Appendix I1

Focused Traffic Analysis

January 13, 2022

Ms. Christine Saunders
SAGECREST PLANNING + ENVIRONMENTAL
27128 Paseo Espada, Suite 1524
San Juan Capistrano, California 92675

RE: Harvill Trailer Storage Yard Focused Traffic Analysis
Project No. 19365

Dear Ms. Saunders:

INTRODUCTION

Ganddini Group, Inc. is pleased to provide this Focused Traffic Analysis for the Harvill Trailer Storage Yard in the County of Riverside. The purpose of this Focused Traffic Analysis is to provide an assessment of potential transportation impacts resulting from development of the proposed Harvill Trailer Storage Yard. Although this is a technical report, effort has been made to write the report clearly and concisely. A glossary is provided in Appendix A to assist the reader with terms related to transportation engineering.

PROJECT DESCRIPTION

Figure 1 shows the project location map. The 7.24-acre project site is located at the northwest corner of Harvill Avenue and Orange Avenue in the County of Riverside, California. The proposed project involves construction of a 15,000 square foot maintenance building for a surface trailer storage yard with 167 trailer stalls and 38 vehicle parking stalls. Vehicular access is proposed at Orange Avenue. 2023 has been analyzed as the opening year for the project. The site plan is illustrated on Figure 2.

PROJECT TRIPS

Since the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (11th Edition, 2021) does not include data specifically for truck trailer parking facilities, trip generation for the proposed project was calculated based on rates derived from trip counts at a comparable trailer storage yard facility located at 5087 Patterson Avenue in the City of Perris, California. The number of trips entering and exiting the survey site were counted on January 23, 2019; count worksheets are provided in Appendix B. Trip rates were calculated for passenger cars based on the number of passenger car parking spaces and for trucks by axle (2-axle tractor, 3-axle tractor, and 4+ axle tractor with attached trailer) based on the number of trailer parking spaces.

Table 1 shows the project trip generation. The project trip generation is shown in both vehicle trips and Passenger Car Equivalent (PCE) trips. In accordance with County of Riverside guidelines, truck-oriented projects should convert truck trips to PCE trips for purposes of capacity analysis. The project-generated truck trips were converted to PCE trips based on the PCE factors recommended by the County of Riverside (1.5 for 2-axle trucks, 2.0 for 3-axle trucks, and 3.0 for trucks with 4 or more axles).

As shown in Table 1, the proposed project is forecast to generate approximately 396 daily vehicle trips, including 24 vehicle trips during the AM peak hour and 26 vehicle trips during the PM peak hour, which equates to approximately 598 daily PCE trips, including 37 PCE trips during the AM peak hour and 35 PCE trips during the PM peak hour.

Figure 3 illustrates the forecast directional distribution patterns of project-generated trips.

STUDY INTERSECTIONS

Although the proposed project is forecast to generate fewer than 100 trips during the weekday AM and PM peak hours, and would thereby typically be exempt from preparation of a transportation impact analysis with Level of Analysis based on criteria specified in the County of Riverside *Transportation Analysis Guidelines (December 2020)* ["the County guidelines"], County of Riverside engineering staff has requested preparation of a focused Level of Service analysis due to the community's sensitivity to truck generating uses. As such, this focused traffic study includes a Level of Service analysis at the following study intersection:

Study Intersections[1]	Jurisdiction
1. Harvill Avenue (NS) at Orange Avenue (EW)	County of Riverside

(1) (NS) = North-South roadway; (EW) = East-West roadway

INTERSECTION DELAY METHODOLOGY

The methodology used to assess the performance of intersections in the County of Riverside is known as the intersection delay method based on the procedures contained in the *Highway Capacity Manual* (Transportation Research Board, 6th Edition). The methodology considers the traffic volume and distribution of movements, traffic composition, geometric characteristics, and signalization details to calculate the average control delay per vehicle and corresponding Level of Service. Control delay is defined as the portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign) and includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay. The intersection control delay is then correlated to Level of Service based on the following thresholds:

Level of Service	Intersection Control Delay (Seconds / Vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤ 10.0	≤ 10.0
B	> 10.0 to ≤ 20.0	> 10.0 to ≤ 15.0
C	> 20.0 to ≤ 35.0	> 15.0 to ≤ 25.0
D	> 35.0 to ≤ 55.0	> 25.0 to ≤ 35.0
E	> 55.0 to ≤ 80.0	> 35.0 to ≤ 50.0
F	> 80.0	> 50.0

Source: Transportation Research Board, *Highway Capacity Manual* (6th Edition).

Level of Service is used to qualitatively describe the performance of a roadway facility, ranging from Level of Service A (free-flow conditions) to Level of Service F (extreme congestion and system failure). At intersections with traffic signal or all way stop control, Level of Service is determined by the average control delay for the

overall intersection. At intersections with cross street stop control (i.e., one- or two-way stop control), Level of Service is determined by the average control delay for the worst minor street approach or major street left turn movement.

Intersection delay/Level of Service analysis was performed using the Vistro (Version 6.00-00) software. The intersection Level of Service analysis has been performed in accordance with the County guidelines.

PERFORMANCE STANDARDS

The County of Riverside has established Level of Service D as the minimum acceptable Level of Service during peak hour conditions. Intersections operating at Level of Service E or F are considered deficient.

THRESHOLDS OF SIGNIFICANCE

Based on the performance standards established by the County of Riverside, operational improvements would be required under the following conditions:

- When existing traffic conditions exceed the General Plan target Level of Service (LOS D).
- When project traffic, when added to existing traffic, will deteriorate the Level of Service to below the target Level of Service (LOS D).
- When cumulative traffic exceeds the target LOS (LOS D).

LEVEL OF SERVICE ANALYSIS & IMPACT EVALUATION

Existing peak hour volumes are based upon AM peak period and PM peak period intersection turning movement counts obtained in August 2021 during typical weekday conditions. The AM peak period was counted between 7:00 AM and 9:00 AM and the PM peak period was counted between 4:00 PM and 6:00 PM. The peak hour within the peak period is based on the four consecutive 15-minute periods with the highest total volume. Thus, the weekday PM peak hour at one intersection may be 4:45 PM to 5:45 PM if those four consecutive 15-minute periods have the highest combined volume. Intersection turning movement count worksheets are provided in Appendix C.

Traffic volume forecasts were developed by adding project-generated trips and background traffic growth to existing traffic volumes. For Existing Plus Ambient Growth Plus Project (EAP) conditions, existing volumes were increased by a growth rate of two percent (2%) per year over a two-year period. This equates to a total growth factor of approximately 1.04. The growth rate was conservatively applied to all movements at the study intersections.

Detailed intersection Level of Service calculation worksheets for each of the following analysis scenarios are provided in Appendix D.

Existing

Table 2 shows the study intersection Levels of Service for existing conditions. As shown in Table 2, the study intersections currently operate within acceptable Levels of Service (D or better).

Existing Plus Ambient Growth Plus Project (EAP)

Table 3 shows the study intersection Levels of Service for Existing Plus Ambient Growth Plus Project (EAP) conditions. As shown in Table 3, the study intersections are forecast to operate within acceptable Levels of Service (D or better) for Existing Plus Ambient Growth Plus Project (EAP) conditions. Therefore, the proposed project is forecast to result in no significant traffic impacts at the study intersections during the peak hours for Existing Plus Ambient Growth Plus Project (EAP) conditions.

Summary

No intersection improvements are recommended since the proposed project is forecast to result in no substantial Level of Service deficiencies at the study intersection.

TRAFFIC SIGNAL WARRANT ANALYSIS

The need for potential installation of a traffic signal at the unsignalized study intersection was evaluated based on the *California Manual on Uniform Traffic Control Devices* (2014) (CA MUTCD), Section 4C.04, eight-hour vehicular volume Warrant 1, four-hour vehicular volume warrant graphs (Warrant 2), and the peak hour volume warrant graphs (Warrant 3). Warrants 1 through 3 were evaluated based on the existing 24-hour approach count volumes. Warrant 3 (peak hour) was also evaluated for the forecast Existing Plus Ambient Growth Plus Project AM peak hour and PM peak hour conditions. Traffic signal warrant analysis worksheets are provided in Appendix E.

Based on the signal warrant analysis, installation of a traffic signal at the study intersection of Harvill Avenue and Orange Avenue is not warranted under Existing conditions or forecast to be warranted for Existing Plus Ambient Growth Plus Project conditions.

CONCLUSION

The study intersection of Harvill Avenue and Orange Avenue is forecast to continue operating within acceptable Levels of Service (D or better) for the scenarios analyzed and a traffic signal is not forecast to be warranted.

We appreciate the opportunity to assist you on this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 795-3100.

Sincerely,
GANDDINI GROUP, INC.

Perrie Ilercil, P.E. (AZ)
Senior Engineer

Giancarlo Ganddini, PE, PTP
Principal

Table 1
Project Trip Generation

Trip Generation Rates[1]								
		AM Peak Hour			PM Peak Hour			
Trip Type	Unit[2]	In	Out	Total	In	Out	Total	Daily
Passenger Car	PS	0.00	0.33	0.33	0.33	0.17	0.50	6.33
Bobtail Truck - 2 axle	PS	0.00	0.00	0.00	0.01	0.00	0.01	0.25
Bobtail Truck - 3 axle	PS	0.01	0.04	0.05	0.01	0.00	0.01	0.27
Bobtail Truck with Trailer (4+ Axle)	PS	0.01	0.00	0.01	0.00	0.02	0.02	0.41
Total Vehicle Trips		0.02	0.37	0.39	0.35	0.19	0.54	7.26

Project Trips Generated									
			AM Peak Hour			PM Peak Hour			
Trip Type	Quantity[3]	Unit[2]	In	Out	Total	In	Out	Total	Daily
Passenger Car	38	PS	0	13	13	13	6	19	241
Bobtail Truck - 2 axle	167	PS	0	0	0	2	0	2	42
Bobtail Truck - 3 axle	167	PS	2	7	9	2	0	2	45
Bobtail Truck with Trailer (4+ Axle)	167	PS	2	0	2	0	3	3	68
Total Vehicle Trips[4]			**4**	**20**	**24**	**17**	**9**	**26**	**396**
Passenger Car	1.0	PCE[5]	0	13	13	13	6	19	241
Bobtail Truck - 2 axle	1.5	PCE[5]	0	0	0	3	0	3	63
Bobtail Truck - 3 axle	2.0	PCE[5]	4	14	18	4	0	4	90
Bobtail Truck with Trailer (4+ Axle)	3.0	PCE[5]	6	0	6	0	9	9	204
Total PCE Trips			**10**	**27**	**37**	**20**	**15**	**35**	**598**

Notes:

(1) Trip generation rates derived from trip counts at a comparable facility (5087 Patterson Avenue, Perris, CA) in January 2019.

(2) PS = Parking Spaces; PCE = passenger car equivalent.

(3) Quantity of parking spaces based on the Site Plan dated 10/12/2021.

(4) Total vehicle trips are shown as vehicle trip-ends.

(5) PCE factors are based on the *County of Riverside Transportation Analysis Guidelines* (December 2020).

Table 2
Existing Intersection Levels of Service

ID	Study Intersection	Traffic Control[1]	AM Peak Hour		PM Peak Hour	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]
1.	Harvill Ave at Orange Ave	CSS	23.0	C	14.6	B

Notes:

(1) CSS = Cross Street Stop

(2) Delay is shown in seconds/vehicle. For intersections with cross street stop control, Level of Service is based on average delay of the worst approach.

(3) LOS = Level of Service

Table 3
Existing Plus Ambient Growth Plus Project (EAP) Intersection Levels of Service

ID	Study Intersection	Traffic Control[1]	AM Peak Hour		PM Peak Hour	
			Delay[2]	LOS[3]	Delay[2]	LOS[3]
1.	Harvill Ave at Orange Ave	CSS	25.4	D	14.8	B

Notes:

(1) CSS = Cross Street Stop

(2) Delay is shown in seconds/vehicle. For intersections with cross street stop control, Level of Service is based on average delay of the worst approach.

(3) LOS = Level of Service

Legend

Study Intersection

Figure 1
Project Location Map

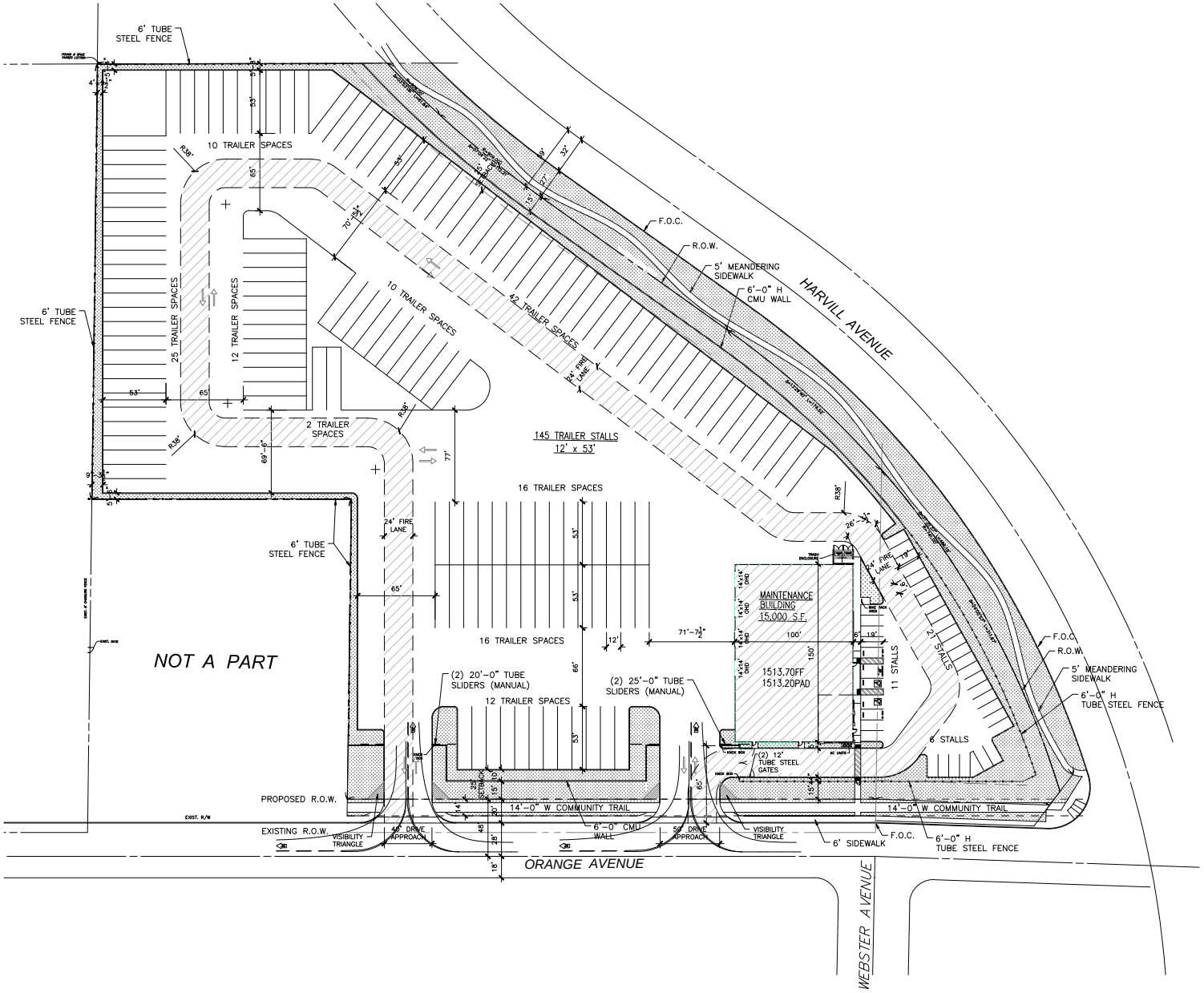

Figure 2
Site Plan

Legend

10% Percent To/From Project

Figure 3
Project Trip Distribution

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APPENDIX A

GLOSSARY

ACRONYMS

AC	Acres
ADT	Average Daily Traffic
Caltrans	California Department of Transportation
DU	Dwelling Unit
ICU	Intersection Capacity Utilization
GFA	Gross Floor Area
LOS	Level of Service
PCE	Passenger Car Equivalent
SP	Service Population
TSF	Thousand Square Feet
V/C	Volume/Capacity
VMT	Vehicle Miles Traveled

TERMS

ACTUATED SIGNAL CONTROL: A type of traffic signal control in which display of each phase depends on whether the corresponding phase detector has registered a service call or the phase is on recall.

ACTUATION: Detection of a roadway user that is forwarded to the signal controller.

AVERAGE DAILY TRAFFIC: The average 24-hour volume for a stated period divided by the number of days in that period. For example, Annual Average Daily Traffic is the total volume during a year divided by 365 days.

BANDWIDTH: The number of seconds of green time available for through traffic in a signal progression.

BOTTLENECK: A point of constriction along a roadway that limits the amount of traffic that can proceed downstream from its location.

CALL: An indication within a signal controller that a particular phase is waiting for service, either through actuation from a roadway user or phase recall.

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass through a roadway facility during a specified period.

CHANNELIZATION: The separation of conflicting traffic movements by use of pavement markings, raised curbs, or other suitable means to facilitate free flow movement.

CLEARANCE INTERVAL: Equal to the yellow plus all-red time, if any, when a traffic signal changes between phases (i.e., the amount of time between the end of a green light from one movement to the beginning of a green light for the next).

COORDINATED SIGNAL CONTROL: A type of traffic signal control in which non-coordinated phases associated with minor movements are constrained such that the coordinated phases are served at a specific time during the signal cycle, thus maintaining the efficient progression of traffic flow along the major roadway.

CONTROL DELAY: The portion of delay attributed to the intersection traffic control (such as a traffic signal or stop sign). It includes initial deceleration, queue move-up time, stopped delay, and final acceleration delay.

CORDON: An imaginary boundary line around or across a study area across which vehicles, persons, or other information can be collected for survey and analytical purposes.

CORNER SIGHT DISTANCE: The minimum sight distance required by the driver of a vehicle to cross or enter the lanes of the major roadway without requiring approaching traffic traveling at a given speed to radically alter their speed or trajectory.

CYCLE: A complete sequence of signal indications for all phases.

CYCLE LENGTH: The total time for a traffic signal to complete one full cycle.

DAILY CAPACITY: A theoretical value representing the daily traffic volume that will typically result in a peak hour volume equal to the capacity of the roadway.

DELAY: The total additional travel time experienced by a roadway user (driver, passenger, bicyclist, or pedestrian) beyond that required to travel at a desired speed.

DENSITY: The number of vehicles occupying in a unit length of the through traffic lanes of a roadway at any given instant. Usually expressed in vehicles per mile.

DETECTOR: A device used to count or determine the presence of a roadway user.

DESIGN SPEED: A speed used for purposes of designing horizontal and vertical alignments of a highway.

DIRECTIONAL SPLIT: The percent of two-way traffic traveling in a specified direction.

DIVERSION: The rerouting of traffic from a normal path of travel between two points, such as to avoid congestion or perform a secondary trip.

FREE FLOW: Traffic flow that is unaffected by a traffic control and/or or upstream or downstream conditions.

GAP: Time or distance between two vehicles measured from rear bumper of the front vehicle to front bumper of the second vehicle.

GAP ACCEPTANCE: The method by which a driver accepts an available gap in traffic to enter or cross the road.

HEADWAY: Time or distance between two successive vehicles measured from same point on both vehicles (i.e., front bumper to front bumper).

LEVEL OF SERVICE: A grading scale of quantitative performance measures representing the quality of service of a transportation facility or service from an average traveler's perspective.

LOOP DETECTOR: A vehicle detector consisting of a loop of wire embedded in the roadway, energized by alternating current and producing an output circuit closure when passed over by a vehicle.

MULTI-MODAL: More than one mode, such as automobile, transit, bicycle, and pedestrian.

OFFSET: The time interval between the beginning of a traffic signal cycle at one intersection and the beginning of signal cycle an adjacent intersection.

PLATOON: A set of vehicles traveling at similar speed and moving as a general group with clear separation between other vehicles ahead and behind.

PASSENGER CAR EQUIVALENT: A metric used to assess the impact of larger vehicles, such as trucks, recreational vehicles, and buses, by converting the traffic volume of larger vehicles to an equivalent number of passenger cars.

PEDESTRIAN CLEARANCE INTERVAL: Also known as the "Flashing Don't Walk" interval, it signals the end of pedestrian entry into the crosswalk following the "Walk" indication and provides time for pedestrians who have already entered the crosswalk to finishing crossing.

PEAK HOUR: The hour within a day in which the maximum volume occurs.

PEAK HOUR FACTOR: The peak hour volume divided by the four times the peak 15-minute flow rate. This

PHASE: In traffic signals, the green, yellow, and red clearance intervals assigned to a specified traffic movement.

PRETIMED SIGNAL: A traffic signal operation in which the cycle length, phasing sequence, and phasing times are predetermined and fixed, regardless of actual demand for any given traffic movement. Also known as a fixed time signal.

PROGRESSION: The coordinated movement of vehicles through signalized intersections along a corridor.

QUEUE: The number of vehicles waiting at a service area such as a traffic signal, stop sign, or access gate.

QUEUE LENGTH: The length of vehicle queue, typically expressed in feet, waiting at a service area such as a traffic signal, stop sign, or access gate.

RECALL: A signal phasing operation in which a specified phase places a call to the signal controller each time a conflicting phase is served, thus ensuring the specified phase will be serviced again.

SEMI-ACTUATED CONTROL: A type of traffic signal control in which only the minor movements are provided detection.

SIGHT DISTANCE: The continuous length of roadway visible to a driver or roadway user.

STACKING DISTANCE: The length of area available behind a service area, such as a traffic signal or gate, for vehicle queuing to occur.

STOPPING SIGHT DISTANCE: The minimum distance required by the driver of a vehicle traveling at a given speed to bring the vehicle to a stop after an object on the road becomes visible, including reaction and response time.

TRIP OR TRIP END: The one-directional movement of a person or vehicle. Every trip has an origin and a destination at its respective ends (i.e., trip ends). In terms of site trip generation, the same vehicle entering and exiting a site generates two trips: one inbound trip and one outbound trip.

TRIP GENERATION RATE: The rate at which a land use generates trips per the specified land use variable, such per dwelling unit or per thousand square feet.

TRUCK: A heavy motor vehicle generally used for transporting goods.

VEHICLE MILES TRAVELED: A measure of the amount and distance of automobile travel essentially calculated as the sum of each trip times the trip length.

APPENDIX B

TRIP GENERATION DATA

City: Perris
Location: 5087 Patterson Avenue

Date: 1/23/2019
Count Type: Classification

	Entering								Exiting							
Time	Pass Veh	Large 2 Axle	3 Axle	4 Axle	5+ Axle	15-min Total	Entering Hourly		Time	Pass Veh	Large 2 Axle	3 Axle	4 Axle	5+ Axle	15-min Total	Exiting Hourly	Hourly Total
0:00	0	0	0	0	0	0	1		0:00	0	0	0	0	0	0	0	1
0:15	0	0	0	0	0	0	2		0:15	0	0	0	0	0	0	0	2
0:30	0	0	0	0	0	0	2		0:30	0	0	0	0	0	0	0	2
0:45	1	0	0	0	0	1	2		0:45	0	0	0	0	0	0	0	2
1:00	1	0	0	0	0	1	2		1:00	0	0	0	0	0	0	0	2
1:15	0	0	0	0	0	0	1		1:15	0	0	0	0	0	0	1	2
1:30	0	0	0	0	0	0	1		1:30	0	0	0	0	0	0	1	2
1:45	0	0	1	0	0	1	1		1:45	0	0	0	0	0	0	1	2
2:00	0	0	0	0	0	0	0		2:00	0	0	1	0	0	1	1	1
2:15	0	0	0	0	0	0	0		2:15	0	0	0	0	0	0	1	1
2:30	0	0	0	0	0	0	0		2:30	0	0	0	0	0	0	2	2
2:45	0	0	0	0	0	0	0		2:45	0	0	0	0	0	0	2	2
3:00	0	0	0	0	0	0	0		3:00	1	0	0	0	0	1	2	2
3:15	0	0	0	0	0	0	0		3:15	1	0	0	0	0	1	1	1
3:30	0	0	0	0	0	0	0		3:30	0	0	0	0	0	0	0	0
3:45	0	0	0	0	0	0	0		3:45	0	0	0	0	0	0	0	0
4:00	0	0	0	0	0	0	0		4:00	0	0	0	0	0	0	0	0
4:15	0	0	0	0	0	0	0		4:15	0	0	0	0	0	0	0	0
4:30	0	0	0	0	0	0	0		4:30	0	0	0	0	0	0	0	0
4:45	0	0	0	0	0	0	0		4:45	0	0	0	0	0	0	0	0
5:00	0	0	0	0	0	0	0		5:00	0	0	0	0	0	0	0	0
5:15	0	0	0	0	0	0	1		5:15	0	0	0	0	0	0	0	1
5:30	0	0	0	0	0	0	2		5:30	0	0	0	0	0	0	0	2
5:45	0	0	0	0	0	0	3		5:45	0	0	0	0	0	0	2	5
6:00	1	0	0	0	0	1	8		6:00	0	0	0	0	0	0	2	10
6:15	0	0	0	0	1	1	7		6:15	0	0	0	0	0	0	6	13
6:30	0	0	0	0	1	1	7	pre-AM	6:30	1	0	1	0	0	2	8	15
6:45	2	0	0	0	3	5	7		6:45	0	0	0	0	0	0	7	14
7:00	0	0	0	0	0	0	2	AM Peak	7:00	**1**	0	**3**	0	0	4	7	9
7:15	0	0	**1**	0	0	1	4		7:15	**1**	0	**1**	0	0	2	4	8
7:30	0	0	0	0	**1**	1	3		7:30	0	0	**1**	0	0	1	3	6
7:45	0	0	0	0	0	0	2		7:45	0	0	0	0	0	0	2	4
8:00	2	0	0	0	0	2	3		8:00	0	1	0	0	0	1	3	6
8:15	0	0	0	0	0	0	4		8:15	1	0	0	0	0	1	2	6
8:30	0	0	0	0	0	0	4		8:30	0	0	0	0	0	0	2	6
8:45	0	1	0	0	0	1	4		8:45	0	1	0	0	0	1	3	7
9:00	1	0	0	1	1	3	4		9:00	0	0	0	0	0	0	3	7
9:15	0	0	0	0	0	0	1		9:15	1	0	0	0	0	1	4	5
9:30	0	0	0	0	0	0	1		9:30	0	1	0	0	0	1	3	4
9:45	1	0	0	0	0	1	1		9:45	0	0	1	0	0	1	2	3
10:00	0	0	0	0	0	0	0		10:00	1	0	0	0	0	1	1	1
10:15	0	0	0	0	0	0	1		10:15	0	0	0	0	0	0	0	1
10:30	0	0	0	0	0	0	3		10:30	0	0	0	0	0	0	1	4
10:45	0	0	0	0	0	0	6		10:45	0	0	0	0	0	0	3	9
11:00	0	0	0	0	1	1	6		11:00	0	0	0	0	0	0	5	11
11:15	0	0	1	0	1	2	6		11:15	0	0	1	0	0	1	6	12

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

City: Perris
Location: 5087 Patterson Avenue

Date: 1/23/2019
Count Type: Classification

	Entering								Exiting							
Time	Pass Veh	Large 2 Axle	3 Axle	4 Axle	5+ Axle	15-min Total	Entering Hourly		Time	Pass Veh	Large 2 Axle	3 Axle	4 Axle	5+ Axle	15-min Total	Exiting Hourly	Hourly Total
11:30	0	1	1	0	1	3	7		11:30	0	0	2	0	0	2	7	14
11:45	0	0	0	0	0	0	6		11:45	0	0	0	1	1	2	7	13
12:00	0	1	0	0	0	1	7		12:00	0	0	1	0	0	1	5	12
12:15	0	1	0	0	2	3	8	Midday	12:15	0	0	0	2	0	2	9	17
12:30	0	2	0	0	0	2	5		12:30	0	0	2	0	0	2	8	13
12:45	0	0	0	0	1	1	7		12:45	0	0	0	0	0	0	8	15
13:00	0	0	1	0	1	2	6		13:00	1	0	2	2	0	5	10	16
13:15	0	0	0	0	0	0	7		13:15	0	0	1	0	0	1	6	13
13:30	1	0	0	2	1	4	7		13:30	1	0	1	0	0	2	5	12
13:45	0	0	0	0	0	0	3		13:45	0	2	0	0	0	2	4	7
14:00	1	0	0	0	2	3	3		14:00	0	0	1	0	0	1	2	5
14:15	0	0	0	0	0	0	1		14:15	0	0	0	0	0	0	1	2
14:30	0	0	0	0	0	0	1		14:30	0	0	1	0	0	1	2	3
14:45	0	0	0	0	0	0	1		14:45	0	0	0	0	0	0	1	2
15:00	1	0	0	0	0	1	3		15:00	0	0	0	0	0	0	2	5
15:15	0	0	0	0	0	0	3		15:15	1	0	0	0	0	1	3	6
15:30	0	0	0	0	0	0	3		15:30	0	0	0	0	0	0	3	6
15:45	0	0	0	0	2	2	4		15:45	0	0	1	0	0	1	4	8
16:00	0	0	0	1	0	1	2		16:00	0	0	1	0	0	1	3	5
16:15	0	0	0	0	0	0	2		16:15	0	1	0	0	0	1	3	5
16:30	1	0	0	0	0	1	4		16:30	1	0	0	0	0	1	4	8
16:45	0	0	0	0	0	0	3		16:45	0	0	0	0	0	0	3	6
17:00	0	1	0	0	0	1	5		17:00	0	0	0	1	0	1	4	9
17:15	**1**	**1**	0	0	0	2	5	PM Peak	17:15	**1**	0	0	**1**	0	2	4	9
17:30	0	0	0	0	0	0	5		17:30	0	0	0	0	0	0	2	7
17:45	0	**1**	**1**	0	0	2	8		17:45	0	0	0	**1**	0	1	6	14
18:00	**1**	0	0	0	0	1	7		18:00	0	0	0	0	**1**	1	8	15
18:15	0	0	0	0	2	2	7	post-PM	18:15	0	0	0	0	0	0	8	15
18:30	0	0	0	0	3	3	5		18:30	2	2	0	0	0	4	9	14
18:45	0	1	0	0	0	1	4		18:45	0	1	2	0	0	3	5	9
19:00	0	1	0	0	0	1	6		19:00	0	0	0	0	1	1	3	9
19:15	0	0	0	0	0	0	5		19:15	0	0	0	1	0	1	4	9
19:30	1	0	0	1	0	2	6		19:30	0	0	0	0	0	0	4	10
19:45	2	0	0	0	1	3	7		19:45	0	1	0	0	0	1	6	13
20:00	0	0	0	0	0	0	6		20:00	1	0	1	0	0	2	7	13
20:15	0	1	0	0	0	1	7		20:15	0	0	0	1	0	1	7	14
20:30	0	2	1	0	0	3	6		20:30	0	1	0	1	0	2	6	12
20:45	1	1	0	0	0	2	3		20:45	0	0	0	1	1	2	5	8
21:00	0	0	1	0	0	1	4		21:00	2	0	0	0	0	2	4	8
21:15	0	0	0	0	0	0	6		21:15	0	0	0	0	0	0	5	11
21:30	0	0	0	0	0	0	7		21:30	0	0	1	0	0	1	7	14
21:45	0	2	0	0	1	3	7		21:45	0	0	0	0	1	1	7	14
22:00	0	2	1	0	0	3	5		22:00	0	0	1	2	0	3	7	12
22:15	0	0	0	1	0	1	6		22:15	0	0	1	0	1	2	5	11
22:30	0	0	0	0	0	0	5		22:30	0	1	0	0	0	1	6	11
22:45	0	1	0	0	0	1	5		22:45	0	0	0	1	0	1	5	10

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

City: Perris
Location: 5087 Patterson Avenue

Date: 1/23/2019
Count Type: Classification

	Entering						
Time	Pass Veh	Large 2 Axle	3 Axle	4 Axle	5+ Axle	15-min Total	Entering Hourly
23:00	0	2	0	1	1	4	4
23:15	0	0	0	0	0	0	Max
23:30	0	0	0	0	0	0	Hourly
23:45	0	0	0	0	0	0	Enter
TOTAL	**19**	**22**	**9**	**7**	**27**	**84**	**8**

	Exiting							
Time	Pass Veh	Large 2 Axle	3 Axle	4 Axle	5+ Axle	15-min Total	Exiting Hourly	Hourly Total
23:00	0	1	0	0	0	1	5	9
23:15	0	0	1	1	1	3	Max	Max
23:30	0	0	0	0	0	0	Hourly	Hourly
23:45	1	0	0	0	0	1	Exit	Total
TOTAL	**19**	**13**	**29**	**16**	**7**	**84**	**10**	**17**

Enter			
Car	Truck Only		Truck+Trailer
19	22	9	34

Enter			Daily
Car	Truck Only	Truck+Trailer	Total
19	13	29	23	168

6:30 AM 7:00 AM 5:15 PM 6:15 PM

Observed Peak Hour Site Traffic Count Summary[1]													
Trip Type	Pre-AM Peak Hour			AM Peak Hour			PM Peak Hour			Post-PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	
Passenger Car	2	3	5	0	2	2	2	1	3	0	2	3	38
Bobtail Truck (2 axle)	0	0	0	0	0	0	2	0	2	2	3	4	35
Bobtail Truck (3 axle)	1	5	6	1	5	6	1	0	1	0	2	2	38
Bobtail Truck-Trailer (4+ axle)	4	0	4	1	0	1	0	3	3	5	1	6	57
Total Vehicle+Trailer Trips	7	8	15	2	7	9	5	4	9	7	8	15	168

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

Table 2
Observed Similar Site Trip Generation Rates Estimated Based on Traffic Count Data

Similar Site Operational Characteristics - 5087 Patterson Avenue, Perris, CA	
Number of Trailer Parking Spaces	140
Number of Passenger Car Parking Spaces	6

Observed Peak Hour Site Traffic Count Summary[1]									
Trip Type	Quantity[2]		AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
Passenger Car	6	PS	0	2	2	2	1	3	38
Bobtail Truck (2 axle)	140	PS	0	0	0	2	0	2	35
Bobtail Truck (3 axle)	140	PS	1	5	6	1	0	1	38
Bobtail Truck-Trailer (4+ axle)	140	PS	1	0	1	0	3	3	57
Total Vehicle+Trailer Trips			2	7	9	5	4	9	168

Observed Similar Site Trip Generation Rates Based on Traffic Count Data								
Trip Type	Unit[2]	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Passenger Car	PS	0.00	0.33	0.33	0.33	0.17	0.50	6.33
Bobtail Truck (2 axle)	PS	0.00	0.00	0.00	0.01	0.00	0.01	0.25
Bobtail Truck (3 axle)	PS	0.01	0.04	0.05	0.01	0.00	0.01	0.27
Bobtail Truck-Trailer (4+ axle)	PS	0.01	0.00	0.01	0.00	0.02	0.02	0.41
Total Vehicle+Trailer Trips		0.02	0.37	0.39	0.35	0.19	0.54	7.26

Notes:

(1) Observed 24-Hour and peak hour site traffic count summary at 5087 Patterson Avenue, Perris, CA (January 23, 2019).

(2) PS = Parking Spaces

APPENDIX C

TRAFFIC COUNT DATA

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:					
8/26/21	LOCATION:	Perris	PROJECT #:	SC3031
THURSDAY	NORTH & SOUTH:	Harvill	LOCATION #:	1
	EAST & WEST:	Orange	CONTROL:	STOP E/W

	NOTES:											
PCE	Class	1	2	3	4	5	6			AM		▲ N
Adjusted	Factor	1	1.5	2	3	2	2			PM		
										MD	◄ W	E ►
										OTHER		S
										OTHER		▼

		NORTHBOUND Harvill			SOUTHBOUND Harvill			EASTBOUND Orange			WESTBOUND Orange			
	LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 0	ET 1	ER 0	WL 0	WT 1	WR 0	TOTAL
AM	7:00 AM	0	128	1	3	38	1	12	0	0	0	0	1	184
	7:15 AM	0	235	6	4	62	0	8	0	2	4	0	4	323
	7:30 AM	1	266	6	5	64	5	18	0	2	5	0	4	373
	7:45 AM	0	241	2	3	84	3	14	0	2	1	0	2	351
	8:00 AM	1	188	7	3	81	2	8	0	1	1	0	6	298
	8:15 AM	2	62	10	2	76	4	2	0	0	9	0	3	170
	8:30 AM	1	60	15	1	62	1	5	0	0	5	0	5	154
	8:45 AM	1	45	2	4	69	5	7	2	1	6	0	4	143
	VOLUMES	6	1,223	49	24	534	21	73	2	8	30	0	28	1,995
	APPROACH %	0%	96%	4%	4%	92%	4%	89%	2%	9%	51%	0%	49%	
	APP/DEPART	1,278	/	1,324	578	/	571	82	/	74	58	/	27	0
	BEGIN PEAK HR		7:15 AM											
	VOLUMES	2	929	21	14	290	10	48	0	7	11	0	15	1,345
	APPROACH %	0%	98%	2%	4%	92%	3%	88%	0%	12%	41%	0%	59%	
	PEAK HR FACTOR		0.873			0.877			0.692			0.797		0.901
	APP/DEPART	952	/	991	314	/	307	54	/	35	26	/	12	0
PM	4:00 PM	1	76	7	10	87	5	1	0	1	7	0	7	202
	4:15 PM	5	62	7	1	117	3	5	0	2	8	1	4	215
	4:30 PM	2	51	7	7	120	5	4	0	0	8	0	6	210
	4:45 PM	2	64	3	4	102	5	2	0	1	3	0	5	189
	5:00 PM	2	50	10	3	106	2	2	0	4	3	0	5	186
	5:15 PM	1	56	2	2	106	4	4	0	2	5	1	7	188
	5:30 PM	2	74	2	1	104	8	1	0	1	5	0	5	202
	5:45 PM	0	60	1	1	82	10	1	0	0	6	0	0	160
	VOLUMES	15	492	39	29	822	40	20	0	11	44	2	38	1,550
	APPROACH %	3%	90%	7%	3%	92%	4%	64%	0%	36%	52%	2%	45%	
	APP/DEPART	545	/	549	891	/	877	31	/	67	84	/	57	0
	BEGIN PEAK HR		4:00 PM											
	VOLUMES	10	253	24	22	426	18	12	0	4	26	1	22	815
	APPROACH %	3%	88%	8%	5%	92%	4%	74%	0%	26%	53%	2%	45%	
	PEAK HR FACTOR		0.853			0.884			0.596			0.857		0.950
	APP/DEPART	287	/	286	465	/	455	16	/	46	48	/	29	0

Harvill

NORTH SIDE

Orange WEST SIDE EAST SIDE **Orange**

SOUTH SIDE

Harvill

Thursday, August 26, 2021 CITY: Perris PROJECT: SC3031

ADT1 Harvill north of Orange. **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	NB		SB			PM Period	NB		SB		
0:00	3		10			12:00	47		49		
0:15	4		6			12:15	47		60		
0:30	3		9			12:30	39		58		
0:45	3	13	6	31	44	12:45	64	197	59	226	423
1:00	4		1			13:00	74		68		
1:15	2		3			13:15	66		51		
1:30	5		4			13:30	67		66		
1:45	4	15	2	10	25	13:45	120	327	49	234	561
2:00	1		2			14:00	84		88		
2:15	6		3			14:15	93		92		
2:30	3		4			14:30	87		146		
2:45	2	12	4	13	25	14:45	76	340	131	457	797
3:00	14		7			15:00	54		127		
3:15	7		5			15:15	83		103		
3:30	20		2			15:30	85		165		
3:45	24	65	5	19	84	15:45	100	322	123	518	840
4:00	14		4			16:00	71		97		
4:15	30		7			16:15	62		116		
4:30	52		6			16:30	57		123		
4:45	48	144	11	28	172	16:45	65	255	109	445	700
5:00	49		14			17:00	56		99		
5:15	55		12			17:15	64		107		
5:30	51		18			17:30	75		107		
5:45	62	217	19	63	280	17:45	57	252	85	398	650
6:00	49		20			18:00	53		84		
6:15	42		21			18:15	74		76		
6:30	62		20			18:30	60		78		
6:45	119	272	33	94	366	18:45	58	245	76	314	559
7:00	138		34			19:00	50		64		
7:15	230		58			19:15	47		59		
7:30	261		62			19:30	37		46		
7:45	245	874	82	236	1110	19:45	46	180	56	225	405
8:00	172		74			20:00	51		49		
8:15	60		72			20:15	30		40		
8:30	60		58			20:30	37		40		
8:45	48	340	58	262	602	20:45	37	155	36	165	320
9:00	43		51			21:00	24		37		
9:15	54		34			21:15	19		31		
9:30	53		51			21:30	25		21		
9:45	44	194	56	192	386	21:45	10	78	25	114	192
10:00	51		43			22:00	22		16		
10:15	51		39			22:15	14		15		
10:30	38		47			22:30	14		13		
10:45	45	185	58	187	372	22:45	16	66	11	55	121
11:00	45		49			23:00	6		11		
11:15	41		70			23:15	12		11		
11:30	61		59			23:30	6		7		
11:45	71	218	40	218	436	23:45	9	33	8	37	70
Total Vol.	2549		1353		**3902**		2450		3188		**5638**

Daily Totals

NB	SB	Combined
4999	4541	**9540**

	AM			PM		
Split %	65.3%	34.7%	**40.9%**	43.5%	56.5%	**59.1%**
Peak Hour	7:15	7:30	**7:15**	13:45	14:45	**15:00**
Volume	908	290	**1184**	384	526	**840**
P.H.F.	0.87	0.88	**0.91**	0.81	0.80	**0.84**

cs@aimtd.com Tell. 714 253 7888

Thursday, August 26, 2021 CITY: Perris PROJECT: SC3031

ADT1 Harvill south of Orange. **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	NB		SB			PM Period	NB		SB		
0:00	3		11			12:00	53		56		
0:15	3		6			12:15	56		60		
0:30	3		9			12:30	40		58		
0:45	3	12	4	30	42	12:45	69	218	63	237	455
1:00	4		1			13:00	69		72		
1:15	2		2			13:15	58		57		
1:30	5		4			13:30	75		74		
1:45	5	16	2	9	25	13:45	116	318	50	253	571
2:00	1		2			14:00	84		97		
2:15	6		4			14:15	88		94		
2:30	3		3			14:30	86		142		
2:45	2	12	2	11	23	14:45	77	335	131	464	799
3:00	13		5			15:00	49		124		
3:15	7		6			15:15	85		104		
3:30	20		3			15:30	81		160		
3:45	24	64	5	19	83	15:45	100	315	125	513	828
4:00	12		4			16:00	73		92		
4:15	27		6			16:15	65		122		
4:30	49		5			16:30	55		121		
4:45	48	136	8	23	159	16:45	63	256	103	438	694
5:00	49		13			17:00	61		102		
5:15	53		13			17:15	58		109		
5:30	51		16			17:30	73		105		
5:45	62	215	19	61	276	17:45	57	249	78	394	643
6:00	48		16			18:00	56		80		
6:15	42		16			18:15	75		76		
6:30	59		18			18:30	59		76		
6:45	119	268	30	80	348	18:45	62	252	75	307	559
7:00	127		31			19:00	50		57		
7:15	225		59			19:15	47		59		
7:30	249		60			19:30	34		43		
7:45	232	833	79	229	1062	19:45	41	172	55	214	386
8:00	171		73			20:00	53		48		
8:15	64		72			20:15	31		41		
8:30	61		58			20:30	34		37		
8:45	42	338	55	258	596	20:45	38	156	35	161	317
9:00	42		51			21:00	24		34		
9:15	59		32			21:15	19		27		
9:30	56		52			21:30	21		20		
9:45	48	205	58	193	398	21:45	12	76	24	105	181
10:00	48		42			22:00	23		11		
10:15	52		39			22:15	14		15		
10:30	44		50			22:30	11		13		
10:45	42	186	48	179	365	22:45	17	65	11	50	115
11:00	53		60			23:00	6		11		
11:15	46		71			23:15	11		9		
11:30	59		57			23:30	7		7		
11:45	79	237	49	237	474	23:45	8	32	9	36	68
Total Vol.	2522		1329		**3851**		2444		3172		**5616**

Daily Totals

NB	SB	Combined
4966	4501	**9467**

	AM			PM		
Split %	65.5%	34.5%	**40.7%**	43.5%	56.5%	**59.3%**
Peak Hour	7:15	7:30	**7:15**	13:45	14:45	**15:00**
Volume	877	284	**1148**	374	519	**828**
P.H.F.	0.88	0.90	**0.92**	0.81	0.81	**0.86**

cs@aimtd.com Tell. 714 253 7888

Thursday, August 26, 2021 CITY: Perris PROJECT: SC3031

ADT1 Orange east of Harvill. **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	EB		WB			PM Period	EB		WB		
0:00	0		0			12:00	14		18		
0:15	0		0			12:15	16		8		
0:30	0		0			12:30	8		13		
0:45	0	0	0	0		12:45	13	51	14	53	104
1:00	0		0			13:00	12		16		
1:15	0		0			13:15	7		18		
1:30	0		0			13:30	10		13		
1:45	0	0	0	0		13:45	8	37	6	53	90
2:00	0		0			14:00	11		18		
2:15	0		1			14:15	10		17		
2:30	0		0			14:30	9		5		
2:45	0	0	0	1	1	14:45	17	47	15	55	102
3:00	1		0			15:00	4		16		
3:15	0		0			15:15	13		21		
3:30	1		1			15:30	6		11		
3:45	0	2	0	1	3	15:45	11	34	13	61	95
4:00	0		0			16:00	15		12		
4:15	1		0			16:15	8		13		
4:30	0		0			16:30	12		14		
4:45	2	3	0	0	3	16:45	6	41	6	45	86
5:00	2		0			17:00	12		7		
5:15	2		0			17:15	4		11		
5:30	3		0			17:30	3		10		
5:45	5	12	2	2	14	17:45	2	21	3	31	52
6:00	8		2			18:00	4		5		
6:15	8		2			18:15	3		5		
6:30	3		1			18:30	3		5		
6:45	12	31	5	10	41	18:45	5	15	2	17	32
7:00	3		1			19:00	3		6		
7:15	8		5			19:15	3		4		
7:30	9		7			19:30	1		1		
7:45	4	24	3	16	40	19:45	0	7	4	15	22
8:00	7		3			20:00	1		2		
8:15	7		7			20:15	2		0		
8:30	11		7			20:30	0		0		
8:45	6	31	5	22	53	20:45	0	3	0	2	5
9:00	10		7			21:00	1		2		
9:15	9		5			21:15	1		2		
9:30	12		7			21:30	1		3		
9:45	13	44	8	27	71	21:45	1	4	0	7	11
10:00	7		11			22:00	1		1		
10:15	10		8			22:15	1		3		
10:30	14		11			22:30	0		0		
10:45	14	45	10	40	85	22:45	0	2	1	5	7
11:00	16		21			23:00	0		0		
11:15	16		14			23:15	1		1		
11:30	9		9			23:30	0		0		
11:45	17	58	14	58	116	23:45	0	1	1	2	3
Total Vol.		250		177	**427**			263		346	**609**

Daily Totals	EB	WB	**Combined**
	513	523	**1036**

	AM			**PM**		
Split %	58.5%	41.5%	**41.2%**	43.2%	56.8%	**58.8%**
Peak Hour	10:30	11:00	**10:30**	12:00	14:45	**12:00**
Volume	60	58	**116**	51	63	**104**
P.H.F.	0.94	0.69	**0.78**	0.80	0.75	**0.81**

cs@aimtd.com Tell. 714 253 7888

Thursday, August 26, 2021 CITY: Perris PROJECT: SC3031

ADT1 Orange west of Harvill. **Prepared by AimTD LLC tel. 714 253 7888**

AM Period	EB		WB			PM Period	EB		WB		
0:00	1		0			12:00	2		5		
0:15	1		0			12:15	3		4		
0:30	0		0			12:30	1		7		
0:45	0	2	2	2	4	12:45	1	7	3	19	26
1:00	0		0			13:00	8		3		
1:15	0		1			13:15	4		1		
1:30	0		0			13:30	3		6		
1:45	0	0	1	2	2	13:45	9	24	2	12	36
2:00	0		0			14:00	7		5		
2:15	0		0			14:15	4		4		
2:30	0		1			14:30	7		6		
2:45	0	0	2	3	3	14:45	8	26	7	22	48
3:00	1		1			15:00	5		15		
3:15	1		0			15:15	3		12		
3:30	2		1			15:30	6		12		
3:45	0	4	0	2	6	15:45	6	20	6	45	65
4:00	2		0			16:00	2		6		
4:15	4		1			16:15	6		8		
4:30	3		1			16:30	4		6		
4:45	1	10	2	4	14	16:45	3	15	7	27	42
5:00	3		2			17:00	6		3		
5:15	5		0			17:15	6		5		
5:30	1		0			17:30	2		9		
5:45	4	13	1	3	16	17:45	1	15	9	26	41
6:00	3		0			18:00	4		12		
6:15	2		1			18:15	9		12		
6:30	4		1			18:30	6		9		
6:45	6	15	2	4	19	18:45	2	21	4	37	58
7:00	11		1			19:00	1		11		
7:15	9		0			19:15	4		5		
7:30	18		6			19:30	4		4		
7:45	14	52	3	10	62	19:45	6	15	6	26	41
8:00	7		3			20:00	3		7		
8:15	2		6			20:15	3		1		
8:30	5		2			20:30	5		5		
8:45	9	23	5	16	39	20:45	4	15	6	19	34
9:00	5		1			21:00	0		4		
9:15	5		8			21:15	0		5		
9:30	8		5			21:30	2		1		
9:45	5	23	2	16	39	21:45	1	3	3	13	16
10:00	1		3			22:00	0		6		
10:15	2		1			22:15	0		2		
10:30	2		2			22:30	4		1		
10:45	4	9	7	13	22	22:45	0	4	2	11	15
11:00	2		4			23:00	0		0		
11:15	3		5			23:15	0		1		
11:30	2		2			23:30	0		1		
11:45	5	12	1	12	24	23:45	1	1	0	2	3
Total Vol.		163		87	**250**			166		259	**425**

Daily Totals	EB	WB	**Combined**
	329	346	**675**

	AM			**PM**		
Split %	65.2%	34.8%	**37.0%**	39.1%	60.9%	**63.0%**
Peak Hour	7:00	8:45	**7:00**	13:45	14:45	**14:45**
Volume	52	19	**62**	27	46	**68**
P.H.F.	0.72	0.59	**0.65**	0.75	0.77	**0.85**

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APPENDIX D

LEVEL OF SERVICE WORKSHEETS

EXISTING

Intersection Level Of Service Report
Intersection 1: Harvill Ave (NS) at Orange Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	36.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Harvill Ave			Harvill Ave			Orange Ave			Orange Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	158.00	100.00	100.00	155.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvill Ave			Harvill Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	2	929	21	14	290	10	48	0	7	11	0	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	929	21	14	290	10	48	0	7	11	0	15
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	258	6	4	80	3	13	0	2	3	0	4
Total Analysis Volume [veh/h]	2	1031	23	16	322	11	53	0	8	12	0	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.02	0.00	0.00	0.23	0.00	0.01	0.09	0.00	0.03
d_M, Delay for Movement [s/veh]	7.91	0.00	0.00	10.52	0.00	0.00	25.03	36.24	9.25	35.50	34.29	12.44
Movement LOS	A	A	A	B	A	A	D	E	A	E	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.07	0.00	0.00	0.85	0.85	0.03	0.30	0.30	0.11
95th-Percentile Queue Length [ft/ln]	0.12	0.00	0.00	1.84	0.00	0.00	21.37	21.37	0.71	7.48	7.48	2.63
d_A, Approach Delay [s/veh]	0.01			0.48			22.96			21.98		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	1.49											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 1: Harvill Ave (NS) at Orange Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	17.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Harvill Ave			Harvill Ave			Orange Ave			Orange Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	158.00	100.00	100.00	155.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvill Ave			Harvill Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	10	253	24	22	426	18	12	0	4	26	1	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	253	24	22	426	18	12	0	4	26	1	22
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	67	6	6	112	5	3	0	1	7	0	6
Total Analysis Volume [veh/h]	11	266	25	23	448	19	13	0	4	27	1	23
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.02	0.00	0.00	0.04	0.00	0.01	0.07	0.00	0.03
d_M, Delay for Movement [s/veh]	8.29	0.00	0.00	7.86	0.00	0.00	16.16	17.24	9.67	14.76	17.46	9.19
Movement LOS	A	A	A	A	A	A	C	C	A	B	C	A
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.05	0.00	0.00	0.12	0.12	0.02	0.23	0.23	0.08
95th-Percentile Queue Length [ft/ln]	0.75	0.00	0.00	1.37	0.00	0.00	3.01	3.01	0.39	5.72	5.72	2.01
d_A, Approach Delay [s/veh]	0.30			0.37			14.63			12.30		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.33											
Intersection LOS	C											

EXISTING PLUS AMBIENT GROWTH PLUS PROJECT

Intersection Level Of Service Report
Intersection 1: Harvill Ave (NS) at Orange Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	43.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Harvill Ave			Harvill Ave			Orange Ave			Orange Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	158.00	100.00	100.00	155.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvill Ave			Harvill Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	2	929	21	14	290	10	48	0	7	11	0	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	0	0	0	0	5	14	0	13	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	966	22	15	302	15	64	0	20	11	0	16
Peak Hour Factor	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010	0.9010
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	268	6	4	84	4	18	0	6	3	0	4
Total Analysis Volume [veh/h]	8	1072	24	17	335	17	71	0	22	12	0	18
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.00	0.03	0.00	0.00	0.34	0.00	0.03	0.10	0.00	0.04
d_M, Delay for Movement [s/veh]	7.98	0.00	0.00	10.74	0.00	0.00	30.38	43.12	9.38	40.13	38.27	12.70
Movement LOS	A	A	A	B	A	A	D	E	A	E	E	B
95th-Percentile Queue Length [veh/ln]	0.02	0.00	0.00	0.08	0.00	0.00	1.40	1.40	0.08	0.34	0.34	0.12
95th-Percentile Queue Length [ft/ln]	0.50	0.00	0.00	2.03	0.00	0.00	35.09	35.09	2.01	8.56	8.56	2.88
d_A, Approach Delay [s/veh]	0.06			0.49			25.42			23.67		
Approach LOS	A			A			D			C		
d_I, Intersection Delay [s/veh]	2.08											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 1: Harvill Ave (NS) at Orange Ave (EW)

Control Type:	Two-way stop	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Harvill Ave			Harvill Ave			Orange Ave			Orange Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Pocket Length [ft]	158.00	100.00	100.00	155.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Harvill Ave			Harvill Ave			Orange Ave			Orange Ave		
Base Volume Input [veh/h]	10	253	24	22	426	18	12	0	4	26	1	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	10	0	0	0	0	10	8	0	7	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	263	25	23	443	29	20	0	11	27	1	23
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	69	7	6	117	8	5	0	3	7	0	6
Total Analysis Volume [veh/h]	21	277	26	24	466	31	21	0	12	28	1	24
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.02	0.00	0.00	0.07	0.00	0.02	0.08	0.00	0.03
d_M, Delay for Movement [s/veh]	8.41	0.00	0.00	7.89	0.00	0.00	17.66	18.77	9.83	15.77	18.82	9.24
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	A
95th-Percentile Queue Length [veh/ln]	0.06	0.00	0.00	0.06	0.00	0.00	0.22	0.22	0.05	0.26	0.26	0.08
95th-Percentile Queue Length [ft/ln]	1.49	0.00	0.00	1.44	0.00	0.00	5.51	5.51	1.21	6.53	6.53	2.12
d_A, Approach Delay [s/veh]	0.54			0.36			14.81			12.87		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.65											
Intersection LOS	C											

ATTACHMENT E

TRAFFIC SIGNAL WARRANT WORKSHEETS

Based on California MUTCD, 2012 Edition
(FHWA's MUTCD 2009 Edition, as amended for use in California)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

Count Date: 8/26/2021

County of Riverside	Harvill Avenue/Orange Avenue	Calc: BA	Date: 9/14/2021
Jurisdiction	Intersection	Check:	Date:

Major St: Harvill Avenue — Critical Approach Speed: 50 mph
Minor St: Orange avenue — Critical Approach Speed: 30 mph

Speed limit or critical speed on major street traffic > 40 mph ..... ☑
or
In built up area of isolated community of < 10,000 population ..... ☐
→ RURAL (R)

☐ URBAN (U)

WARRANT 1 - Eight Hour Vehicular Volume

SATISFIED ☐ YES ☑ NO

(Condition A or Condition B or Combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume

100% SATISFIED ☐ YES ☑ NO
80% SATISFIED ☐ YES ☑ NO

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												
	Urban	Rural	Urban	Rural	3:00 PM	11:00 AM	2:00 PM	12:00 PM	1:00 PM	7:00 AM	4:00 PM	10:00 AM	Hour
APPROACH LANES	1		2 or More										
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	833	455	792	444	552	1,069	701	373	
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	61	58	55	53	53	52	45	40	

Condition B - Interruption of Continuous Traffic

100% SATISFIED ☐ YES ☑ NO
80% SATISFIED ☐ YES ☑ NO

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)												
	Urban	Rural	Urban	Rural	3:00 PM	11:00 AM	2:00 PM	12:00 PM	1:00 PM	7:00 AM	4:00 PM	10:00 AM	Hour
APPROACH LANES	1		2 or More										
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	833	455	792	444	552	1,069	701	373	
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	61	58	55	53	53	52	45	40	

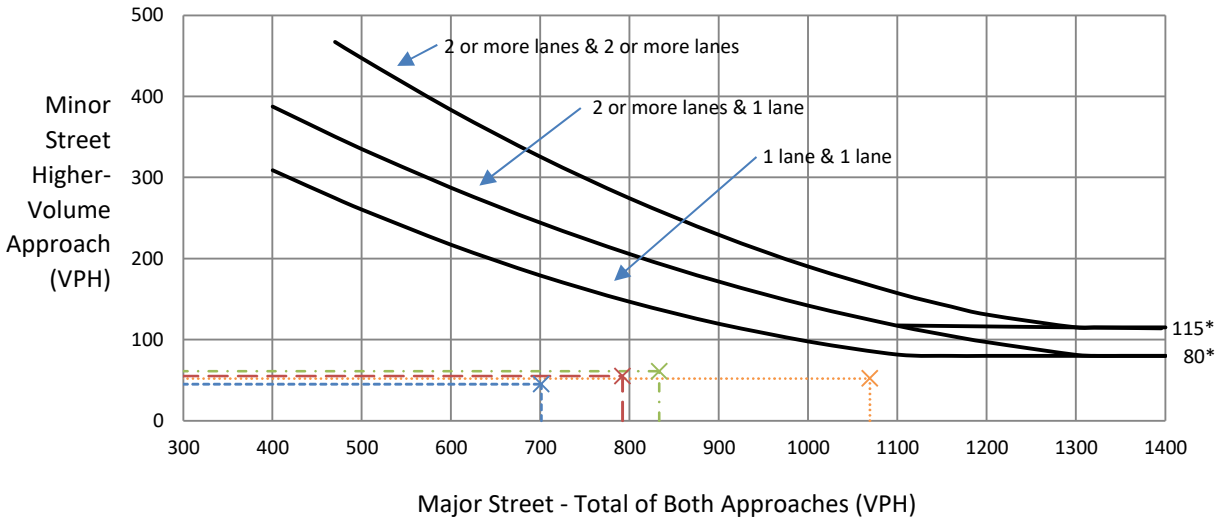
Combination of Conditions A & B

SATISFIED ☐ YES ☑ NO

REQUIREMENT	CONDITION	X	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. Minimum Vehicular Volume		☐ YES ☑ NO
	AND, B. Interruption of Continuous Traffic		
AND, an adequate trial of other alternatives that could cause less delay and inconvenience to traffic has failed to solve the traffic problems			☐ YES ☐ NO

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume

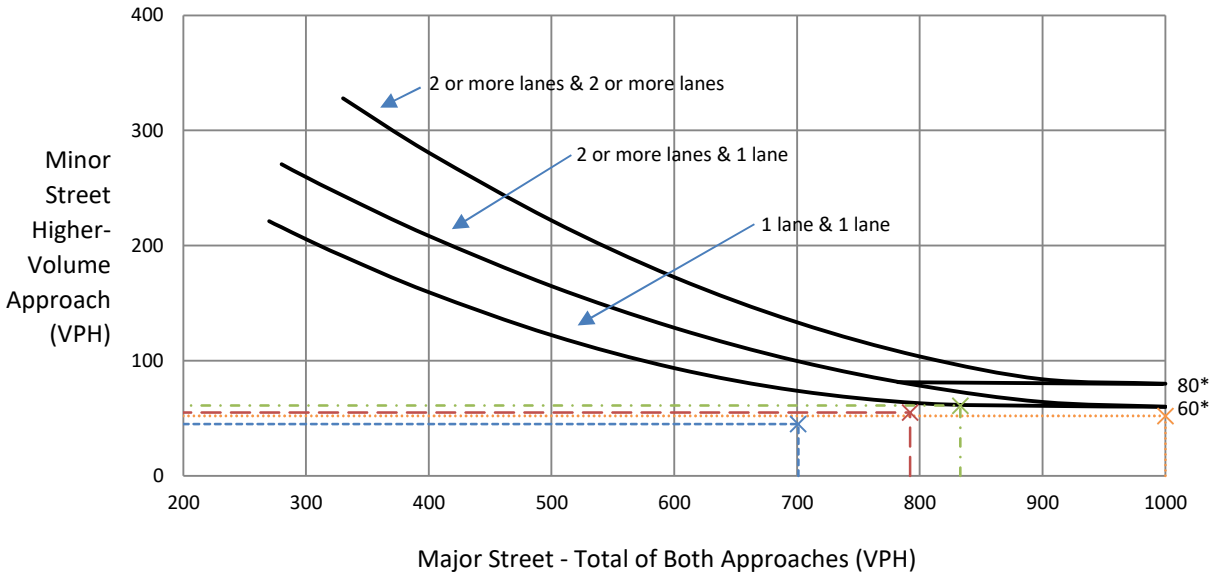


This figure is not applicable; see Figure 4C-2 below.

*Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor street approach with one lane.

Figure 4C-2. Warrant 2, Four-Hour Vehicular Volume (70% Factor)

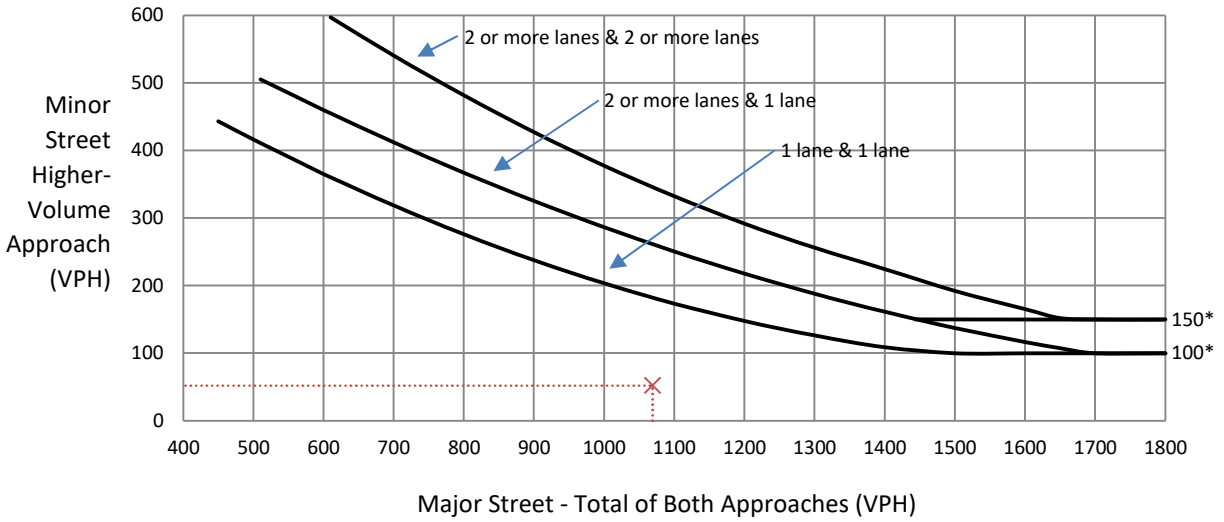
(Community less than 10,000 population or above 40 mph on the major street)



Traffic Signal Warrant Is NOT Satisfied

*Note: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 60 vph applies as the lower threshold volume for a minor street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour Vehicular Volume

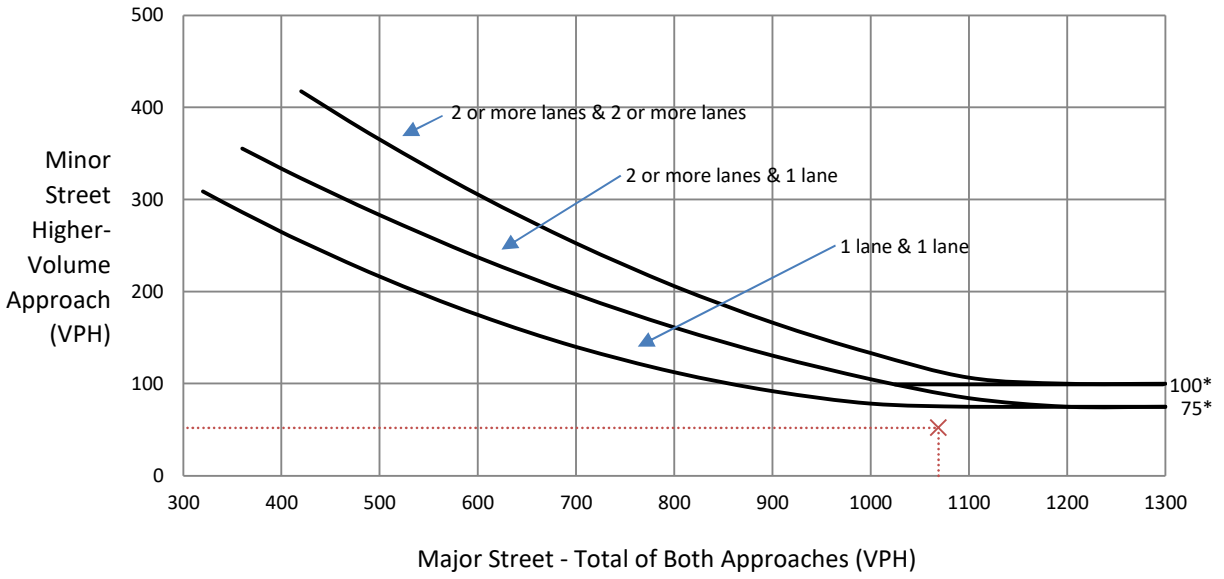


This figure is not applicable; see Figure 4C-4 below.

*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour Vehicular Volume (70% Factor)

(Community less than 10,000 population or above 40 mph on the major street)



Traffic Signal Warrant Is NOT Satisfied

*Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

Figure E-1

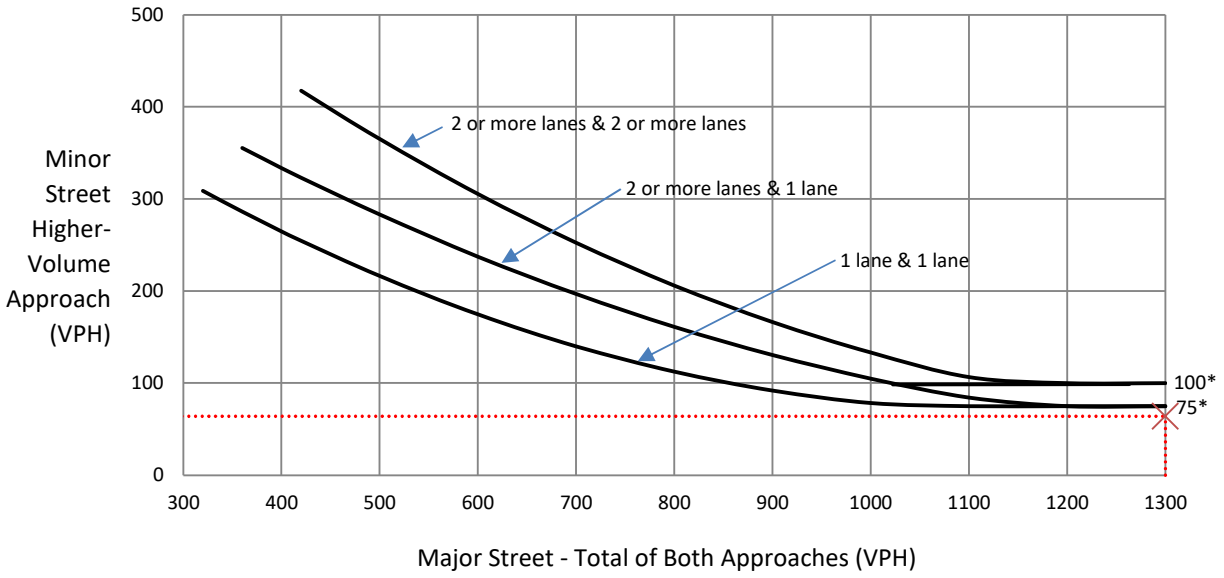
Harvil Avenue (NS) / Orange Avenue (EW) - #1
Existing Plus Ambient Growth Plus Project
AM

Major Street: Harvil Avenue Volume: 1327

Minor Street: Orange Avenue Volume: 64

Warrant 3, Peak Hour Vehicular Volume (70% Factor)

(Community less than 10,000 population or above 40 mph on the major street)



Traffic Signal Warrant Is NOT Satisfied

*Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor street approach with one lane.

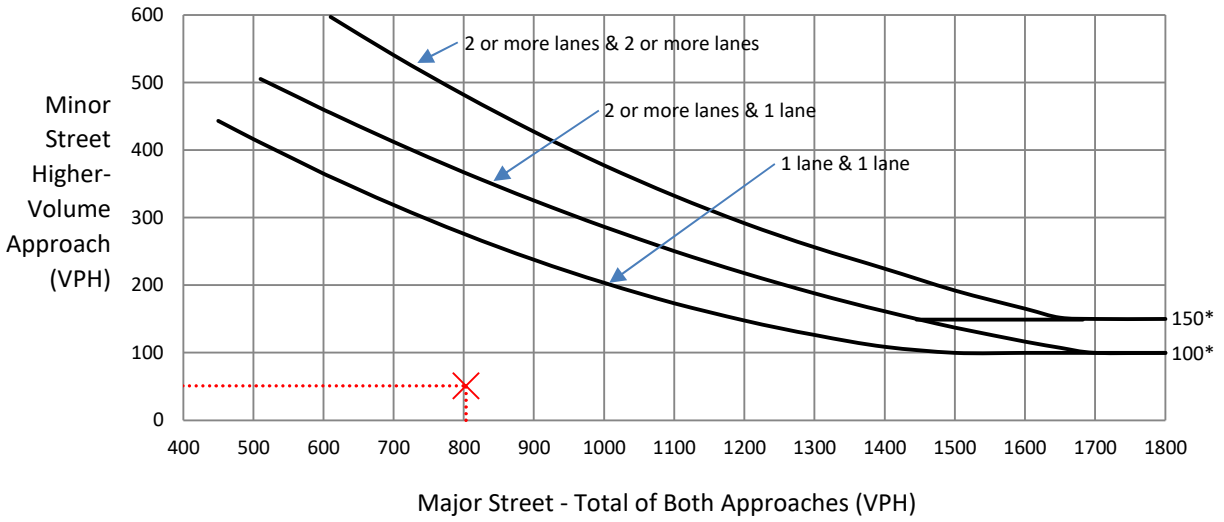
Figure E-2

North-South St (NS) / East-West St (EW) - #1
Existing Plus Ambient Growth Plus Project
PM

Major Street: North-South St Volume: 803

Minor Street: East-West St Volume: 51

Warrant 3, Peak Hour Vehicular Volume (100% Factor)



This figure is not applicable; see Figure 4C-4 below.

*Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor street approach with one lane.