.3%	46.7%	46.7%	46.7%	46.7%	46.7%
Yellow Time (s)	4.4	4.4	4.4	4.4	4.4	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)	5.4	5.4	5.4	5.4	5.4		4.6	4.6		4.6
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	Max	Max	Max	Max	Max
Act Effct Green (s)	31.2	31.2	31.2	31.2	31.2		37.8	37.8		37.8
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.39		0.48	0.48		0.48
v/c Ratio	0.01	0.85	0.06	0.05	0.80		0.09	0.61		0.06
Control Delay	13.5	33.1	4.7	14.7	29.8		14.5	14.2		6.4
Queue Delay	0.0	0.0	0.0	0.0	1.6		0.0	0.0		0.0
Total Delay	13.5	33.1	4.7	14.7	31.4		14.5	14.2		6.4
LOS	B	C	A	B	C		B	B		A
Approach Delay		31.2			31.3		14.2			6.4
Approach LOS		C			C		B			A

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 79.1
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 25.4
 Intersection LOS: C
 Intersection Capacity Utilization 82.9%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 2: Highgrove Pl. & Center St.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↑	↗	↖	↗			↑	↗		↕	
Traffic Volume (veh/h)	2	597	40	6	560	5	58	1	501	8	0	38
Future Volume (veh/h)	2	597	40	6	560	5	58	1	501	8	0	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	2	622	0	6	583	5	60	1	522	8	0	40
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	177	718		155	710	6	755	12	771	139	34	591
Arrive On Green	0.38	0.38	0.00	0.38	0.38	0.38	0.49	0.49	0.49	0.49	0.00	0.49
Sat Flow, veh/h	828	1870	1585	802	1852	16	1362	24	1585	173	70	1214
Grp Volume(v), veh/h	2	622	0	6	0	588	61	0	522	48	0	0
Grp Sat Flow(s),veh/h/ln	828	1870	1585	802	0	1868	1387	0	1585	1457	0	0
Q Serve(g_s), s	0.2	23.6	0.0	0.5	0.0	21.8	0.3	0.0	19.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	22.0	23.6	0.0	24.2	0.0	21.8	1.5	0.0	19.4	1.2	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.98		1.00	0.17		0.83
Lane Grp Cap(c), veh/h	177	718		155	0	716	767	0	771	763	0	0
V/C Ratio(X)	0.01	0.87		0.04	0.00	0.82	0.08	0.00	0.68	0.06	0.00	0.00
Avail Cap(c_a), veh/h	318	1036		292	0	1035	767	0	771	763	0	0
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	31.2	21.9	0.0	33.0	0.0	21.3	10.5	0.0	15.1	10.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	5.6	0.0	0.1	0.0	3.6	0.2	0.0	4.7	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	10.3	0.0	0.1	0.0	9.1	0.6	0.0	7.5	0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.2	27.5	0.0	33.1	0.0	24.9	10.7	0.0	19.9	10.6	0.0	0.0
LnGrp LOS	C	C		C	A	C	B	A	B	B	A	A
Approach Vol, veh/h		624	A		594			583				48
Approach Delay, s/veh		27.5			25.0			18.9				10.6
Approach LOS		C			C			B				B
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		42.0		34.9		42.0		34.9				
Change Period (Y+Rc), s		4.6		5.4		4.6		5.4				
Max Green Setting (Gmax), s		37.4		42.6		37.4		42.6				
Max Q Clear Time (g_c+I1), s		21.4		25.6		3.2		26.2				
Green Ext Time (p_c), s		2.2		3.6		0.3		3.3				

Intersection Summary

HCM 6th Ctrl Delay	23.5
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection												
Int Delay, s/veh	7.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕	↕		↕↕				↕			↕
Traffic Vol, veh/h	2	597	40	6	560	5	0	0	509	0	0	96
Future Vol, veh/h	2	597	40	6	560	5	0	0	509	0	0	96
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	622	42	6	583	5	0	0	530	0	0	100

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	588	0	0	622	0	0	-	-	311	-	-	294
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	983	-	-	955	-	-	0	0	685	0	0	702
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	983	-	-	955	-	-	-	-	685	-	-	702
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0.1			25.9			11		
HCM LOS							D			B		

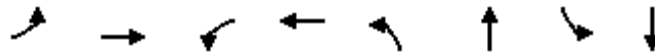
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	685	983	-	-	955	-	-	702
HCM Lane V/C Ratio	0.774	0.002	-	-	0.007	-	-	0.142
HCM Control Delay (s)	25.9	8.7	0	-	8.8	0	-	11
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	7.4	0	-	-	0	-	-	0.5

Timings

Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020

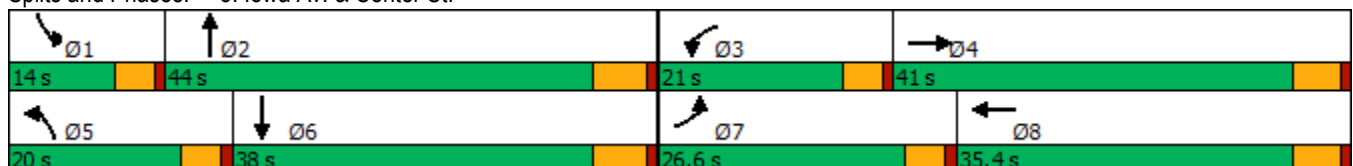


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↘	↕	↘	↕	↘	↕	↘	↕
Traffic Volume (vph)	230	791	169	360	160	782	100	601
Future Volume (vph)	230	791	169	360	160	782	100	601
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA
Protected Phases	7	4	3	8	5	2	1	6
Permitted Phases								
Detector Phase	7	4	3	8	5	2	1	6
Switch Phase								
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0
Minimum Split (s)	9.6	36.4	9.6	33.4	9.6	29.8	9.6	28.8
Total Split (s)	26.6	41.0	21.0	35.4	20.0	44.0	14.0	38.0
Total Split (%)	22.2%	34.2%	17.5%	29.5%	16.7%	36.7%	11.7%	31.7%
Yellow Time (s)	3.6	4.4	3.6	4.4	3.6	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	4.6	5.4	4.6	5.8	4.6	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max
Act Effct Green (s)	19.3	34.3	14.4	29.4	13.7	38.3	8.9	33.5
Actuated g/C Ratio	0.17	0.29	0.12	0.25	0.12	0.33	0.08	0.29
v/c Ratio	0.81	0.91	0.79	0.57	0.79	0.91	0.76	0.69
Control Delay	68.2	53.0	75.4	38.0	76.9	49.2	87.5	41.5
Queue Delay	3.4	48.7	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.6	101.7	75.4	38.0	76.9	49.2	87.5	41.5
LOS	E	F	E	D	E	D	F	D
Approach Delay		95.7		47.6		53.0		47.5
Approach LOS		F		D		D		D

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 116.4
 Natural Cycle: 100
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 63.9
 Intersection LOS: E
 Intersection Capacity Utilization 86.4%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 3: Iowa Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

3: Iowa Av. & Center St.

03/05/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖↗		↖	↖↗	
Traffic Volume (veh/h)	230	791	118	169	360	131	160	782	225	100	601	71
Future Volume (veh/h)	230	791	118	169	360	131	160	782	225	100	601	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	237	815	96	174	371	132	165	806	193	103	620	65
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	269	919	108	204	648	227	194	972	233	128	993	104
Arrive On Green	0.15	0.29	0.29	0.11	0.25	0.25	0.11	0.34	0.34	0.07	0.31	0.31
Sat Flow, veh/h	1781	3195	376	1781	2579	905	1781	2835	679	1781	3246	340
Grp Volume(v), veh/h	237	453	458	174	254	249	165	505	494	103	339	346
Grp Sat Flow(s),veh/h/ln	1781	1777	1794	1781	1777	1707	1781	1777	1737	1781	1777	1808
Q Serve(g_s), s	14.5	27.2	27.2	10.7	13.9	14.2	10.1	29.1	29.1	6.3	18.2	18.3
Cycle Q Clear(g_c), s	14.5	27.2	27.2	10.7	13.9	14.2	10.1	29.1	29.1	6.3	18.2	18.3
Prop In Lane	1.00		0.21	1.00		0.53	1.00		0.39	1.00		0.19
Lane Grp Cap(c), veh/h	269	511	516	204	446	429	194	609	596	128	544	553
V/C Ratio(X)	0.88	0.89	0.89	0.85	0.57	0.58	0.85	0.83	0.83	0.80	0.62	0.63
Avail Cap(c_a), veh/h	352	568	573	262	478	460	246	609	596	150	544	553
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.3	37.9	38.0	48.4	36.4	36.6	48.8	33.6	33.6	50.9	33.2	33.2
Incr Delay (d2), s/veh	18.2	14.6	14.5	15.8	1.4	1.6	16.7	12.4	12.6	19.8	5.3	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	13.4	13.6	5.5	6.0	6.0	5.3	13.9	13.7	3.5	8.3	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.5	52.6	52.5	64.2	37.8	38.2	65.5	46.0	46.2	70.8	38.5	38.5
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		1148			677			1164			788	
Approach Delay, s/veh		55.0			44.7			48.8			42.7	
Approach LOS		E			D			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	12.6	44.0	17.4	37.5	16.7	39.9	21.4	33.4				
Change Period (Y+Rc), s	4.6	5.8	4.6	5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	9.4	38.2	16.4	35.6	15.4	32.2	22.0	30.0				
Max Q Clear Time (g_c+1), s	8.3	31.1	12.7	29.2	12.1	20.3	16.5	16.2				
Green Ext Time (p_c), s	0.0	3.3	0.1	2.9	0.1	3.0	0.3	2.4				
Intersection Summary												
HCM 6th Ctrl Delay			48.7									
HCM 6th LOS			D									

Timings

Highgrove Town Center Due Diligence (JN:13222)

6: Iowa Av. & Palmyrita Av.

03/05/2020

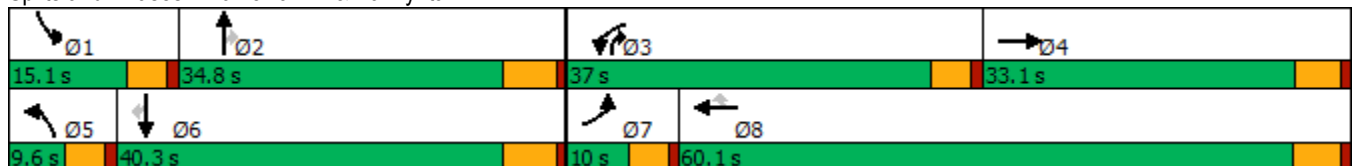


Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↖	↗	↗	↖	↗	↗	↖	↗	↗
Traffic Volume (vph)	18	23	525	70	100	59	945	490	51	888	26
Future Volume (vph)	18	23	525	70	100	59	945	490	51	888	26
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	3	1	6	
Permitted Phases					8			2			6
Detector Phase	7	4	3	8	8	5	2	3	1	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	5.0	10.0	5.0	5.0	10.0	10.0
Minimum Split (s)	9.6	33.1	9.6	39.4	39.4	9.6	31.8	9.6	9.6	31.8	31.8
Total Split (s)	10.0	33.1	37.0	60.1	60.1	9.6	34.8	37.0	15.1	40.3	40.3
Total Split (%)	8.3%	27.6%	30.8%	50.1%	50.1%	8.0%	29.0%	30.8%	12.6%	33.6%	33.6%
Yellow Time (s)	3.6	4.1	3.6	4.4	4.4	3.6	4.8	3.6	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.1	4.6	5.4	5.4	4.6	5.8	4.6	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	Max	None	None	Max	Max
Act Effct Green (s)	5.3	13.2	32.7	43.0	43.0	5.1	34.6	68.5	7.6	34.9	34.9
Actuated g/C Ratio	0.05	0.13	0.32	0.42	0.42	0.05	0.34	0.67	0.07	0.34	0.34
v/c Ratio	0.22	0.23	1.05	0.10	0.15	0.77	0.89	0.45	0.44	0.83	0.05
Control Delay	56.6	24.4	86.5	19.0	1.6	99.0	45.7	2.2	58.4	39.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.6	24.4	86.5	19.0	1.6	99.0	45.7	2.2	58.4	39.8	0.2
LOS	E	C	F	B	A	F	D	A	E	D	A
Approach Delay		32.7		67.5			33.5			39.7	
Approach LOS		C		E			C			D	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 102.6
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.05
 Intersection Signal Delay: 42.7
 Intersection LOS: D
 Intersection Capacity Utilization 79.2%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 6: Iowa Av. & Palmyrita Av.





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↖	↗	↖	↖↗	↗	↖	↖↗	↖
Traffic Volume (veh/h)	18	23	28	525	70	100	59	945	490	51	888	26
Future Volume (veh/h)	18	23	28	525	70	100	59	945	490	51	888	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	20	26	12	590	79	48	66	1062	467	57	998	18
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	38	118	54	565	736	624	85	1223	1033	73	1201	536
Arrive On Green	0.02	0.10	0.10	0.32	0.39	0.39	0.05	0.34	0.34	0.04	0.34	0.34
Sat Flow, veh/h	1781	1211	559	1781	1870	1585	1781	3554	1541	1781	3554	1585
Grp Volume(v), veh/h	20	0	38	590	79	48	66	1062	467	57	998	18
Grp Sat Flow(s),veh/h/ln	1781	0	1770	1781	1870	1585	1781	1777	1541	1781	1777	1585
Q Serve(g_s), s	1.1	0.0	2.0	32.4	2.7	1.9	3.7	28.5	15.0	3.2	26.4	0.8
Cycle Q Clear(g_c), s	1.1	0.0	2.0	32.4	2.7	1.9	3.7	28.5	15.0	3.2	26.4	0.8
Prop In Lane	1.00		0.32	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	38	0	172	565	736	624	85	1223	1033	73	1201	536
V/C Ratio(X)	0.53	0.00	0.22	1.04	0.11	0.08	0.78	0.87	0.45	0.78	0.83	0.03
Avail Cap(c_a), veh/h	94	0	485	565	1002	849	87	1223	1033	183	1201	536
HCM 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
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	0.0	42.5	34.9	19.6	19.4	48.1	31.3	8.4	48.5	31.1	22.6
Incr Delay (d2), s/veh	4.2	0.0	0.6	49.8	0.1	0.1	31.4	8.5	1.4	6.4	6.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.9	21.1	1.2	0.7	2.3	12.8	4.6	1.5	11.7	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.7	0.0	43.1	84.6	19.7	19.4	79.5	39.8	9.8	54.9	37.9	22.8
LnGrp LOS	D	A	D	F	B	B	E	D	A	D	D	C
Approach Vol, veh/h		58			717			1595			1073	
Approach Delay, s/veh		46.8			73.1			32.7			38.5	
Approach LOS		D			E			C			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	40.9	37.0	15.3	9.5	40.3	6.8	45.6				
Change Period (Y+Rc), s	4.6	5.8	4.6	* 5.4	4.6	5.8	4.6	5.4				
Max Green Setting (Gmax), s	10.5	29.0	32.4	* 28	5.0	34.5	5.4	54.7				
Max Q Clear Time (g_c+11), s	5.2	30.5	34.4	4.0	5.7	28.4	3.1	4.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.1	0.0	3.2	0.0	0.6				

Intersection Summary

HCM 6th Ctrl Delay	43.2
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Timings
9: Iowa Av. & Spruce St.

Highgrove Town Center Due Diligence (JN:13222)

03/06/2020

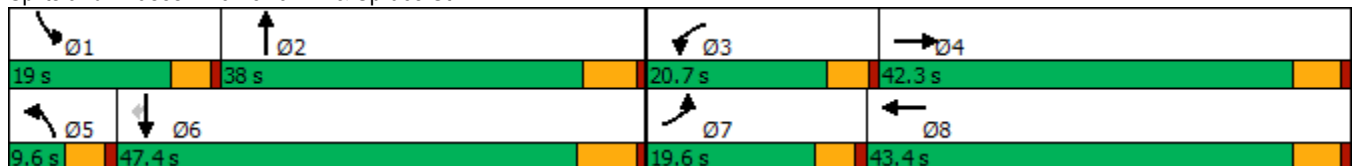


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↖	↕	↖	↕	↖	↕	↖↗	↕	↗
Traffic Volume (vph)	212	423	139	178	95	845	416	1237	338
Future Volume (vph)	212	423	139	178	95	845	416	1237	338
Turn Type	Prot	NA	Prot	NA	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8	5	2	1	6	
Permitted Phases									6
Detector Phase	7	4	3	8	5	2	1	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	5.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.6	34.4	9.6	43.4	9.6	30.8	9.6	31.2	31.2
Total Split (s)	19.6	42.3	20.7	43.4	9.6	38.0	19.0	47.4	47.4
Total Split (%)	16.3%	35.3%	17.3%	36.2%	8.0%	31.7%	15.8%	39.5%	39.5%
Yellow Time (s)	3.6	4.4	3.6	4.4	3.6	4.8	3.6	5.2	5.2
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.4	4.6	5.4	4.6	5.8	4.6	6.2	6.2
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	Max	None	Max	Max
Act Effct Green (s)	15.1	27.9	12.9	25.7	5.0	32.4	14.5	41.5	41.5
Actuated g/C Ratio	0.14	0.26	0.12	0.24	0.05	0.30	0.13	0.38	0.38
v/c Ratio	0.96	0.81	0.73	0.40	1.29	1.00	1.01	1.01	0.47
Control Delay	96.1	39.5	67.5	18.9	241.8	67.6	91.8	62.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.1	39.5	67.5	18.9	241.8	67.6	91.8	62.5	8.0
LOS	F	D	E	B	F	E	F	E	A
Approach Delay		53.0		33.4		83.6		59.3	
Approach LOS		D		C		F		E	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 108.3
 Natural Cycle: 115
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.29
 Intersection Signal Delay: 61.1
 Intersection LOS: E
 Intersection Capacity Utilization 85.6%
 ICU Level of Service E
 Analysis Period (min) 15

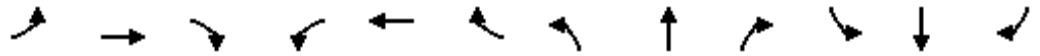
Splits and Phases: 9: Iowa Av. & Spruce St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)

9: Iowa Av. & Spruce St.

03/06/2020



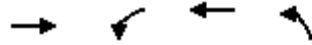
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↗↘		↗	↗↘		↗	↗↘		↗↘	↗↘	↗
Traffic Volume (veh/h)	212	423	253	139	178	147	95	845	103	416	1237	338
Future Volume (veh/h)	212	423	253	139	178	147	95	845	103	416	1237	338
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	236	470	190	154	198	163	106	939	77	462	1374	239
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	591	237	185	377	294	87	1041	85	484	1438	641
Arrive On Green	0.15	0.24	0.24	0.10	0.20	0.20	0.05	0.31	0.31	0.14	0.40	0.40
Sat Flow, veh/h	1781	2458	985	1781	1899	1481	1781	3322	272	3456	3554	1585
Grp Volume(v), veh/h	236	339	321	154	185	176	106	502	514	462	1374	239
Grp Sat Flow(s),veh/h/ln	1781	1777	1666	1781	1777	1604	1781	1777	1817	1728	1777	1585
Q Serve(g_s), s	13.4	18.4	18.7	8.7	9.5	10.2	5.0	27.8	27.8	13.6	38.6	10.9
Cycle Q Clear(g_c), s	13.4	18.4	18.7	8.7	9.5	10.2	5.0	27.8	27.8	13.6	38.6	10.9
Prop In Lane	1.00		0.59	1.00		0.92	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	260	427	401	185	352	318	87	557	569	484	1438	641
V/C Ratio(X)	0.91	0.79	0.80	0.83	0.52	0.55	1.22	0.90	0.90	0.95	0.96	0.37
Avail Cap(c_a), veh/h	260	638	598	279	657	593	87	557	569	484	1438	641
HCM 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
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.2	36.6	36.7	45.2	36.9	37.1	48.9	33.8	33.8	43.9	29.7	21.4
Incr Delay (d2), s/veh	32.0	4.1	4.7	7.7	1.2	1.5	168.4	20.4	20.1	29.3	15.2	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	8.2	7.8	4.1	4.1	4.0	6.2	14.4	14.7	7.5	17.9	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	75.2	40.7	41.5	52.9	38.1	38.6	217.3	54.2	53.9	73.2	44.9	23.1
LnGrp LOS	E	D	D	D	D	D	F	D	D	E	D	C
Approach Vol, veh/h		896			515			1122			2075	
Approach Delay, s/veh		50.1			42.7			69.5			48.7	
Approach LOS		D			D			E			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.0	38.4	15.3	30.1	9.6	47.8	19.6	25.8				
Change Period (Y+Rc), s	4.6	* 6.2	4.6	5.4	4.6	6.2	4.6	5.4				
Max Green Setting (Gmax), s	14.4	* 32	16.1	36.9	5.0	41.2	15.0	38.0				
Max Q Clear Time (g_c+1), s	15.6	29.8	10.7	20.7	7.0	40.6	15.4	12.2				
Green Ext Time (p_c), s	0.0	1.4	0.1	3.5	0.0	0.5	0.0	2.1				

Intersection Summary

HCM 6th Ctrl Delay	53.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



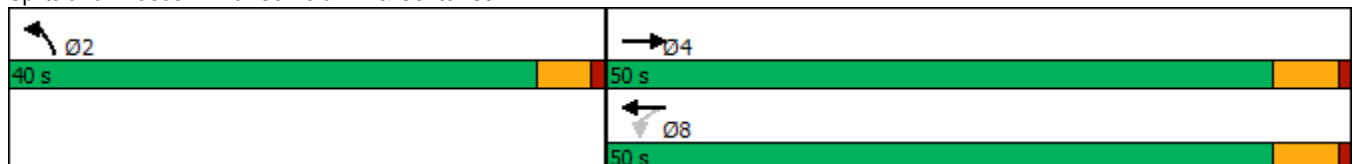
Lane Group	EBT	WBL	WBT	NBL
Lane Configurations	↑↑	↑	↑↑	↑
Traffic Volume (vph)	668	20	431	73
Future Volume (vph)	668	20	431	73
Turn Type	NA	Perm	NA	Prot
Protected Phases	4		8	2
Permitted Phases		8		
Detector Phase	4	8	8	2
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	22.4	15.4	15.4	26.6
Total Split (s)	50.0	50.0	50.0	40.0
Total Split (%)	55.6%	55.6%	55.6%	44.4%
Yellow Time (s)	4.4	4.4	4.4	3.6
All-Red Time (s)	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.4	5.4	4.6
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	Max	Max	Max	None
Act Effct Green (s)	49.0	49.0	49.0	12.2
Actuated g/C Ratio	0.73	0.73	0.73	0.18
v/c Ratio	0.34	0.05	0.19	0.34
Control Delay	5.3	5.5	4.6	21.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	5.3	5.5	4.6	21.3
LOS	A	A	A	C
Approach Delay	5.3		4.7	21.3
Approach LOS	A		A	C

Intersection Summary

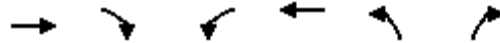
Cycle Length: 90
 Actuated Cycle Length: 67.1
 Natural Cycle: 50
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.34
 Intersection Signal Delay: 6.3
 Intersection Capacity Utilization 39.2%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 10: Garfield Av. & Center St.



HCM 6th Signalized Intersection Summary Highgrove Town Center Due Diligence (JN:13222)
 10: Garfield Av. & Center St. 03/05/2020



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↘	
Traffic Volume (veh/h)	668	116	20	431	73	29
Future Volume (veh/h)	668	116	20	431	73	29
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	742	129	22	479	81	32
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	2122	369	499	2501	169	67
Arrive On Green	0.70	0.70	0.70	0.70	0.14	0.14
Sat Flow, veh/h	3108	524	636	3647	1218	481
Grp Volume(v), veh/h	437	434	22	479	114	0
Grp Sat Flow(s),veh/h/ln	1777	1762	636	1777	1714	0
Q Serve(g_s), s	6.1	6.1	0.9	2.9	3.9	0.0
Cycle Q Clear(g_c), s	6.1	6.1	7.0	2.9	3.9	0.0
Prop In Lane		0.30	1.00		0.71	0.28
Lane Grp Cap(c), veh/h	1250	1240	499	2501	237	0
V/C Ratio(X)	0.35	0.35	0.04	0.19	0.48	0.00
Avail Cap(c_a), veh/h	1250	1240	499	2501	957	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	3.7	3.7	5.1	3.2	25.2	0.0
Incr Delay (d2), s/veh	0.8	0.8	0.2	0.2	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.3	0.1	0.6	1.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	4.5	4.5	5.2	3.4	26.7	0.0
LnGrp LOS	A	A	A	A	C	A
Approach Vol, veh/h	871			501	114	
Approach Delay, s/veh	4.5			3.5	26.7	
Approach LOS	A			A	C	
Timer - Assigned Phs		2		4		8
Phs Duration (G+Y+Rc), s		13.4		50.0		50.0
Change Period (Y+Rc), s		4.6		5.4		5.4
Max Green Setting (Gmax), s		35.4		44.6		44.6
Max Q Clear Time (g_c+I1), s		5.9		8.1		9.0
Green Ext Time (p_c), s		0.3		6.0		3.5

Intersection Summary

HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.