

TRAFFIC IMPACT STUDY

Irwindale Industrial Project

13131 Los Angeles Street, Irwindale

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Prepared For:

ECORP Consulting, Inc.

1801 Park Court Place, Building B, Suite 103
Santa Ana, CA 92701

JB81279 – Rev 2

Prepared by:



1100 Corporate Center
Drive, Suite 201
Monterey Park, CA 91754
(323) 260-4703

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EXECUTIVE SUMMARY

The following summarizes the traffic study results, conclusions and recommendations:

- The proposed Project is an industrial building of 525,000 square feet in interior floor area. Access would be provided by site driveways on Los Angeles Street at the south side of the site and on Rivergrade Road at the northwest side of the site. The project tenants are not yet identified, but are anticipated to be warehouse or light industrial land uses.
- The Project is anticipated to be completed and occupied by the end of the year 2021.
- The proposed Project site is currently unoccupied, but had a former industrial use that has been analyzed for a trip generation credit based on the number of employees.

Trip Generation

- The trip generation of the project was calculated using nationally-accepted rates defined by the Institute of Transportation Engineers (ITE) –Trip Generation (10th edition). The light industrial rate is the highest rate in the larger industrial land use category within the ITE reference, and therefore the application of that rate is more conservative.
- The proposed Project would generate 3,210 daily trips, including 450 vehicle trips during the a.m. peak hour (301 inbound trips and 149 outbound trips) and 406 vehicle trips during the p.m. peak hour (140 inbound trips and 266 outbound trips).

Significant Intersection Impacts and Mitigation

- Based on the applied City of Irwindale significant traffic impact criteria, the proposed Project would create significant traffic impacts at these study intersections under future with-Project conditions.
 - o 11. I-605 Southbound Ramps/Los Angeles Street
 - o 12. I-605 Northbound Ramps/Los Angeles Street
- The analyzed mitigation measures were the addition of lanes to the freeway off-ramps at both locations. These improvements would require widening of the off-ramp facilities. At the southbound off-ramp location, intersection 11, the recommended mitigation measure is an added left-turn lane at the ramp approach. At the northbound off-ramp location, intersection 12, the recommended mitigation measure is an added right-turn lane at the ramp approach.
- The analyzed mitigation measures would fully mitigate the identified impacts at both study intersections, under both existing plus-Project and future with-Project conditions.

CMP and Freeway Impacts

- The proposed Project is not anticipated to cause a significant traffic impact at any Metro Congestion Management Program (CMP) arterial monitoring intersections, but would exceed CMP freeway segment thresholds.

- A Caltrans facility impact analysis was conducted that included freeway mainline segments, diverging/converging points between ramps and the mainline, and queuing at freeway off-ramps.
- At six freeway mainline segments and three diverging/merging areas, potentially significant impacts would occur per Caltrans standards due to the proposed Project.
- Based on an analysis of ramp queues and existing lengths, operations will be significantly impacted under Future-with-Project conditions at three off-ramps. The Project creates a new queuing impact (compared with Future-without-Project conditions) at the I-605 southbound off-ramp at Lower Azusa Road.

Main Project Driveway Controls

- A traffic signal warrant analysis was conducted for the main Project driveway on Los Angeles Street. The City Engineer would make the final determination as to traffic signal need, but the peak-hour volume warrant was met at that location for the post-project period.

1. INTRODUCTION

The proposed Project is an industrial building at 13131 Los Angeles Street, within the City of Irwindale. KOA Corporation has been retained to analyze the potential traffic impacts associated with the proposed Project. The scope and methodologies used for this traffic study were developed in accordance with current traffic study guidelines and policies of the City of Irwindale.

1.1 PROJECT DESCRIPTION

The proposed Project is an industrial building of 525,000 square feet in interior floor area. Access would be provided by site driveways on Los Angeles Street at the south side of the site and on Rivergrade Road at the northwest side of the site. The project tenants are not yet identified, but are anticipated to be warehouse or light industrial land uses. .

The Project is anticipated to be completed and occupied by the end of the year 2021. The proposed Project site plan is illustrated on Figure 1.

1.2 PROJECT STUDY AREA

The project study area, as defined through consultation with City staff, includes the following 13 study intersections:

1. I-605 Southbound Off-ramp/Arrow Highway
2. I-605 Northbound On-ramp/Arrow Highway
3. Rivergrade Road/ Arrow Highway
4. Stewart Avenue/ Rivergrade Road
5. I-605 Southbound On-ramp/Live Oak Avenue
6. I-605 Northbound Off-ramps/Live Oak Avenue
7. Graham Access Road/ Live Oak Avenue
8. Rivergrade Road/Live Oak Avenue
9. Rivergrade Road/Commerce Drive
10. Rivergrade Road/Brooks Avenue
11. I-605 Southbound Ramps/Los Angeles Street
12. I-605 Northbound Ramps/Los Angeles Street
13. Little John Street/Los Angeles Street

A signal warrant analysis was conducted for the main/south site driveway on Los Angeles Street.

Project-related impacts were also assessed at 12 mainline locations on the I-10, I-210 and I-605 freeways, and at eight ramp locations on the 605 freeway. The locations are listed below.

Mainline Locations

1. I-210 West of I-605
2. I-605 SB North of Arrow Hwy
3. I-605 SB Arrow Hwy to Live Oak
4. I-605 SB Live Oak to Lower Azusa
5. I-605 SB South of Lower Azusa
6. I-10 West of I-605
7. I-10 East of I-605

8. I-605 NB South of Lower Azusa
9. I-605 NB Lower Azusa to Live Oak
10. I-605 NB Live Oak to Arrow Highway
11. I-605 NB North of Arrow Highway
12. I-210 East of I-605

I-605 Ramp Locations

1. NB Off at Los Angeles Street
2. NB On from Los Angeles Street
3. NB Off at Live Oak avenue
4. NB On from Arrow Highway Eastbound
5. NB On from Arrow Highway Westbound
6. SB Off at Arrow Highway
7. SB On from Live Oak avenue
8. SB Off at Lower Azusa Road
9. SB On from Lower Azusa Road

Figure 2 illustrates the locations of the study intersections. Details on the freeway level-of-service analysis are provided in the section on "Congestion Management Program and Freeway Impacts."

FIGURE 1

13131 Los Angeles Street EIR Site Plan

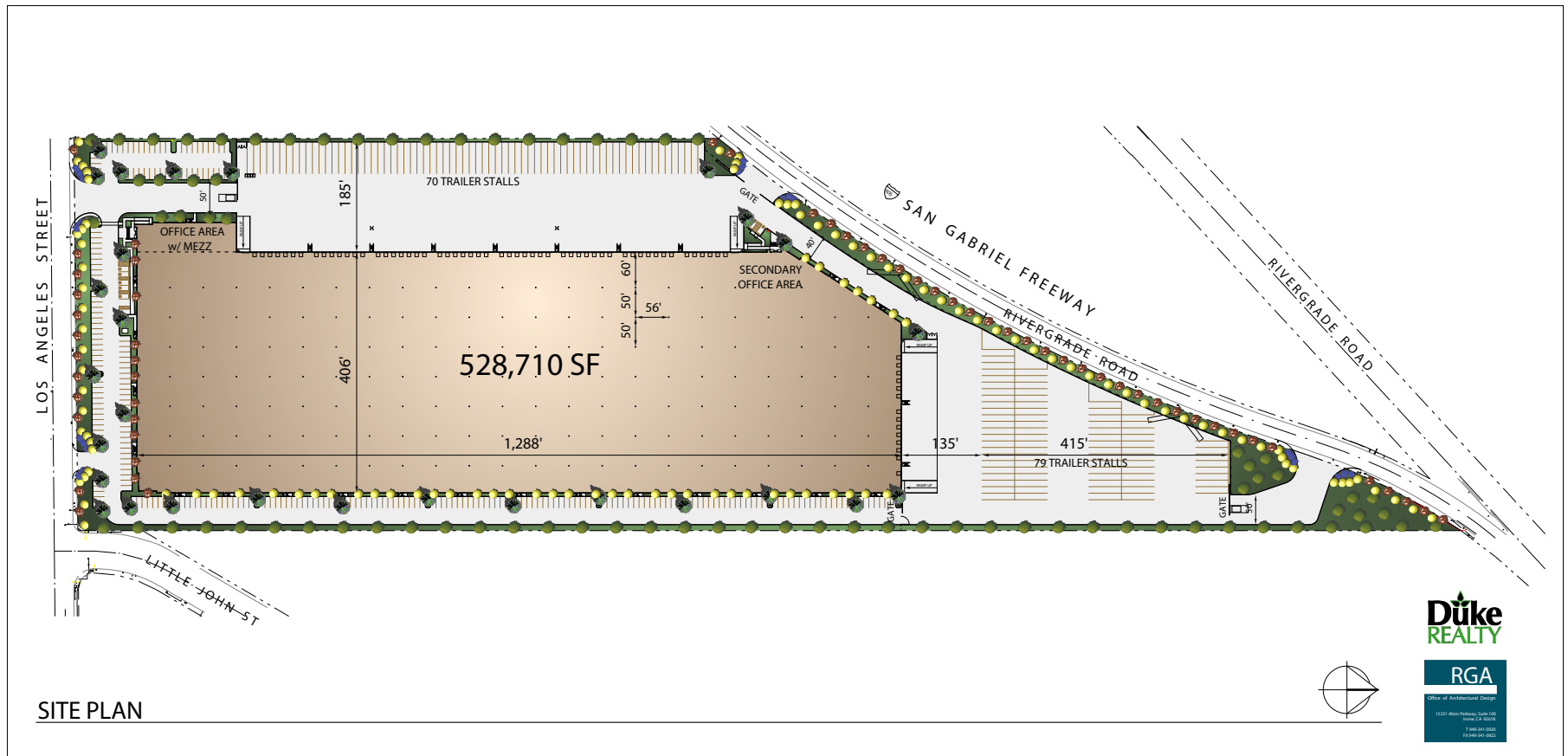
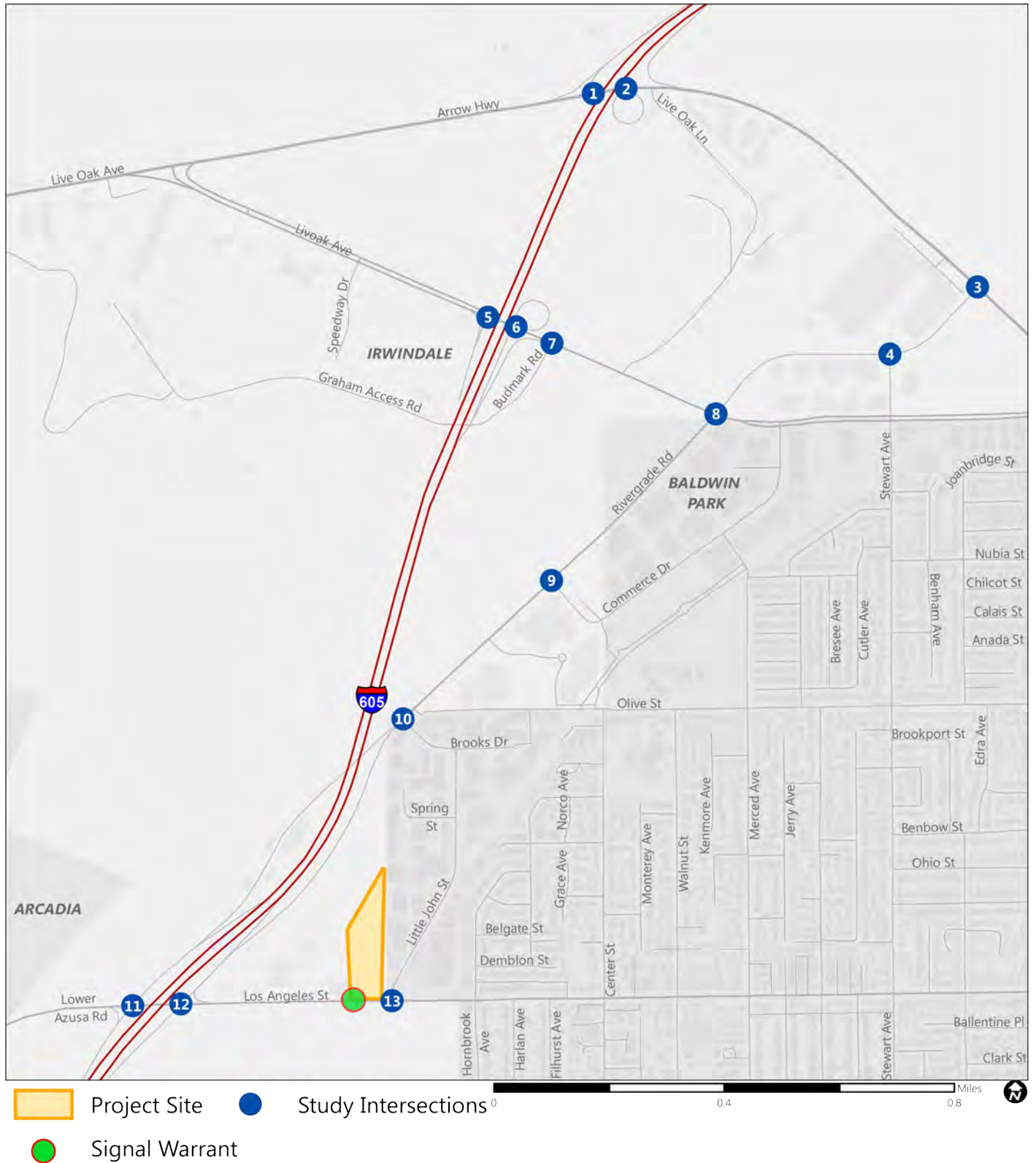


FIGURE 2

13131 Los Angeles Street EIR Study Area and Intersections



1.3 ANALYZED SCENARIOS

Traffic impacts associated with the proposed Project were analyzed at the study intersections for the weekday a.m. and weekday p.m. peak-hour periods. The study included the analysis of the following traffic scenarios:

- Existing
- Existing with Project
- Future without Project
- Future with Project

1.4 ANALYSIS METHODOLOGY

KOA coordinated with City of Irwindale staff as the first step in the traffic analysis, in order to define the study area and other major details. The scoping document provided to the City and then revised based on comments is provided in Appendix A.

The following text describes the methodology applied in this report.

Existing Condition

New traffic counts were conducted at the study intersections. The counts were used to determine existing traffic conditions. Counts included auto and truck counts, with the latter categorized by number of axles. Passenger Car Equivalency (PCE) factors were applied to the truck volumes based on categories of axle numbers – two, three, and four plus. The factors applied to these categories were 2.0, 2.5, and 3.0, respectively.

Fieldwork within the study area was undertaken to identify the condition of key study area roadways including traffic control and approach lane configuration at each study intersection, and on-street parking restrictions.

The existing level of service (LOS) at each of the study intersections is discussed in Section 2 of this report.

Project Trip Generation and Distribution

Project trip generation was based on land use intensities and trip rates defined by *Trip Generation, 10th Edition*, published by the Institute of Transportation Engineers (ITE). The trip generation and distribution calculations are discussed in Section 3 of this report.

Existing with-Project Condition

Based on the projected Project traffic and the traffic count totals, an Existing plus-Proposed Project conditions scenario was analyzed per the *Sunnyvale* and *Smart Rail* California Environmental Quality Act (CEQA) court case decisions that determined that project impacts should be analyzed against existing conditions.

The level of service analysis for existing with-Project conditions is discussed in Section 4 of this report.

Future without-Project Condition

In order to account for traffic growth in the study area, an ambient/background traffic growth rate was applied to the existing traffic counts. In addition, traffic from related/area projects (approved and pending developments) was also added to the study area. The levels of service at the study intersections for future without-Project conditions are discussed in Section 5 of this report.

Future with-Project Condition

Based on the future without-Project volumes plus traffic from the proposed Project, the future with-Project traffic volume conditions were determined and analyzed. The levels of service for this scenario are discussed in Section 6 of this report.

Level of Service Methodology

The City of Irwindale published traffic impact study guidelines, to be applied to projects within the City. The current version of the guidelines is dated December 30, 2014.

For analysis of LOS at signalized intersections, the City of Irwindale has designated the Intersection Capacity Utilization (ICU) methodology as the desired tool. The concept of roadway level of service under the ICU methodology is calculated as the volume of vehicles that pass through the facility divided by the capacity of that facility. A 10% adjustment to the clearance and loss time factor based on the critical phases of the signalized control was included in the traffic analysis. A facility is "at capacity" (ICU value of 1.00 or greater) when extreme congestion occurs. This value is a function of hourly volumes, signal phasing, and approach lane configuration on each leg of the intersection.

For intersections 6 and 9, which are stop-controlled, LOS was analyzed based on the Highway Capacity Manual (HCM) un-signalized intersection methodology. This method calculates roadway level of service based on intersection delay, defined as the worst-case approach delay experienced by users of the intersection who must stop or yield to free-flow through traffic. The method uses a "gap acceptance" technique to predict driver delay.

A facility with LOS A indicates excellent operating conditions with little delay to motorists, whereas LOS F represents congested conditions with excessive vehicle delay.

Tables 1 and 2 define the level of service criteria applied to the unsignalized and signalized study intersections.

**Table 1 – All-Way and Partial Stop-Controlled (HCM)
Intersection Level of Service Definitions**

LOS	Average Control Delay (sec/veh)
A	0 - 10
B	10 to 15
C	15-25
D	25-35
E	35-50
F	>50

**Table 2 – Signalized Intersection (ICU)
Level of Service Definitions**

LOS	Volume to Capacity Ratio
A	0 - .600
B	.601 to .700
C	.701-.800
D	.801-.900
E	.901-1.000
F	>1.000

Significant Traffic Impacts

Significant impacts of a proposed Project at an intersection must be mitigated to a level of insignificance, where feasible. Determination of potential significant traffic impacts due to the proposed Project is discussed in Section 7 of this report.

2. EXISTING CONDITIONS

This section describes the existing conditions within the study area in terms of roadway facilities, transit service and traffic operating conditions.

2.1 EXISTING ROADWAY SYSTEM

The key roadways within the study area are described here. The discussion is limited to specific roadways that traverse the study intersections and serve the Project site. Figure 3 illustrates the existing traffic controls and approach lane geometries at the study intersections.

Arrow Highway is classified, in the study area vicinity, as a Main Arterial Highway by the City of Irwindale General Plan. This roadway provides two travel lanes in each direction. On-street parking is generally prohibited on both sides of the roadway. The posted speed limit is 45 miles per hour.

Brooks Drive is classified as a Residential Roadway in the City of Baldwin Park General Plan. This roadway provides 1 travel lane in each direction. On-street parking is prohibited on both sides of the roadway west (or north) of Little John Street and permitted on both sides of the roadway east of Little John Street. The prima facie speed limit is 25 miles per hour.

Commerce Drive is classified as a Collector Street in the City of Irwindale General Plan. The roadway provides one lane of travel in each direction. On-street parking is generally prohibited on both sides of the roadway. The posted speed limit is 40 miles per hour.

Little John Street is classified as a Residential Roadway in the City of Baldwin Park General Plan. This roadway provides one travel lane in each direction. On-street parking is permitted on the north half of the roadway (towards Brooks Drive) and prohibited on the south half (towards Los Angeles Street). The posted speed limit is 40 miles per hour.

Live Oak Avenue is classified by the Irwindale General Plan as a Major Arterial east of the junction with Arrow Highway. This roadway generally provides two travel lanes in the westbound direction and three travel lanes in the eastbound direction. On-street parking is generally prohibited on both sides of the roadway. The posted speed limit is 45 miles per hour.

Los Angeles Street/Lower Azusa Road is classified as a Secondary Highway in the City of Irwindale General Plan and as a Collector/Industrial Roadway in the City of Baldwin Park General Plan. This roadway provides two travel lanes in each direction. On-street parking is generally prohibited on both sides of the roadway. The posted speed limit is 45 miles per hour.

Rivergrade Road is classified as a Secondary Highway in the City of Irwindale General Plan. The roadway provides two lanes of travel in each direction. On-street parking is generally prohibited on both sides of the roadway. The posted speed limit ranges from 40 to 50 miles per hour.

Stewart Avenue is classified as a Collector Street in the Irwindale General Plan. This roadway provides two travel lanes in each direction. On-street parking is generally prohibited on both sides of the roadway. The posted speed limit is 30 miles per hour.

2.2 EXISTING TRANSIT SERVICE

The vicinity of the proposed Project site is served by bus transit lines operated by Foothill Transit. Table 2 provides a description of the service provided by these lines.

Table 3 – Existing Transit Service Summary

Agency	Line	From	To	Via	Peak Frequency
Foothill Transit	178	El Monte Bus Station	Puente Hills Mall	Valley Boulevard, Cogswell Road, Lower Azusa Road, Los Angeles Street, West Covina Parkway	28 minutes
Foothill Transit	492	El Monte Bus Station	Montclair Metrolink	Arrow Highway, Live Oak Avenue	19-20 minutes
Foothill Transit	272	Duarte	West Covina Parkway/California Avenue	Buena Vista Street, Arrow Highway, Rivergrade Road, Stewart Avenue, Baldwin Park Blvd	30 minutes

2.3 EXISTING TRAFFIC VOLUMES

Vehicle turning movement counts were collected at the study intersections on April 10th and April 11th of 2019 from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m. Counts included auto and truck counts, with the latter categorized by number of axles. Passenger Car Equivalency (PCE) factors were applied to the truck volumes based on categories of axle numbers – two, three, and four plus.

Existing weekday a.m. peak-hour and p.m. peak-hour traffic turn movement volume count summaries are provided in Appendix B of this report.

2.4 EXISTING INTERSECTION LEVEL OF SERVICE

Based on the intersection lane configurations and the existing traffic volumes, volume-to-capacity ratios and average delay values and corresponding levels of service (LOS) were determined for each of the study intersections during the weekday a.m. and p.m. peak hours.

Table 4 summarizes the volume-to-capacity ratios and LOS values for existing traffic conditions.

Table 4 – Study Intersection Existing Conditions

Study Intersections		Weekday AM		Weekday PM	
		V/C or Delay	LOS	V/C or Delay	LOS
1	I-605 Southbound Off-ramp/Arrow Highway	1.134	F	0.620	B
2	I-605 Northbound On-ramp/Arrow Highway	0.000	-	0.000	-
3	Rivergrade Road/ Arrow Highway	0.723	C	0.625	B
4	Stewart Avenue/ Rivergrade Road	0.337	A	0.356	A
5	I-605 Southbound On-ramp/Live Oak Avenue	0.849	D	1.248	F
6	I-605 Northbound Off-ramps/Live Oak Avenue*	1081.6	F	606.9	F
7	Graham Access Road/ Live Oak Avenue	0.655	B	0.670	B
8	Rivergrade Road/Live Oak Avenue	0.649	B	0.961	E
9	Rivergrade Road/Commerce Drive*	24.1	C	25.1	D
10	Rivergrade Road/Brooks Avenue	0.475	A	0.370	A
11	I-605 Southbound Ramps/Los Angeles Street	0.788	C	0.796	C
12	I-605 Northbound Ramps/Los Angeles Street	0.913	E	0.916	E
13	Little John Street/Los Angeles Street	0.578	A	0.748	C

LOS = Level of Service

V/C= Volume to Capacity Ratio

*Stop-controlled intersections analyzed using the Highway Capacity Manual (HCM) delay-based methodology.

Eight of the 13 study intersections are currently operating at LOS D or better during the weekday a.m. and p.m. peak hours. The following intersections operate at LOS E or F during one or both peak periods:

- I-605 Southbound Off-ramp/Arrow Highway
- I-605 Southbound On-ramp/Live Oak Avenue
- I-605 Northbound Off-ramps/Live Oak Avenue
- Rivergrade Road/Live Oak Avenue
- I-605 Northbound Ramps/Los Angeles Street

The existing traffic volumes for the weekday a.m. and p.m. peak hours are illustrated on Figure 4. The existing traffic analysis scenario worksheets are provided in Appendix C.

FIGURE 3

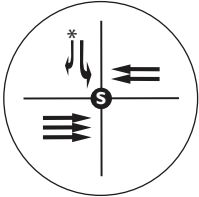
13131 Los Angeles Street EIR Existing Lane Configurations



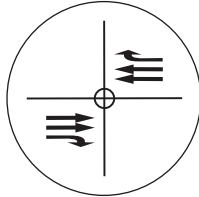
LANE CONFIGURATION

- Signalized Intersection
- Intersection Lane Geometry
- Stop Sign Controlled Intersection
- Stop Sign Location
- Uncontrolled, right-turn only

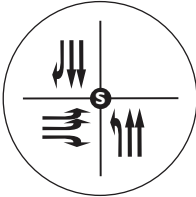
1 I-605 SB Off-ramp & Arrow Highway



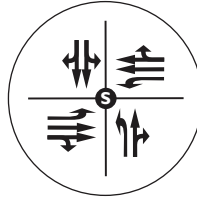
2 I-605 NB On-ramps & Arrow Highway



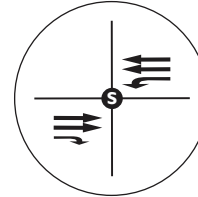
3 Arrow Highway & Rivergrade Road



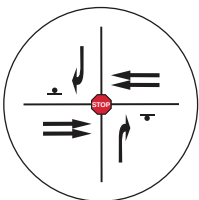
4 Stewart Avenue & Rivergrade Road



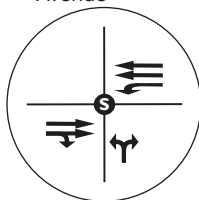
5 I-605 SB On-ramp & Live Oak Avenue



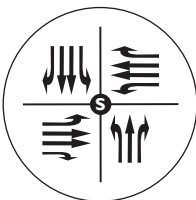
6 I-605 NB Off-ramps & Live Oak Avenue



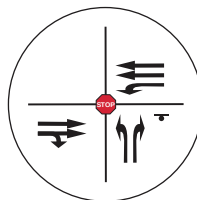
7 Graham Access Road & Live Oak Avenue



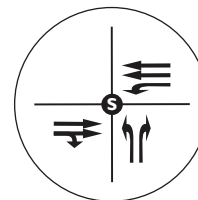
8 Rivergrade Road & Live Oak Avenue



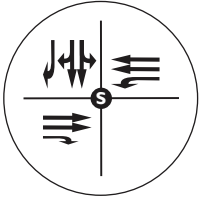
9 Rivergrade Road & Commerce Drive



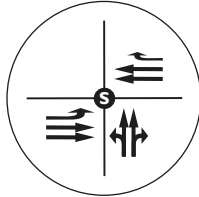
10 Rivergrade Road & Brooks Drive



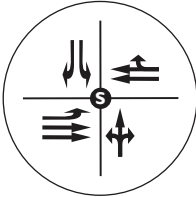
11 I-605 SB Ramps & Lower Azusa Road



12 I-605 NB Ramps & Los Angeles Street



13 Littlejohn Street & Los Angeles Street



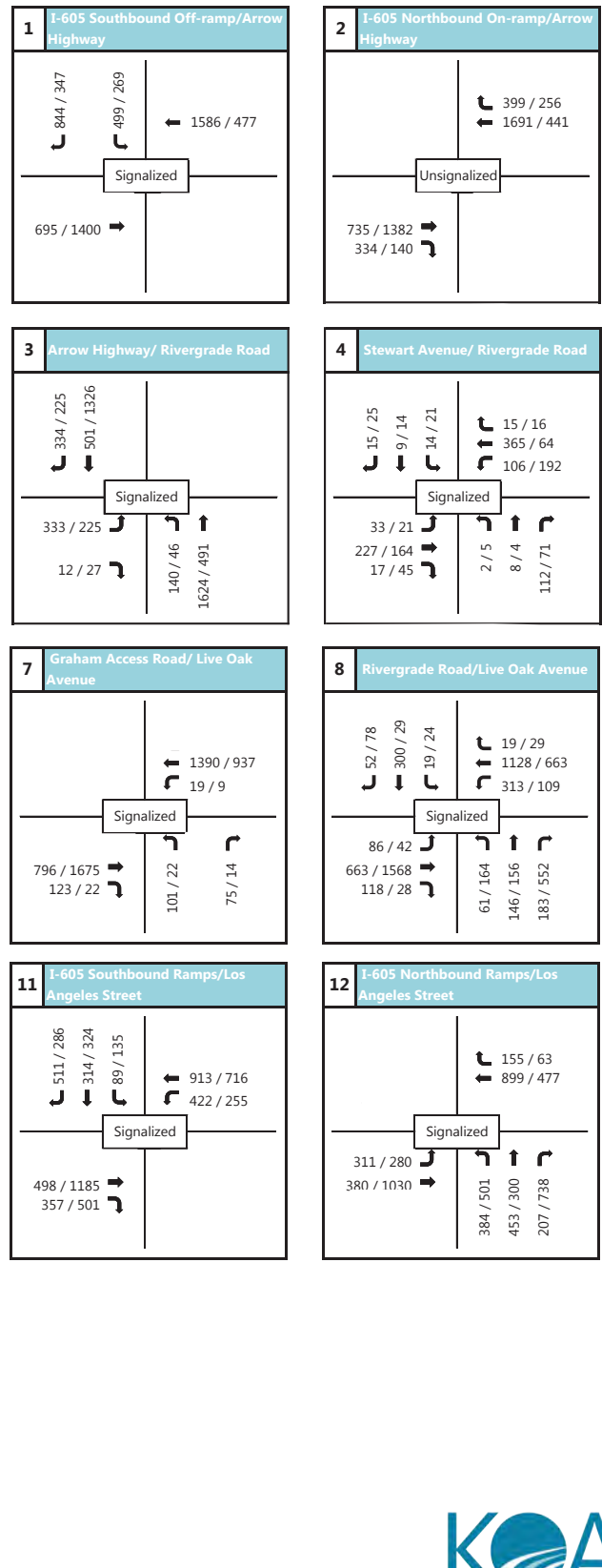
* Small lanes are channelized

FIGURE 4

13131 Los Angeles Street EIR Existing- AM/PM Peak Hour Traffic Volumes



xx/xx AM/PM turning movement volumes



3. PROJECT TRAFFIC

This section defines the traffic that would be generated by the proposed Project in a three-step process including trip generation, trip distribution and trip assignment.

3.1 PROJECT TRIP GENERATION

The proposed Project land use would be an industrial use with 525,000 square feet of total interior floor area. The trip generation of the project was calculated using nationally-accepted rates defined by the Institute of Transportation Engineers (ITE) –*Trip Generation (10th edition)*. The light industrial rate is the highest rate in the larger industrial land use category within the ITE reference, and therefore the application of that rate is more conservative.

Given the site's industrial nature, the trip generation total distinguished between truck trips and passenger car/small commercial vehicle trips. The truck trip percentages (including the breakdown of trucks by number of axles) were taken from a 2003 Truck Trip Generation study conducted by the city of Fontana. Passenger Car Equivalent Rates were applied to the different truck axle categories to determine the amount of passenger car traffic equal to the generated truck traffic (given the trucks' larger size). The passenger car equivalent trips were added to the passenger car/small commercial vehicle trip total to derive the aggregate trip generation.

Credits for a former use at the site were then subtracted from the aggregate trip generation, as the site could potentially be used again with a similar use under current conditions. Information on the previous site use was compiled by the City of Irwindale, and as the use had primarily outdoor operations, floor area calculations would not be accurate. The number of employees that had been assigned to that operation was defined, and served as the basis for trip generation of the previous use. The resulting trip generation calculations were applied as a credit.

The trip generation analysis is provided in Table 5 (on the following page). The proposed Project would generate 3,210 daily trips, including 450 vehicle trips during the a.m. peak hour (301 inbound trips and 149 outbound trips) and 406 vehicle trips during the p.m. peak hour (140 inbound trips and 266 outbound trips).

3.2 PROJECT TRIP DISTRIBUTION

Trip distribution is the process of assigning the directions from which traffic will access the Project site. Trip distribution is dependent upon the land use characteristics of the Project, the local roadway network, and the general locations of other land uses to which Project trips would originate or terminate. Figure 5 illustrates the trip distribution percentages at the study intersections that were used for the traffic impact analysis.

3.3 PROJECT TRIP ASSIGNMENT

Based on the trip generation and distribution assumptions described above, Project traffic was assigned to the roadway system. Figure 6 illustrates the assigned Project trips for the analyzed weekday a.m. and p.m. peak hours.

Table 5 – Project Vehicle Trip Generation

ITE Code	Land Use	Intensity	Units	Weekday						
				Daily	AM Peak Hour		PM Peak Hour			
				Total	Total	In	Out	Total	In	Out
Trip Generation Rates ¹										
110	General Light Industrial, Total	-	KSF	4.96	0.70		0.63			
140	Manufacturing, Total	-	Employees	2.47	0.37	74%	26%	0.33	39%	61%
Trip Generation Totals-New Use										
110	General Light Industrial, Total	525,000	KSF	2,604	368		331			
Trip Generation Rates Trucks ²										
110	General Light Industrial, 2-axle trucks	-	Proportion ¹	0.08	0.08	38%	63%	0.08	67%	33%
110	General Light Industrial, 3-axle trucks	-		0.039	0.039	38%	63%	0.039	67%	33%
110	General Light Industrial, 4+-axle trucks	-		0.095	0.095	38%	63%	0.095	67%	33%
Truck Trips Non-Factored, Removed										
110	General Light Industrial, 2-axle trucks	525,000	KSF	208	29	11	18	26	17	9
110	General Light Industrial, 3-axle trucks	525,000	KSF	102	14	5	9	13	9	4
110	General Light Industrial, 4+-axle trucks	525,000	KSF	247	35	13	22	31	21	10
Truck Trips-Passenger Car Equivalents, Added										
110	General Light Industrial, 2-axle trucks	525,000	KSF	416	58	22	36	52	35	17
110	General Light Industrial, 3-axle trucks	525,000	KSF	255	35	13	22	33	22	11
110	General Light Industrial, 4+-axle trucks	525,000	KSF	741	105	39	66	93	62	31
Trip Generation Rates-Passenger and Small Commercial Vehicles										
110	General Light Industrial, Total	0.000	KSF	See above	See above	88%	12%	See above	13%	87%
Passenger Car and Small Commercial Vehicle Trips Subtotal										
110	General Light Industrial, Total	525,000	KSF	2,047	290	255	35	261	34	227
Gross Project Total		525,000		3,459	488	329	158	439	153	286
Trip Generation Totals Subtracted for Net Total -Former Use										
140	Manufacturing	101	Employees	249	38	28	10	33	13	20
Net Project Total		525,000		3,210	450	301	149	406	140	266

Passenger Car Equivalent factors applied were 2.0 for 2 axle trucks, 2.5 for 3-axle trucks and 3.00 for 4+ axle trucks.

1. Total Peak hour and Daily trip generation and passenger/small commercial category entry and exit percentages derived from 10th Edition ITE Trip Generation Manual.

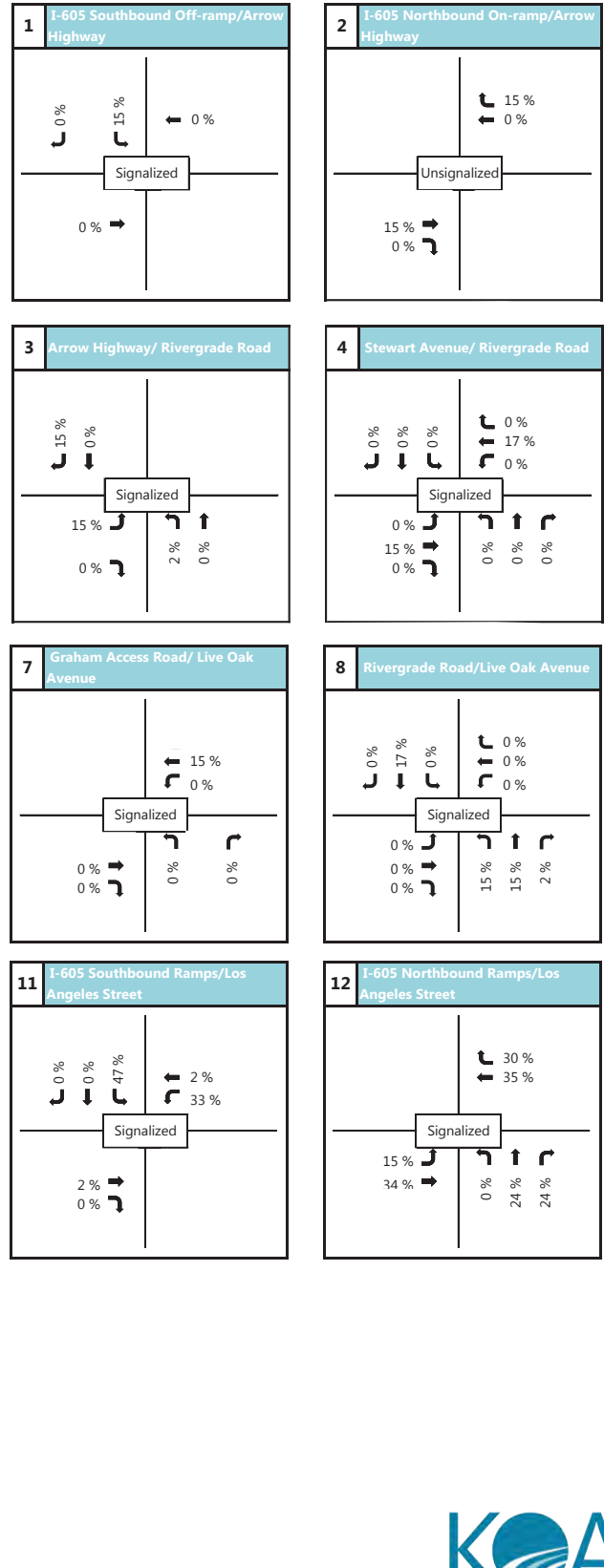
2. Applies truck percentages of total traffic taken from City of Fontana Truck Trip Generation Study, Dated August 2003.

FIGURE 5

13131 Los Angeles Street EIR Project Trip Distribution



xx% Project Trip Distribution



4. EXISTING WITH PROJECT CONDITIONS

This section documents existing traffic conditions at the study intersections with the addition of Project-generated traffic. Traffic volumes for these conditions were derived by adding Project trips to the existing traffic volumes.

Table 6 summarizes the resulting V/C, Vehicle Delay and LOS values at the study intersections for the existing with-Project conditions. The traffic analysis worksheets for this scenario are provided in Appendix D of this report.

Table 6 – Study Intersection Existing With-Project Conditions

Study Intersections		Weekday AM		Weekday PM	
		V/C or Delay	LOS	V/C or Delay	LOS
1	I-605 Southbound Off-ramp/Arrow Highway	1.134	F	0.620	B
2	I-605 Northbound On-ramp/Arrow Highway	0.000	-	0.000	-
3	Rivergrade Road/ Arrow Highway	0.730	C	0.639	B
4	Stewart Avenue/ Rivergrade Road	0.350	A	0.369	A
5	I-605 Southbound On-ramp/Live Oak Avenue	0.862	D	1.273	F
6	I-605 Northbound Off-ramps/Live Oak Avenue*	1129.3	F	606.9	F
7	Graham Access Road/ Live Oak Avenue	0.662	B	0.670	B
8	Rivergrade Road/Live Oak Avenue	0.679	B	0.964	E
9	Rivergrade Road/Commerce Drive*	27.4	D	30.8	D
10	Rivergrade Road/Brooks Avenue	0.490	A	0.397	A
11	I-605 Southbound Ramps/Los Angeles Street	0.849	D	0.866	D
12	I-605 Northbound Ramps/Los Angeles Street	1.002	F	0.980	E
13	Little John Street/Los Angeles Street	0.581	A	0.750	C

LOS = Level of Service

V/C= Volume to Capacity Ratio

*Stop-controlled intersections analyzed using the Highway Capacity Manual (HCM) delay-based methodology.

Eight of the 13 study intersections would continue to operate at LOS D or better during the weekday a.m. and p.m. peak hours. The following study intersections would operate at LOS values of E or F during either peak period:

- I-605 Southbound Off-ramp/Arrow Highway
- I-605 Southbound On-ramp/Live Oak Avenue
- I-605 Northbound Off-ramps/Live Oak Avenue
- Rivergrade Road/Live Oak Avenue
- I-605 Northbound Ramps/Los Angeles Street

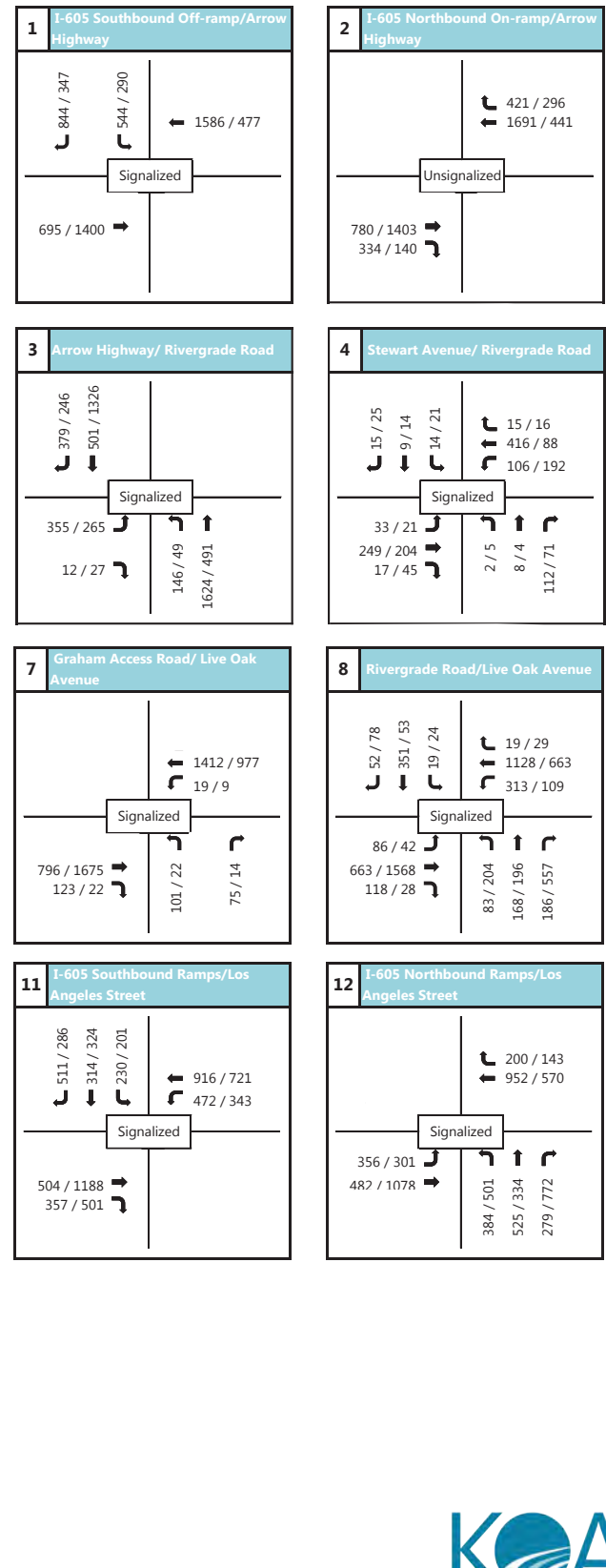
The existing with-Project traffic volumes for the weekday a.m. and p.m. peak hours are illustrated in Figure 7.

FIGURE 7

13131 Los Angeles Street EIR Existing with Project - AM/PM Peak Hour Traffic Volumes



xx/xx AM/PM turning movement volumes



5. FUTURE WITHOUT PROJECT CONDITIONS

This section provides an analysis of future traffic conditions in the study area with area/related project trips and background growth added, but without Project traffic. The proposed Project is anticipated to be completed within the year 2021, and this defines the future analysis year.

5.1 AMBIENT GROWTH

In order to acknowledge regional population and employment growth outside of the study area, an ambient traffic growth rate was applied to the existing traffic counts. An annual growth rate of two percent was used for this analysis.

5.2 AREA PROJECTS

In addition to the application of the ambient traffic growth rate, traffic from related/area projects (approved and pending developments) was included as part of the year-2021 analysis. A total of 22 projects were identified for inclusion in the traffic impact analysis. These include 13 related projects in the City of Irwindale, five related projects in the City of El Monte, and four related projects in the City of Baldwin Park.

Table 8 provides the trip generation estimates for the related/area projects. Their locations are illustrated on Figure 8.

Table 7 – Area Projects Trip Generation Estimate

No.	Project Name	Address	City	Land Use	Intensity	Units	Daily	AM Peak Hour			PM Peak Hour		
								Rate	% In	% Out	Rate	% In	% Out
1	Manning Pit	5175 Vincent Avenue	Irwindale	General Light Industrial	545,735	KSF	2,707	382	336	46	344	45	299
2	The Park @ Live Oak	1200 Arrow Highway	Irwindale	General Light Industrial	1,451,400	KSF	7,199	1,016	894	122	914	119	795
			Irwindale	Shopping Center	98,600	KSF	3,722	93	58	35	376	180	196
3	Panattoni	16203-16233 Arrow Highway	Irwindale	General Light Industrial	130,366	KSF	647	91	80	11	82	11	71
4	Panattoni	242 Live Oak Avenue	Irwindale	General Light Industrial	85,400	KSF	424	60	53	7	54	7	47
5	Ayala Industrial Bldg.	5589 Ayala Avenue	Irwindale	General Light Industrial	80,000	KSF	397	56	49	7	50	7	43
6	Irwindale Med. Clinic	15768 Arrow Highway	Irwindale	Medical/Dental Office	13,300	KSF	463	37	29	8	46	13	33
7	Wendy's Restaurant	15768 Arrow Highway	Irwindale	Fast-Food with Drive-Thru Window	2,300	KSF	1,083	92	47	45	75	39	36
8	Kaiser Med. Office Bldg.	12761 Schabarum Avenue	Irwindale	Medical/Dental Office	90,000	KSF	3,132	250	195	55	311	87	224
9	Reliance II	15990 Foothill Boulevard	Irwindale	General Light Industrial	1,853,000	KSF	9,191	1,297	1,141	156	1,167	152	1,015
			Irwindale	Shopping Center	10,000	KSF	378	9	6	3	38	18	20
10	City of Hope	1500 E. Duarte Road	Irwindale	Medical/Dental Office	108,804	KSF	3,786	302	236	66	376	105	271
11	Tentative Tract Map 82190	2424 & 2428 Mountain Avenue	Irwindale	Single-Family Homes	7.0	Dwelling Units	66	5	1	4	7	4	3
12	Tentative Parcel Map 82188	4826 Baca Avenue	Irwindale	Single-Family Homes	4.0	Dwelling Units	38	3	1	2	4	3	1
13	Tentative Parcel Map 82189	5134 Irwindale Avenue	Irwindale	Single-Family Homes	2.0	Dwelling Units	19	1	0	1	2	1	1
14	22-unit single-family subdivision	4422-4436 Bannister Street	El Monte	Single-Family Homes	22.0	Dwelling Units	208	16	4	12	22	14	8
15	3 new single-family units	5229 Hammill Road	El Monte	Single-Family Homes	3.0	Dwelling Units	28	2	1	1	3	2	1
16	3 2,747 Square foot res units on	11646 Lower Azusa Road	El Monte	Single-Family Homes	3.0	Dwelling Units	28	2	1	1	3	2	1
17	5-unit PUD and one common private	11830 Lambert Avenue	El Monte	Single-Family Homes	5.0	Dwelling Units	47	4	1	3	5	3	2
18	5-detached 2-story res units	11613 Rio Hondo Parkway	El Monte	Single-Family Homes	5.0	Dwelling Units	47	4	1	3	5	3	2
19	23 unit condominium	14751 Badillo Street	Baldwin Park	Multifamily Housing (Mid-Rise)	23.0	Dwelling Units	125	8	2	6	10	6	4
20	97,945 sq ft, 10 unit industrial warehouse condominium	5119 Azusa Canyon Rd	Baldwin Park	General Light Industrial	97,945	KSF	486	69	61	8	62	8	54
21	15 single family residential	15138 Nubia Street	Baldwin Park	Single-Family Homes	15.0	Dwelling Units	142	11	3	8	15	9	6
22	5 unit condominium	4232 LA Rica Avenue	Baldwin Park	Multifamily Housing (Low Rise)	5.0	Dwelling Units	37	2	0	2	3	2	1
Total							34,400	3,812	3,200	612	3,974	840	3,134

The related project volumes figures for the weekday a.m. and p.m. peak hours are also provided on Figure 9.

5.3 FUTURE WITHOUT PROJECT INTERSECTION LEVEL OF SERVICE

The future without-Project traffic volumes for the weekday a.m. and p.m. peak hours are illustrated on Figure 10.

Table 8 summarizes the V/C, Vehicle Delay and LOS values at the study intersections under this scenario. The traffic analysis worksheets for this scenario are provided in Appendix E of this report.

Table 8 – Study Intersection Future without-Project Conditions

Study Intersections	Weekday AM		Weekday PM	
	V/C or Delay	LOS	V/C or Delay	LOS
1 I-605 Southbound Off-ramp/Arrow Highway	1.365	F	0.764	C
2 I-605 Northbound On-ramp/Arrow Highway	0.000	-	0.000	-
3 Rivergrade Road/ Arrow Highway	0.748	C	0.646	B
4 Stewart Avenue/ Rivergrade Road	0.346	A	0.367	A
5 I-605 Southbound On-ramp/Live Oak Avenue	0.935	E	1.614	F
6 I-605 Northbound Off-ramps/Live Oak Avenue*	3409.4	F	1033.8	F
7 Graham Access Road/ Live Oak Avenue	0.685	B	0.700	B
8 Rivergrade Road/Live Oak Avenue	0.700	B	1.003	F
9 Rivergrade Road/Commerce Drive*	26.0	D	27.5	D
10 Rivergrade Road/Brooks Avenue	0.490	A	0.380	A
11 I-605 Southbound Ramps/Los Angeles Street	0.827	D	0.850	D
12 I-605 Northbound Ramps/Los Angeles Street	0.965	E	0.969	E
13 Little John Street/Los Angeles Street	0.586	A	0.752	C

LOS = Level of Service

V/C= Volume to Capacity Ratio

*Stop-controlled intersections analyzed using the Highway Capacity Manual (HCM) delay-based methodology.

Eight of the 13 study intersections would continue to operate at LOS D or better during the weekday a.m. and p.m. peak hours. The following study intersections would continue to operate at poor LOS values of E or F during either peak period:

- I-605 Southbound Off-ramp/Arrow Highway
- I-605 Southbound On-ramp/Live Oak Avenue
- I-605 Northbound Off-ramps/Live Oak Avenue
- Rivergrade Road/Live Oak Avenue
- I-605 Northbound Ramps/Los Angeles Street

FIGURE 8

13131 Los Angeles Street EIR

Location of Related Area Projects

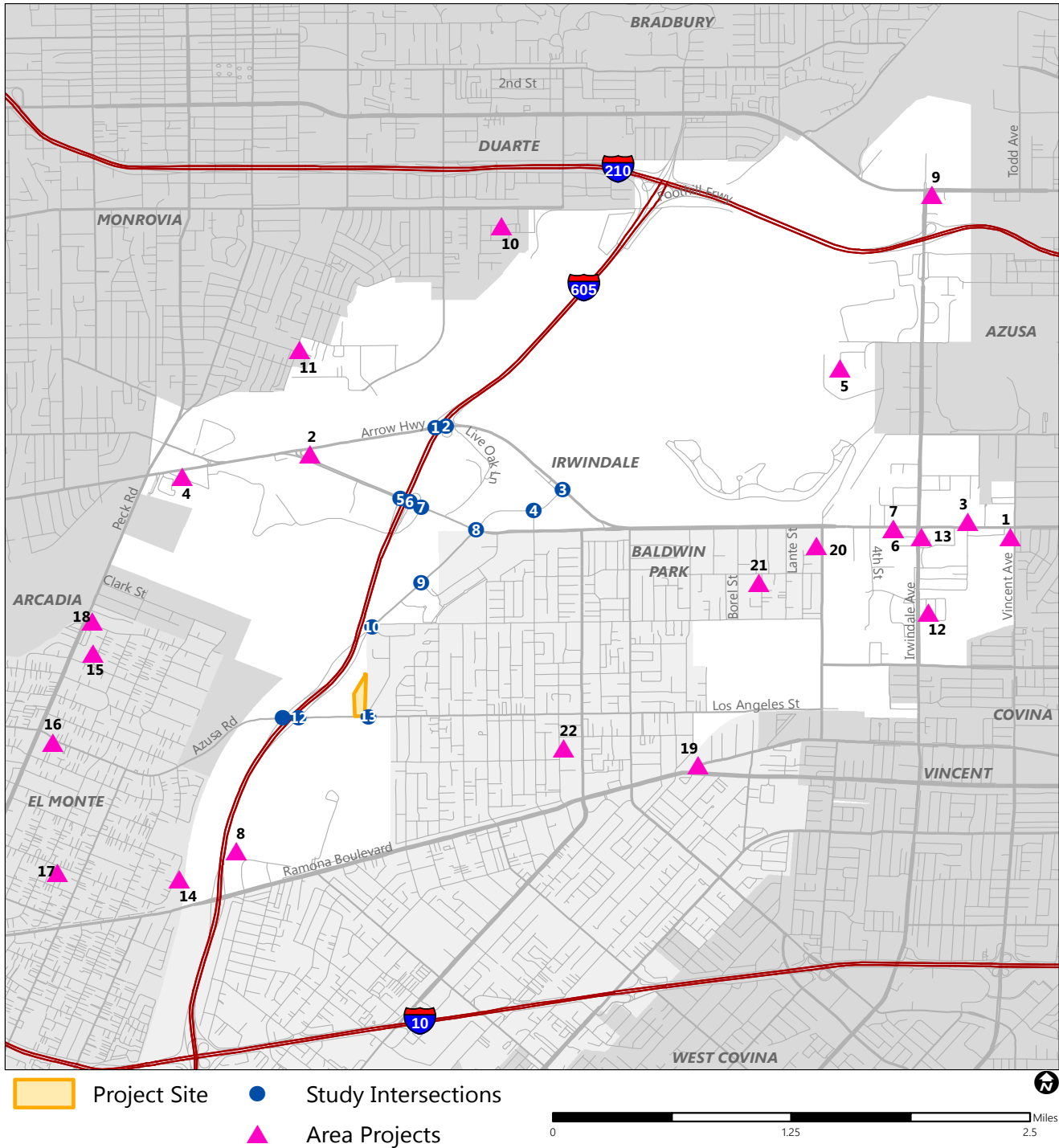


FIGURE 9

13131 Los Angeles Street EIR Area Projects Trip Assignment - AM/PM Peak Hour



xx/xx AM/PM turning movement volumes

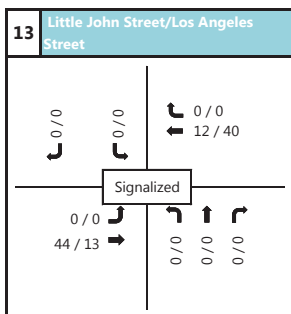
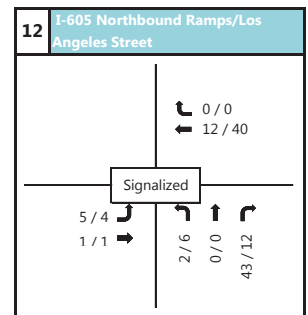
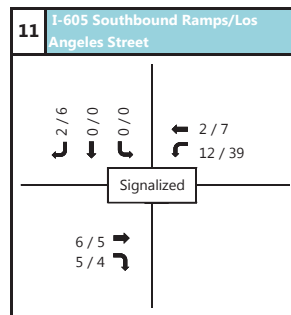
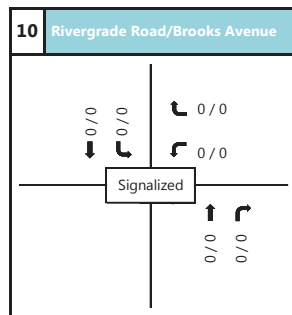
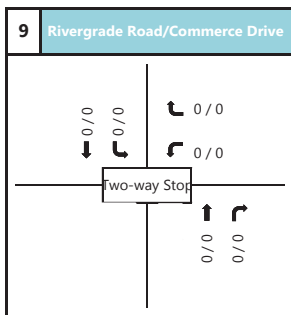
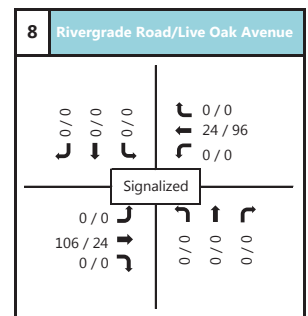
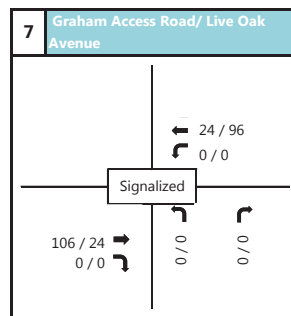
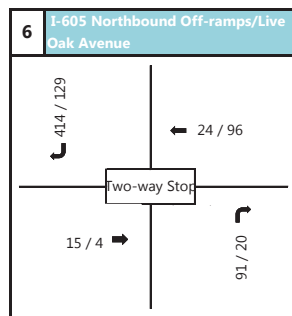
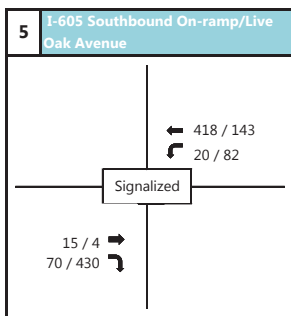
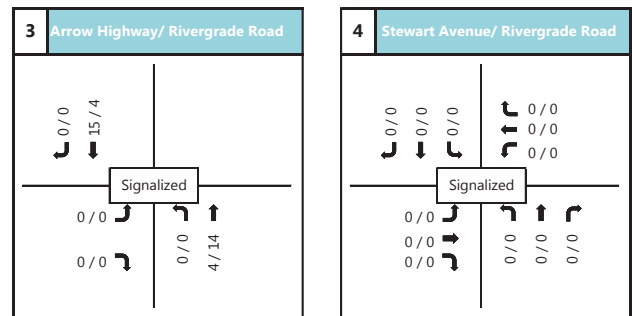
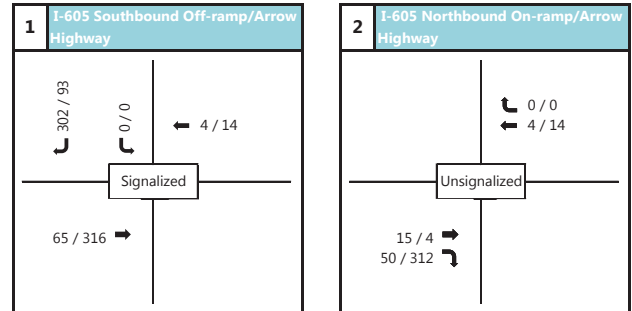
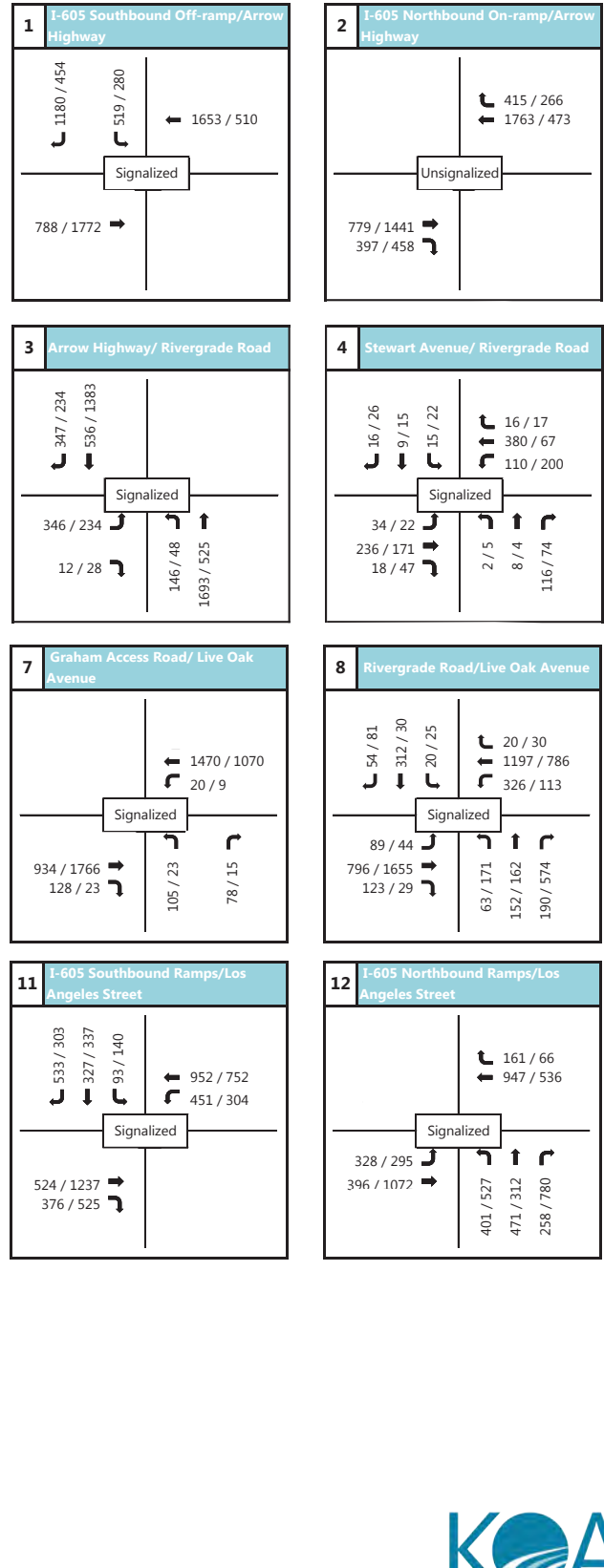


FIGURE 10

13131 Los Angeles Street EIR Future without Project- AM/PM Peak Hour Traffic Volumes



xx/xx AM/PM turning movement volumes



6. FUTURE WITH PROJECT CONDITIONS

This section documents future traffic conditions at the study intersections with the addition of Project-generated traffic. Traffic volumes for these conditions were derived by adding Project trips to the future without-Project scenario volumes.

Table 9 summarizes the resulting V/C (or delay) and LOS values at the study intersections for the future with-Project traffic conditions. The future with-Project traffic analysis worksheets are provided in Appendix F of this report.

Table 9 – Study Intersection Future with-Project Conditions

Study Intersections		Weekday AM		Weekday PM	
		V/C or Delay	LOS	V/C or Delay	LOS
1	I-605 Southbound Off-ramp/Arrow Highway	1.365	F	0.764	C
2	I-605 Northbound On-ramp/Arrow Highway	0.000	-	0.000	-
3	Rivergrade Road/ Arrow Highway	0.755	C	0.661	B
4	Stewart Avenue/ Rivergrade Road	0.359	A	0.379	A
5	I-605 Southbound On-ramp/Live Oak Avenue	0.949	E	1.639	F
6	I-605 Northbound Off-ramps/Live Oak Avenue*	3496.9	F	1119.2	F
7	Graham Access Road/ Live Oak Avenue	0.692	B	0.700	B
8	Rivergrade Road/Live Oak Avenue	0.730	C	1.006	F
9	Rivergrade Road/Commerce Drive*	29.9	D	34.6	D
10	Rivergrade Road/Brooks Avenue	0.505	A	0.407	A
11	I-605 Southbound Ramps/Los Angeles Street	0.887	D	0.920	E
12	I-605 Northbound Ramps/Los Angeles Street	1.055	F	1.032	F
13	Little John Street/Los Angeles Street	0.589	A	0.755	C

LOS = Level of Service

V/C= Volume to Capacity Ratio

*Stop-controlled intersections analyzed using the Highway Capacity Manual (HCM) delay-based methodology.

Seven of the 13 study intersections would continue to operate at LOS D or better during the weekday a.m. and p.m. peak hours. The following six study intersections would operate at LOS E or F during either peak period:

- I-605 Southbound Off-ramp/Arrow Highway
- I-605 Southbound On-ramp/Live Oak Avenue
- I-605 Northbound Off-ramps/Live Oak Avenue
- Rivergrade Road/Live Oak Avenue
- I-605 Southbound Ramps/Los Angeles Street
- I-605 Northbound Ramps/Los Angeles Street

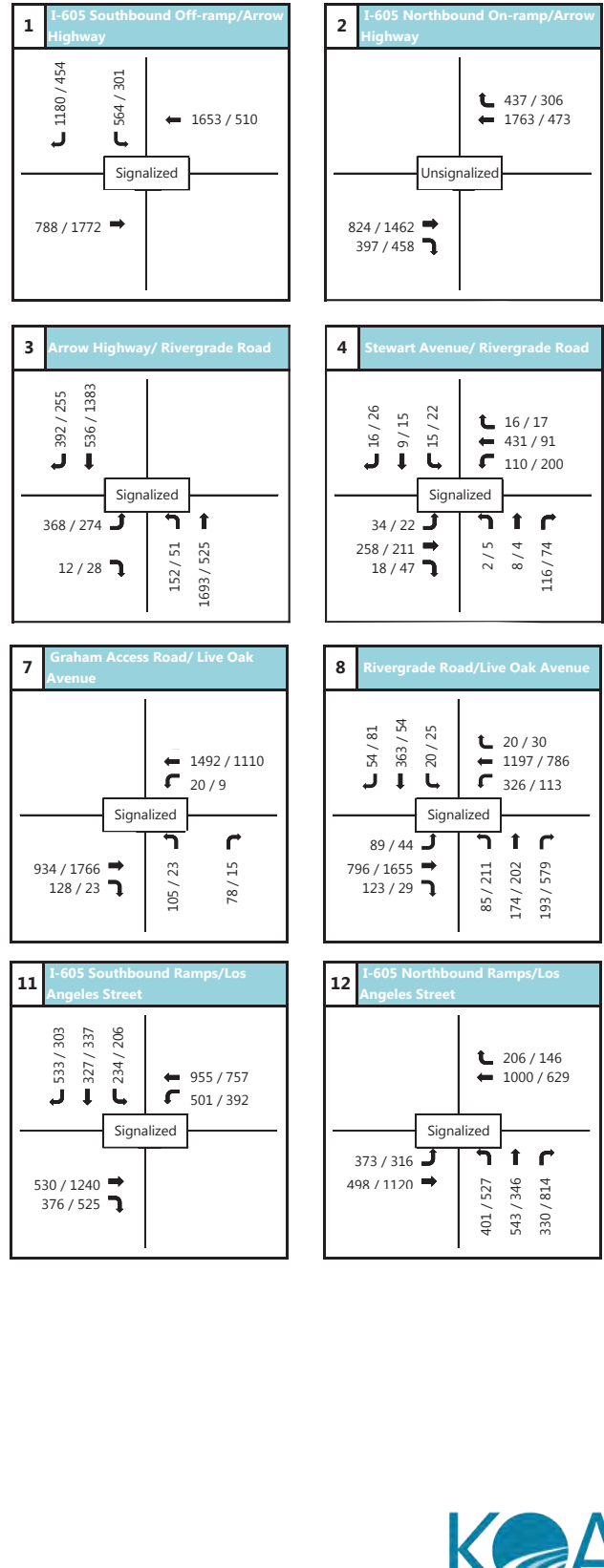
The future with-Project traffic volumes for the weekday a.m. and p.m. peak hours are illustrated on Figure 11.

FIGURE 11

13131 Los Angeles Street EIR Future with Project- AM/PM Peak Hour Traffic Volumes



xx/xx AM/PM turning movement volumes



7. PROJECT TRAFFIC IMPACTS

7.1 DETERMINATION OF TRAFFIC IMPACTS

Traffic impacts are identified if a proposed development will result in a significant change in traffic conditions at a study intersection. A significant impact is typically identified if Project-related traffic will cause service levels to deteriorate beyond a threshold limit specified by the overseeing agency.

The traffic study guidelines of the City of Irwindale define significant impacts based on pre-project levels of service. If an intersection operates at an LOS value of D or lower under existing or future-without-project conditions, an impact occurs where the project causes operations to depreciate to LOS E or F.

When pre-project operations are at LOS E, deterioration of traffic to LOS F, or an increase of the V/C ratio greater than or equal to .02 at signalized intersections, causes a significant impact. When pre-project conditions are at LOS F at a signalized intersection, then the addition of 50 or more project trips causing an increase in the V/C ratio greater than or equal to .02 is considered significant. For un-signalized intersections operating at LOS F in pre-project conditions, the worsening of total control delay to more than four or five seconds per vehicle (for a single- or multi-lane approach), or the addition of 50 or more vehicle trips to an intersection where total control delay already exceeds these values, creates a significant impact.

These thresholds are summarized below.

Pre-project Level of Service	Impact Threshold	
	Signalized Intersections	Un-Signalized Intersections
A through D	LOS E or F	
E	(1). LOS F (2). V/C increase of at least .02	LOS F
F	Addition of more than 50 project trips and an increase in V/C of .02 or greater.	(1). Project trips cause total control delay of minor-street approach to increase to more than 4.0 seconds per vehicle for a single lane approach or 5.0 seconds per vehicle for a multi-lane approach. (2). Addition of more than 50 project trips when total control delay exceeds 4.0 seconds per vehicle (for single-lane approach) or 5.0 seconds per vehicle (for multi-lane approach).

V/C= Volume-to-Capacity Ratio

Source: Irwindale Traffic Study Guidelines, August 2014

7.2 PROJECT TRAFFIC IMPACTS – EXISTING PLUS PROJECT

Table 10 provides a summary of the Project impacts under existing conditions. Traffic impacts created by the proposed Project were determined by comparing the existing scenario conditions to the existing with-Project scenario conditions.

The proposed Project would create significant traffic impacts at the following study intersection:

- 12. I-605 Northbound Ramps/Los Angeles Street

Table 10 – Determination of Project Impacts – Existing plus-Project Conditions

Study Intersections	Peak Hour	Existing (2018) Condition		Existing (2018) + Project		Change in V/C or Delay	Added Project Trips	Sig Impact?
		V/C or Delay	LOS	V/C or Delay	LOS			
1 I-605 Southbound Off-ramp/Arrow Highway	Weekday AM	1.134	F	1.134	F	-	45	No
	Weekday PM	0.620	B	0.620	B	-	21	No
2 I-605 Northbound On-ramp/Arrow Highway	Weekday AM	0.000	-	0.000	-	-	67	No
	Weekday PM	0.000	-	0.000	-	-	61	No
3 Rivergrade Road/ Arrow Highway	Weekday AM	0.723	C	0.730	C	0.007	73	No
	Weekday PM	0.625	B	0.639	B	0.014	64	No
4 Stewart Avenue/ Rivergrade Road	Weekday AM	0.337	A	0.350	A	0.013	73	No
	Weekday PM	0.356	A	0.369	A	0.013	64	No
5 I-605 Southbound On-ramp/Live Oak Avenue	Weekday AM	0.849	D	0.862	D	0.013	22	No
	Weekday PM	1.248	F	1.273	F	0.025	40	No
6 I-605 Northbound Off-ramps/Live Oak Avenue*	Weekday AM	1081.6	F	1129.3	F	47.700	22	No
	Weekday PM	606.9	F	606.9	F	-	40	No
7 Graham Access Road/ Live Oak Avenue	Weekday AM	0.655	B	0.662	B	0.007	22	No
	Weekday PM	0.670	B	0.670	B	-	40	No
8 Rivergrade Road/Live Oak Avenue	Weekday AM	0.649	B	0.679	B	0.030	98	No
	Weekday PM	0.961	E	0.964	E	0.003	109	No
9 Rivergrade Road/Commerce Drive*	Weekday AM	24.1	C	27.4	D	3.3	98	No
	Weekday PM	25.1	D	30.8	D	5.7	109	No
10 Rivergrade Road/Brooks Avenue	Weekday AM	0.475	A	0.490	A	0.015	98	No
	Weekday PM	0.370	A	0.397	A	0.027	109	No
11 I-605 Southbound Ramps/Los Angeles Street	Weekday AM	0.788	C	0.849	D	0.061	200	No
	Weekday PM	0.796	C	0.866	D	0.070	162	No
12 I-605 Northbound Ramps/Los Angeles Street	Weekday AM	0.913	E	1.002	F	0.089	389	Yes
	Weekday PM	0.916	E	0.980	E	0.064	310	Yes
13 Little John Street/Los Angeles Street	Weekday AM	0.578	A	0.581	A	0.003	13	No
	Weekday PM	0.748	C	0.750	C	0.002	12	No

LOS = Level of Service

*Two-way stop intersection, with analysis based on HCM methodology. Values denote vehicle delay in seconds

The evaluation of the control delay significance threshold for un-signalized intersections, under existing with project conditions, is provided in Table 11.

Table 11 – Worst-Approach Control Delay (Seconds per Vehicle), Existing plus Project Scenario

Intersections	Peak Hour	Vehicles on Worst Approach	Worst-Approach Delay	Delay (seconds) per Vehicle	Significance Threshold (seconds)	Exceeds Threshold?
6 I-605 Northbound Off-ramps/Live Oak Avenue*	AM	613	1,129.3	1.8	4.0	No
	PM	660	606.9	0.9		No
9 Rivergrade Road/Commerce Drive*	AM	94	25.8	0.3	5.0	No
	PM	174	25.0	0.1		No

7.3 PROJECT TRAFFIC IMPACTS – FUTURE WITH PROJECT

Table 12 provides a summary of the Project impacts under future conditions. Traffic impacts created by the Project were determined by comparing the future without-Project conditions to the future with-Project conditions.

The proposed Project would create significant peak-hour traffic impacts at two of the 13 study intersections:

- 11. I-605 Southbound Ramps/Los Angeles Street
- 12. I-605 Northbound Ramps/Los Angeles Street

**Table 12 – Determination of Project Impacts –
Future with-Project Conditions**

	Study Intersections	Peak Hour	Future (2020) No Project		Future (2020) With Project		Change in V/C	Added Project Trips	Sig Impact?
			V/C or Delay	LOS	V/C or Delay	LOS			
1	I-605 Southbound Off-ramp/Arrow Highway	Weekday AM	1.365	F	1.365	F	-	45	No
		Weekday PM	0.764	C	0.764	C	-	21	No
2	I-605 Northbound On-ramp/Arrow Highway	Weekday AM	0.000	-	0.000	-	-	67	No
		Weekday PM	0.000	-	0.000	-	-	61	No
3	Rivergrade Road/ Arrow Highway	Weekday AM	0.748	C	0.755	C	0.007	73	No
		Weekday PM	0.646	B	0.661	B	0.015	64	No
4	Stewart Avenue/ Rivergrade Road	Weekday AM	0.346	A	0.359	A	0.013	73	No
		Weekday PM	0.367	A	0.379	A	0.012	64	No
5	I-605 Southbound On-ramp/Live Oak Avenue	Weekday AM	0.935	E	0.949	E	0.014	22	No
		Weekday PM	1.614	F	1.639	F	0.025	40	No
6	I-605 Northbound Off-ramps/Live Oak Avenue*	Weekday AM	3409.4	F	3496.9	F	87.5	22	No
		Weekday PM	1033.8	F	1119.2	F	85.4	40	No
7	Graham Access Road/ Live Oak Avenue	Weekday AM	0.685	B	0.692	B	0.007	22	No
		Weekday PM	0.700	B	0.700	B	-	40	No
8	Rivergrade Road/Live Oak Avenue	Weekday AM	0.700	B	0.730	C	0.030	98	No
		Weekday PM	1.003	F	1.006	F	0.003	109	No
9	Rivergrade Road/Commerce Drive*	Weekday AM	26.0	D	29.9	D	3.9	98	No
		Weekday PM	27.5	D	34.6	D	7.1	109	No
10	Rivergrade Road/Brooks Avenue	Weekday AM	0.490	A	0.505	A	0.015	98	No
		Weekday PM	0.380	A	0.407	A	0.027	109	No
11	I-605 Southbound Ramps/Los Angeles Street	Weekday AM	0.827	D	0.887	D	0.060	200	No
		Weekday PM	0.850	D	0.920	E	0.070	162	Yes
12	I-605 Northbound Ramps/Los Angeles Street	Weekday AM	0.965	E	1.055	F	0.090	389	Yes
		Weekday PM	0.969	E	1.032	F	0.063	310	Yes
13	Little John Street/Los Angeles Street	Weekday AM	0.586	A	0.589	A	0.003	13	No
		Weekday PM	0.752	C	0.755	C	0.003	12	No

LOS = Level of Service

*Two-way stop intersection, with analysis based on HCM methodology. Values denote vehicle delay in seconds

The evaluation of the control delay significance threshold for un-signalized intersections, under existing with project conditions, is provided in Table 11

Table 13 – Worst-Approach Control Delay (Seconds per Vehicle), Future plus Project Scenario

	Intersections	Peak Hour	Vehicles on Worst Approach	Worst-Approach Delay	Delay (seconds) per Vehicle	Significance Threshold (seconds)	Exceeds Threshold?
6	I-605 Northbound Off-ramps/Live Oak Avenue	AM	1052	3,496.9	3.3	4.0	No
		PM	749	1,119.2	1.5		No
9	Rivergrade Road/Commerce Drive	AM	97	28.1	0.3	5.0	No
		PM	181	27.7	0.2		No

7.4 INTERSECTION MITIGATION MEASURES ANALYSIS

For the significantly-impacted intersections, potential mitigation measures were analyzed. These locations are both located within the same interchange, and are intersections of Los Angeles Street and I-605 freeway off-ramps.

It was determined from a review of geometric details and traffic controls at these locations that the best mitigation measures would be the addition of lanes to the freeway off-ramps at both locations. These improvements would require widening of the off-ramp facilities. At the southbound off-ramp location, intersection 11, the recommended mitigation measure is an added left-turn lane at the ramp approach. At the northbound off-ramp location, intersection 12, the recommended mitigation measure is an added right-turn lane at the ramp approach.

The effects of these mitigation measures on impact significance is reviewed in table 14 (existing plus-Project conditions) and Table 15 (future with-Project conditions).

Fair-share improvement percentages for the significantly-impacted intersections are reviewed in the next report sub-section.

**Table 14 – Mitigation Measure Analysis–
Existing plus-Project Conditions**

Study Intersections		Peak Hour	Existing (2018) Condition		Existing (2018) + Project + Mitig		Change in V/C	Sig Impact?
			V/C or Delay	LOS	V/C or Delay	LOS		
12	I-605 Northbound Ramps/Los Angeles Street	Weekday AM	0.913	E	0.915	E	0.002	No
		Weekday PM	0.916	E	0.812	D	-0.104	No

**Table 15 – Mitigation Measure Analysis–
Future with-Project Conditions**

Study Intersections		Peak Hour	Future (2020) No Project		Future (2018) + Project + Mitig		Change in V/C	Sig Impact?
			V/C or Delay	LOS	V/C or Delay	LOS		
11	I-605 Southbound Ramps/Los Angeles Street	Weekday AM	0.827	D	0.838	D	0.011	No
		Weekday PM	0.850	D	0.877	D	0.027	No
12	I-605 Northbound Ramps/Los Angeles Street	Weekday AM	0.965	E	0.952	E	-0.013	No
		Weekday PM	0.969	E	0.857	D	-0.112	No

The analyzed mitigation measures would fully mitigate the identified impacts at both study intersections, under both existing plus-Project and future with-Project conditions.

7.5 FAIR-SHARE VOLUME ANALYSIS

City of Irwindale traffic study guidelines require a fair-share volume analysis at significantly-impacted study locations. The identified Project significant impacts occur at the two intersections of Los Angeles Street with the I-605 freeway ramps. The fair-share percentages for these locations were based on the following formula within the guidelines:

$$\text{project volumes/existing with-project volumes}$$

The volumes used for this calculation are peak-hour, and both the AM and PM peak conditions were analyzed. The fair-share percentages for the two intersections for both peak hours are as follows:

I-605 Southbound Ramps/Los Angeles Street

- AM peak hour: 200 project trips / 3,304 existing with-project trips = 6.1 percent
- PM peak hour: 162 project trips / 3,564 existing with-project trips = 4.6 percent

I-605 Northbound Ramps/Los Angeles Street

- AM peak hour: 389 project trips / 3,178 existing with-project trips = 12.2 percent
- PM peak hour: 310 project trips / 3,699 existing with-project trips = 8.4 percent

7.6 DRIVEWAY SIGNAL WARRANT FOR FUTURE WITH PROJECT CONDITIONS

A traffic signal warrant analysis was conducted at the intersection of the main Project site driveway with Los Angeles Street. A warrant analysis, determines if requirements would be met for a new traffic signal. The analysis was based on that prescribed by the Manual on Uniform Traffic Control Devices (MUTCD), published by the Federal Highway Administration and amended for use in California by Caltrans.

The analyzed post-Project peak-hour traffic volumes from the trip generation and distribution analysis were applied to the driveway inbound and outbound volumes, and analyzed volumes from the nearby Little John intersections were applied to the eastbound and westbound traffic flows on Los Angeles Street.

Inputs to the analysis included the roadway lane configurations and post-project vehicle turning movement volumes. The following signal warrant guideline defines the minimum criteria for the potential installation of a traffic control signal based on peak-hour volumes.

- Warrant 3 - Peak Hour Volume – Determine that for one hour of the day minor street traffic operates with undue delay in entering or crossing the major street. Part A - Total volume and vehicle hours of delay on the minor approach. Part B – Peak-hour volumes of both approaches of the major street and highest approach of the minor street. Warrant 3 is met if Part A or Part B is met.

As the MUTCD recommends that engineering judgment be considered, the City engineer would make the final determination on the traffic control change, whether warrants are met or not.

For post-project conditions, the peak-hour volumes along Los Angeles Street are 1,894 vehicles during the weekday AM peak hour and 2,450 vehicles during the PM peak hour. The driveway volume would be 102 vehicles in the AM peak hour and 181 vehicles in the PM peak hour.

Based on the analyzed data, Part A would not be satisfied (as the number of vehicle-hours of minor approach delay falls below the threshold). However, the peak-hour volumes indicated on the chart (Part B) would be satisfied, as the a.m. and p.m. peak-hour points fall above the minimum threshold curve. Therefore, the peak-hour volume warrant would be satisfied at this location under post-Project conditions.

The warrant worksheets and graph for this study intersection is provided in Appendix L.

8. CONGESTION MANAGEMENT PROGRAM AND FREEWAY FACILITY IMPACTS

This section demonstrates the ways in which this traffic study was prepared to be in conformance with the procedures mandated by the County of Los Angeles Congestion Management Program (CMP). An analysis was also conducted of potential freeway impacts per Caltrans impact standards.

The CMP was created statewide because of Proposition 111 and was implemented locally by the Los Angeles County Metropolitan Transportation Authority (Metro). The CMP for Los Angeles County requires that the traffic impact of individual development projects of potentially regional significance be analyzed. A specific system of arterial roadways plus all freeways comprises the CMP system. Per CMP Transportation Impact Analysis (TIA) Guidelines, a traffic impact analysis is conducted where:

- At CMP arterial monitoring intersections, including freeway on-ramps or off-ramps, where the proposed Project will add 50 or more vehicle trips during either a.m. or p.m. weekday peak hours.
- At CMP mainline freeway-monitoring locations, where the Project will add 150 or more trips, in either direction, during the either the a.m. or p.m. weekday peak hours.

8.1 POTENTIAL CMP ARTERIAL IMPACTS

The nearest CMP arterial to the project site is Azusa Avenue, which is over four miles east of the Project site. The CMP intersections of Azusa Avenue and Arrow Highway and Azusa Avenue and Workman Avenue are located at a distance of 4.5 miles to the northeast and southeast of the Project site:

- CM ID 14 – Azusa Avenue and Arrow Highway
- CMP ID 159 – Azusa Avenue and Workman Avenue

The Project trip assignment analysis indicated that no more than 11 project trips are expected to travel to/from the Project site along arterial roadways to the east. Therefore, neither of the arterial monitoring stations requires additional CMP impact analysis.

8.2 POTENTIAL FREEWAY IMPACTS

The State of California Department of Transportation (Caltrans) publishes guidelines on the calculations of potential impacts to state facilities from planned development projects. The I-10 (San Bernardino Freeway), I-210 (Foothill Freeway) and I-605 (San Gabriel Valley Freeway) are CMP freeway routes maintained by Caltrans within or near to the Project study area. Analysis is presented here based on both CMP and Caltrans traffic impact guidelines.

Freeway Mainline Analysis – CMP Guidelines

The Project percentage share of freeway mainline traffic volumes is analyzed within this report sub-section. Based on the incremental Project trip generation and distribution from Figure 6, the proposed project will add 150 or more new trips during the AM peak hour to the freeway segments on either side of the Arrow Highway, Los Angeles Street and Live Oak Avenue interchanges in the Project year of 2021.

Freeway Mainline Volume Analysis – Caltrans Guidelines

Potential freeway facility impacts were also considered per Caltrans traffic study guidelines. Existing volumes were compiled from Caltrans data, via AADT (Average Annual Daily Traffic) data reports from 2017. The year 2017 is the most recent available data summarized by Caltrans. Table 16 provides a summary of the collected data.

Table 16 – Caltrans Volume Data for Mainline Freeway Segments

Route	County	Postmile	DESCRIPTION	BACK AADT	AHEAD AADT
010	LA	31.151	BALDWIN PARK, JCT. RTE. 605	235,000	222,000
210	LA	36.410	DUARTE, JCT. RTE. 605	256,000	269,000
605	LA	21.074	BALDWIN PARK, RAMONA BOULEVARD	197,000	190,000
605	LA	22.153	IRWINDALE, LOWER AZUSA ROAD/LOS ANGELES ST	190,000	176,000
605	LA	23.515	IRWINDALE, LIVE OAK AVENUE	176,000	146,000
605	LA	23.958	IRWINDALE, ARROW HIGHWAY	146,000	160,000

The volumes for the related analysis come from the bolded figures under the "Back AADT" and "Ahead AADT" columns in Table 16. The "back" and "ahead" labels refer to the direction on the freeway facility from the analyzed location. Per Caltrans definitions for data collection and analysis, back volumes are further south or west on the facility and ahead volumes are further north or east on the facility (in relation to the overall facility direction of travel within the region). As the "back" counts relative to one location match the "ahead" counts at the next location, the latter were used for simplicity and consistency for mainline locations on I-605. For the I-10 and I-210 freeway segments, the use of "back" and "ahead" counts relative to the junction with the I-605 freeway enabled a comparison of traffic to the west and to the east of the junction.

Peak-hour volumes were derived by applying peak-hour and peak directional percentages defined by separate Caltrans data. These percentages provide an estimate of the proportion of average daily traffic traveling in the peak direction in peak hours. The peak directional volume was applied to both directions of travel to provide a conservative analysis. The peak-hour and directional factors used for both the analyzed mainline and merging/weaving segments are defined in Table 17.

Table 17 – Peak Hour ("K") and Directional ("D") Factors

Route	County	Postmile	AM Direction	AM_K_FACTOR	AM_D_FACTOR	PM Direction	PM_K_FACTOR	PM_D_FACTOR
605	LA	22.920	South	6.630	54.690	North	6.850	50.830
010	LA	30.300	West	6.510	61.470	West	7.070	54.650
210	LA	42.661	West	6.880	51.190	East	6.470	55.210

Future background traffic conditions for the project year of 2021 were obtained by applying the two percent annual ambient growth factor from the primary traffic impact analysis to the existing peak-hour and directional volumes. The growth factor was applied based on the count year of 2017. Cumulative project trips entering or leaving freeway ramps were then assigned to freeway segments to define the future-without Project conditions.

Finally project trips entering or leaving freeway ramps were added to the future-without Project volumes to define the future with project freeway operating conditions.

Freeway Mainline Highway Capacity Manual Analysis

A freeway mainline level of service calculation for the future without and future with-Project traffic volumes was conducted, using the Highway Capacity Manual methodology. Table 18 summarizes the results of this analysis, for mainline segments on the I-10, I-210 and I-605 freeways:

Some of the mainline segments on the I-605 freeway operate at acceptable LOS values in all scenarios, but six of the 12 locations operate at LOS E or F under future conditions with or without the proposed Project. The mainline segments on the I-10 and I-210 freeways operate at LOS values of E or F during at least one peak hour in all scenarios. The northbound and southbound segments on I-605 to the “back” of Lower Azusa/Los Angeles Street operate at LOS E during the Weekday PM and AM peak hours, respectively, in the future scenarios.

Table 18 – Mainline LOS Calculations

No	Fwy/Dire ction	Mainline Segment	Peak Hour	Existing (2017) Condition		Future (2020) No Project		Future (2020) With Project	
				Density	LOS	Density	LOS	Density	LOS
1	I-210	Back of I-605	Weekday AM	35.2	E	40.1	E	41.0	E
			Weekday PM	36.1	E	41.2	E	41.9	E
2	I-605 SB	Ahead of Arrow Highway	Weekday AM	24.2	C	27.4	D	28.4	D
			Weekday PM	23.2	C	25.2	C	25.6	C
3	I-605 SB	Ahead of Live Oak Avenue	Weekday AM	23.5	C	23.5	C	24.1	C
			Weekday PM	21.2	C	22.5	C	22.8	C
4	I-605 SB	Ahead of Lower Azusa Road/Los Angeles Street	Weekday AM	27.7	D	30.4	D	31.5	D
			Weekday PM	26.4	D	31.4	D	32.1	D
5	I-605 SB	Back of Lower Azusa Road/Los Angeles Street (Ahead of Ramona Blvd)	Weekday AM	30.8	D	34.5	D	35.0	D
			Weekday PM	29.1	D	35.7	E	36.7	E
6	I-10	Back of I-605	Weekday AM	35.2	E	40.1	E	40.4	E
			Weekday PM	33.4	D	37.6	E	37.9	E
7	I-10	Ahead of I-605	Weekday AM	-	F	-	F	-	F
			Weekday PM	-	F	-	F	-	F
8	I-605 NB	Back of Lower Azusa Road/Los Angeles Street (Ahead of Ramona Blvd)	Weekday AM	31.2	D	38.5	E	39.9	E
			Weekday PM	29.5	D	33.2	D	33.7	D
9	I-605 NB	Ahead of Lower Azusa Road/Los Angeles Street	Weekday AM	27.5	D	33.0	D	33.6	D
			Weekday PM	26.2	D	29.0	D	29.6	D
10	I-605 NB	Ahead of Live Oak Avenue	Weekday AM	22.3	C	23.8	C	24.2	C
			Weekday PM	21.5	C	22.8	C	23.2	C
11	I-605 NB	Ahead of Arrow Highway	Weekday AM	25.7	C	28.0	D	28.7	D
			Weekday PM	24.6	C	28.1	D	28.9	D
12	I-210	Ahead of I-605	Weekday AM	37.9	E	44.3	E	45.0	E
			Weekday PM	39.0	E	-	F	-	F

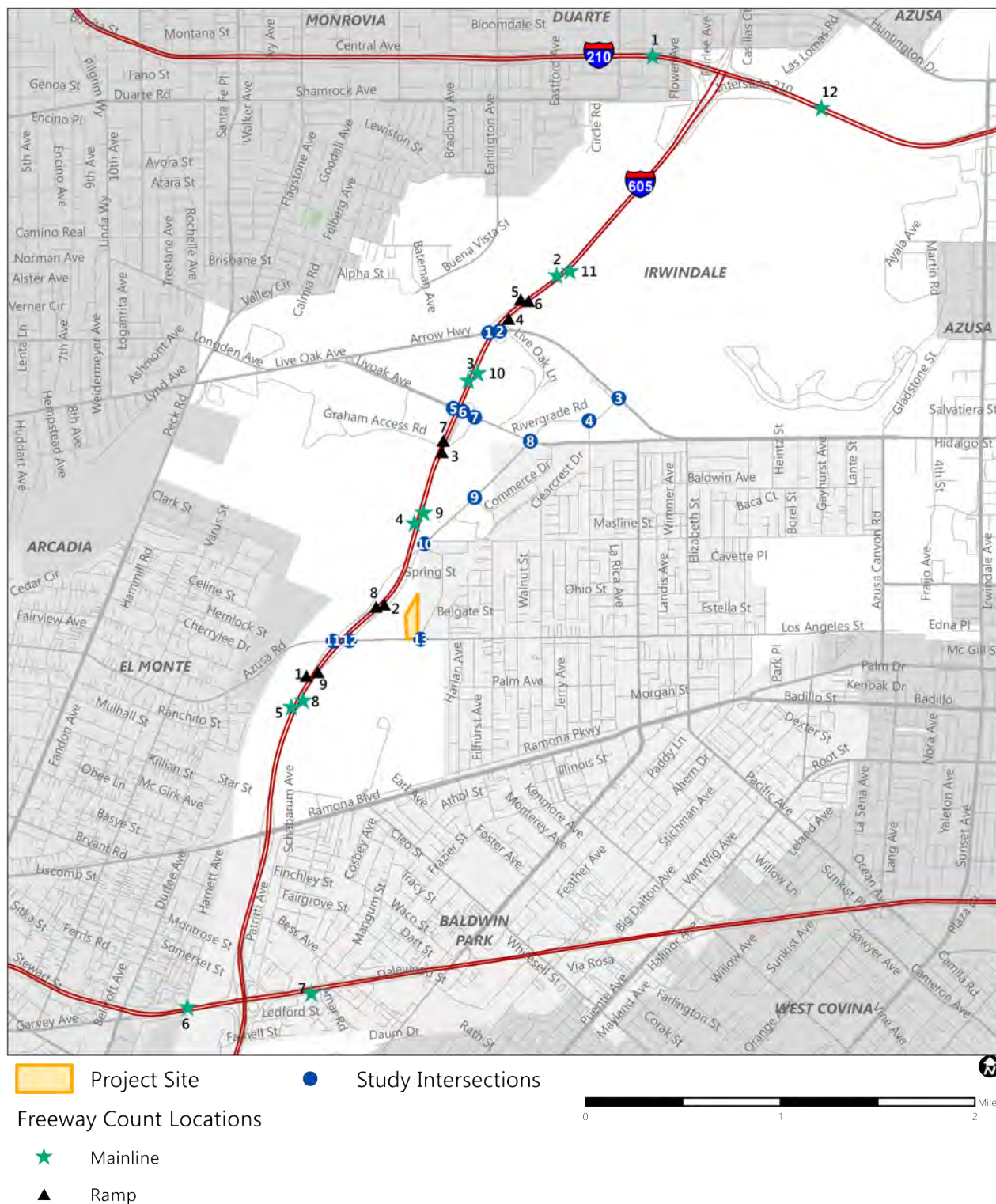
LOS = Level of Service

Freeway Weaving Area Highway Capacity Manual Analysis

Freeway merge/weaving analyses were conducted for access ramp connections at the mainline along the I-605 freeway, as summarized in Table 19. The analyzed access ramp locations are illustrated on Figure 12, and the ramp locations icons show the approximate gore points (the junction of the each ramp with the mainline).

FIGURE 12

13131 Los Angeles Street EIR Study Mainline and Ramp Locations



The analysis of the merging and weaving segments was based on application of the peak-hour and directional factors to the most recent Caltrans AADT volumes from the adjoining ramps. While 2017 volumes were used where available, half of the most-recent ramp AADT volumes were from the year 2015. Table 19 highlights the values used for the analysis in bold.

As on the mainline segments, project and cumulative project trips entering and exiting each ramp were added to define the analyzed future without-Project and future with-Project scenarios, along with the ambient growth rate applied to the study intersections. Traffic volumes were added to the nearest upstream mainline segments to provide a realistic estimate of traffic fluctuation along the freeway corridor.

Table 19 – Caltrans Volume Data for Merging/Weaving Segments

COUNTY	ROUTE	Postmile	DESCRIPTION	AADT Values	
				YR_2015	YR_2017
LA	605	21.980	NB OFF TO LOWER AZUSA/LA ST	12490	
LA	605	22.366	NB ON FR LOWER AZUSA/LA ST	4130	3806
LA	605	23.230	NB OFF TO LIVE OAK AVE		7725
LA	605	23.952	NB ON FROM EB ARROW HWY	2540	2627
LA	605	24.152	NB ON FROM WB ARROW HWY	3700	3901
LA	605	21.951	SB ON FR LOWER AZUSA/LA ST	12370	
LA	605	22.315	SB OFF TO LOWER AZUSA/LA ST	4370	8309
LA	605	23.346	SB ON FROM LIVE OAK AVE	14050	16362
LA	605	24.058	SB OFF TO ARROW HWY	7700	

Table 20 – Merging/Weaving Area LOS Calculations

No	Direction	Merge/Diverge Segment	Peak Hour	Existing (2015 or 2017) Condition		Future (2020) No Project		Future (2020) With Project	
				Density	LOS	Density	LOS	Density	LOS
1	NB	Off at Los Angeles Street	Weekday AM	35.400	E	39.900	E	41.300	E
			Weekday PM	34.200	D	36.800	E	37.500	E
2	NB	On from Los Angeles Street	Weekday AM	28.400	D	31.600	D	32.300	D
			Weekday PM	27.500	C	29.400	D	30.200	D
3	NB	Off at Live Oak avenue	Weekday AM	31.900	D	38.700	E	39.100	E
			Weekday PM	30.800	D	33.900	D	34.400	D
4	NB	On from Arrow Highway eb	Weekday AM	24.100	C	25.600	C	25.900	C
			Weekday PM	23.300	C	26.900	C	27.200	C
5	NB	On from Arrow Highway wb	Weekday AM	24.700	C	26.100	C	26.500	C
			Weekday PM	23.900	C	26.100	C	26.800	C
6	SB	Off at Arrow Highway	Weekday AM	28.900	D	33.100	D	34.100	D
			Weekday PM	27.900	C	30.200	D	30.700	D
7	SB	On from Live Oak avenue	Weekday AM	29.500	D	30.200	D	30.800	D
			Weekday PM	27.200	C	32.600	D	33.200	D
8	SB	Off at Lower Azusa Road	Weekday AM	31.800	D	33.900	D	35.300	E
			Weekday PM	30.700	D	34.400	D	35.200	D
9	SB	On from Lower Azusa Road	Weekday AM	29.900	D	31.900	D	32.300	D
			Weekday PM	28.900	D	32.500	D	33.300	D

LOS = Level of Service

Overall Incremental Freeway Facility Impacts

Caltrans considers LOS E and F operations to be deficient, and any trips added to these conditions constitute a significant impact per Caltrans guidelines. Potential impacts to Caltrans facilities, based on the analysis above and these thresholds, are discussed here.

The following mainline segments would be operating at LOS E or F in the Project year per Table 18, and would have worsened operations due to the proposed Project:

- I-210, back of I-605
- I-605 southbound, back of Lower Azusa Road
- I-10, back of I-605
- I-10, ahead of I-605
- I-605 northbound, back of Lower Azusa Road
- I-210, ahead of I-605

The following merging/diverging areas at ramp junctions with mainline segments would be operating at LOS E or F in the Project year per Table 20, and would have worsened operations due to the proposed Project:

- I-605 Northbound Off-Ramp at Los Angeles Street
- I-605 Northbound Off-Ramp at Live Oak Avenue
- I-605 Southbound Off-Ramp at Lower Azusa Road

At these six freeway mainline segments and three diverging/merging areas, significant Project impacts would potentially occur per Caltrans traffic impact study guidelines and deficient LOS values.

Off-Ramp Queueing Analysis

Lengthy vehicle queues at off-ramps cause traffic to back up onto the freeway mainline, potentially impacting freeway operations. Therefore, queues were analyzed at four off-ramps adjacent to observed mainline segments on I-605 (and corresponding to four project study intersections) under without-Project and with-Project conditions, to assess whether the Project significantly affects queueing:

- I-605 Southbound Off-ramp at Arrow Highway (southbound approach to Study Intersection 1)
- I-605 Northbound Off-Ramps at Live Oak Avenue (northbound and southbound approaches to Study Intersection 6)
- I-605 Southbound Off-Ramp at Lower Azusa Road (southbound approach to Study Intersection 11)
- I-605 Northbound Off-Ramp at Los Angeles Street (northbound approach to Study Intersection 12)

The analysis focused on the 95th-percentile queue (i.e. the queue higher than 95 percent of observed queues), derived from simulation in *SimTraffic* software. Caltrans determines significant queueing impacts where a queue exceeds 85% of the length of the off-ramp. The study used this threshold to assess project queueing impacts. Table 21 provides the 95th-percentile queues and available storage at the four off-ramps.

Based on the analyzed queues and measured ramp lengths, operations will be significantly impacted under Future-with-Project conditions at the northbound off-ramps at Live Oak Avenue and Los Angeles Street and at the southbound off-ramp at the intersection of Rivergrade Road and Lower Azusa Road. At the former two ramp intersections, the Project does not create any new queuing impacts, with both off-ramps experiencing spillover queues under Future pre-project conditions during the affected peak hours. At the intersection of Rivergrade Road and Lower Azusa Road, however, the addition of project trips causes a significant queuing impact to appear on the southbound through-right lane during the AM peak hour.

Table 21 – Off-Ramp Queuing Analysis

Movement	Peak Hour	Ramp Storage Length (Feet)	Future No Project				Future with Project			
			95 % Vehicle Queue (feet)	95% Vehicle Queue (Vehicle)	Queue % of available storage	Significant Impact?	95% Vehicle Queue (feet)	95% Vehicle Queue (Vehicle)	Queue % of available storage	Significant Impact?
#1 I-605 SB OFF RAMP / ARROW HIGHWAY										
SBL	Weekday AM	964	482	20	50%	No	734	30	76%	No
	Weekday PM	964	230	10	24%	No	226	10	23%	No
#6 I-605 NB OFF RAMPS / LIVE OAK AVENUE										
NBR	Weekday AM	878	1072	43	122%	Yes	1086	44	124%	Yes
	Weekday PM	878	1000	40	114%	Yes	955	39	109%	Yes
SBR	Weekday AM	1667	1769	71	106%	Yes	1796	72	108%	Yes
	Weekday PM	1667	2027	82	122%	Yes	2041	82	122%	Yes
#11 RIVERGRADE ROAD SB (I-605 SB OFF RAMP) / LOWER AZUSA ROAD										
SBLT	Weekday AM	1364	247	10	18%	No	1157	47	85%	No
	Weekday PM	1364	319	13	23%	No	430	18	32%	No
SBTR	Weekday AM	1364	264	11	19%	No	1199	48	88%	Yes
	Weekday PM	1364	302	13	22%	No	399	16	29%	No
SBR	Weekday AM	1364	232	10	17%	No	239	10	18%	No
	Weekday PM	1364	237	10	17%	No	244	10	18%	No
#12 I-605 NB OFF RAMP / LOS ANGELES STREET										
NBLT	Weekday AM	1371	353	15	26%	No	436	18	32%	No
	Weekday PM	1371	1739	70	127%	Yes	1689	68	123%	Yes
NBTR	Weekday AM	1371	309	13	23%	No	408	17	30%	No
	Weekday PM	1371	1682	68	123%	Yes	1644	66	120%	Yes

Vehicle Queue figures assume average length of 25 feet per vehicle.

The queuing reports for ramp-adjacent study intersections are provided in Appendix J.

Highway Capacity Manual Operations Analysis

Traffic operations at freeway ramp-adjacent study intersections were also analyzed in Synchro 10 software. The operations analysis used the same volumes as the Project Traffic Impact Analysis but employed the Highway Capacity Manual methodology for signalized intersections. The analysis included both on-ramp and off-ramp intersections. The Levels of Service and Average Delay values for the intersections are shown in Table 22. Three of the six intersections operate at LOS E or F under Future Pre- and Post-project conditions.

Table 22 – Ramp Intersection Level of Service Analysis

Study Intersections		Peak Hour	Future (2020) No Project		Future (2020) With Project	
			V/C or Delay	LOS	V/C or Delay	LOS
1	I-605 Southbound Off-ramp/Arrow Highway	Weekday AM	27.2	C	32.6	C
		Weekday PM	10.6	B	11.4	B
2	I-605 Northbound On-ramp/Arrow Highway	Weekday AM	0.0	-	0.0	-
		Weekday PM	0.0	-	0.0	-
5	I-605 Southbound On-ramp/Live Oak Avenue	Weekday AM	26.5	C	29.4	C
		Weekday PM	249.5	F	251.1	F
6	I-605 Northbound Off-ramps/Live Oak Avenue*	Weekday AM	3409.4	F	3496.9	F
		Weekday PM	1033.8	F	1119.2	F
11	I-605 Southbound Ramps/Los Angeles Street	Weekday AM	31.4	C	40.6	D
		Weekday PM	40.0	D	51.4	D
12	I-605 Northbound Ramps/Los Angeles Street	Weekday AM	96.9	F	127.2	F
		Weekday PM	81.1	F	93.2	F

LOS = Level of Service

*HCM values derived from project level-of-service analysis in Vistro. Other figures derive from Synchro 10 software

The Level of Service worksheets for ramp-adjacent study intersections are provided in Appendix K.

Project Fair-Share Volume Calculations

The Caltrans document entitled *Guide for the Preparation of Traffic Impact Studies* defines a formula for the computation of equitable share responsibility for freeway facility mitigation measures, where Caltrans proposed improvement projects have been identified. This formula is as follows:

$$\frac{\text{Vehicle trips generated by the project during the peak hour}}{(\text{Traffic volume on facility at build out}) - (\text{Existing volumes} + \text{area projects volumes})}$$

Where "build out" traffic volumes are volumes projected for an area horizon year (including ambient growth, cumulative project and proposed project development). Existing traffic volumes, and known area projects volumes, are removed from these volumes to isolate background growth that is not attributable to any specific project. These calculations are provided in Table 23, for the I-10, I-210 and I-605 mainline segments that operate at LOS E or F in the project year.

The Project share of volumes on the mainline freeway segments would range from 1 percent to 6.8 percent. These percentages are presented as informational items, as Caltrans does not have defined impact standards.

Table 23 – Fair-Share Calculations on Impacted Mainline Freeway Segments

Segment No	Segment Name	Period	1. Project Trips	2. Project Buildout Traffic *	3. Existing Traffic	4. Area Project Traffic	5. Post-Project Traffic minus Existing and Area Project Traffic	6. Fair-Share Percent= 1./5.
1	I-210, Back of I-605	AM	112	11830	9016	122	2692	4.2%
		PM	85	11972	9145	126	2701	3.1%
5	I-605 SB, Back of Lower Azusa Road/Los Angeles Street	PM	128	8680	6616	43	2021	6.3%
6	I-10, Back of I-605	AM	43	12259	9404	121	2734	1.6%
		PM	38	11838	9080	122	2636	1.4%
7	I-10, Ahead of I-605	AM	29	11576	8884	121	2571	1.1%
		PM	26	11180	8578	122	2480	1.0%
8	I-605 NB, Back of Lower Azusa Road/Los Angeles Street	AM	144	9554	6889	550	2115	6.8%
12	I-210, Ahead of I-605	AM	74	12441	9474	182	2785	2.7%
		PM	56	12604	9609	190	2805	2.0%

*Obtained by factoring up existing traffic volumes to year 2040 levels by a growth rate defined in the Los Angeles County Congestion Management Plan, then adding project and area project trips.

APPENDIX A
Study Scoping Document

TRAFFIC STUDY – Scope Summary Document
13131 Los Angeles Street Industrial Project
April 2, 2019

This Scoping Summary Document acknowledges that the traffic study for the following project will be prepared in accordance with current traffic study guidelines and policies of the City of Irwindale.

Project Name: 13131 Los Angeles Street Industrial Project

Project Description and Scope of Work:

The proposed project is an industrial building of 525,000 square feet in interior floor area. Access would be provided by site driveways on Los Angeles Street at the south side of the site and on Rivergrade Road at the northwest side of the site. The project tenants are not yet identified, but are anticipated to be light industrial land uses. The proposed site plan is provided in Attachment A.

The scope of work includes an impact analysis at signalized City intersections in the vicinity of the project site, and analysis of potential impacts to nearby Caltrans facilities, as detailed below.

Study Intersections

The locations of these proposed study intersections are illustrated in Attachment B. A signal warrant analysis would also be conducted at the West Driveway/Los Angeles Street intersection.

1. I-605 Southbound Off-ramp/Arrow Highway
2. I-605 Northbound On-ramp/Arrow Highway
3. Rivergrade Road/ Arrow Highway
4. Stewart Avenue/ Rivergrade Road
5. I-605 Southbound On-ramp/Live Oak Avenue
6. I-605 Northbound Off-ramps/Live Oak Avenue
7. Graham Access Road/ Live Oak Avenue
8. Rivergrade Road/Live Oak Avenue
9. Rivergrade Road/Commerce Drive
10. Rivergrade Road/Brooks Avenue
11. I-605 Southbound Ramps/Los Angeles Street
12. I-605 Northbound Ramps/Los Angeles Street
13. Little John Street/Los Angeles Street

Geographic Distribution

The trip distribution to the study area is estimated to be as follows:

- 20 percent to/from I-605 to the north via Arrow Highway interchange
- 20 percent to I-605 south via Live Oak Avenue interchange
- 25 percent from the north on I-605 via Los Angeles Street interchange

- 48 percent from the south on I-605 via Los Angeles Street interchange
- 25 percent to the north on I-605 via Los Angeles Street interchange
- 28 percent to the south on I-605 via Los Angeles Street interchange
- 2 percent to/from Arrow Highway to the east
- 2 percent to/from Los Angeles Street/Lower Azusa Avenue to the west
- 3 percent to/from Los Angeles Street to the east

The proposed project trip distribution (100 percent in / 100 percent out) to the study area locations is provided on Attachment C. The project assigned trips based on this distribution and the net project trip generation are provided on Attachment D1 (AM peak hour) and Attachment D2 (PM peak hour).

Trip Generation

The project building space will be occupied by tenants that are not yet identified by the applicant/owner. The tenants have been anticipated for the traffic study to be light industrial uses as a conservative approach to the analysis, as the rates for this use are higher than other potential uses such as warehousing. Rates are based on floor area and ITE *Trip Generation* (10th Edition).

The trip generation calculations are provided in Table 1. The total estimated project trip generation is 2,604 daily vehicles, including 367 vehicles in the AM peak hour and 331 vehicles in the PM peak hour.

TABLE 1 – ESTIMATED NET PROJECT TRIP GENERATION

ITE Code	Land Use	Intensity	Units	Weekday						
				Daily	AM Peak Hour			PM Peak Hour		
				Rate	Rate	In	Out	Rate	In	Out
Trip Generation Rates										
110	General Light Industrial	-	KSF	4.96	0.70	88%	12%	0.63	13%	87%
Trip Generation Totals-New Use										
110	General Light Industrial	525.000	KSF	2,604	367	323	44	331	43	288
Total		525		2,604	367	323	44	331	43	288

Project Buildout Year: 2020

Ambient Growth Rate: 2% per year

Area Projects: A cumulative/area project list will be obtained from the City of Irwindale, to include known pending/under construction projects in the City and the City of El Monte, the City of Arcadia, and the City of Baldwin Park.

Caltrans Facility Analysis

Potential impacts to off-ramp facilities will be examined at the Los Angeles Street, Live Oak Avenue, Arrow Highway interchanges at the I-605 freeway (using Highway Capacity Manual method and existing/future queuing calculations), and nearby mainline freeway segments (using High Capacity Software analysis for mainline and merging/diverging points, as applicable at these interchanges).

General Safety Evaluation

Based on the projected traffic volumes, the analysis will consider whether left- or right-turn lanes or other safety enhancements are needed to satisfactorily accommodate site traffic.

Project Study Contact

Name: Brian Marchetti, KOA Corporation
Address 1100 Corporate Center Drive, Suite. 201, Monterey Park, CA 91754
Phone No. (323) 260-4703
Email bmarchetti@koacorp.com

TRAFFIC STUDY – Scope Summary Document
13131 Los Angeles Street Industrial Project
April 2, 2019

ATTACHMENT A - SITE PLAN

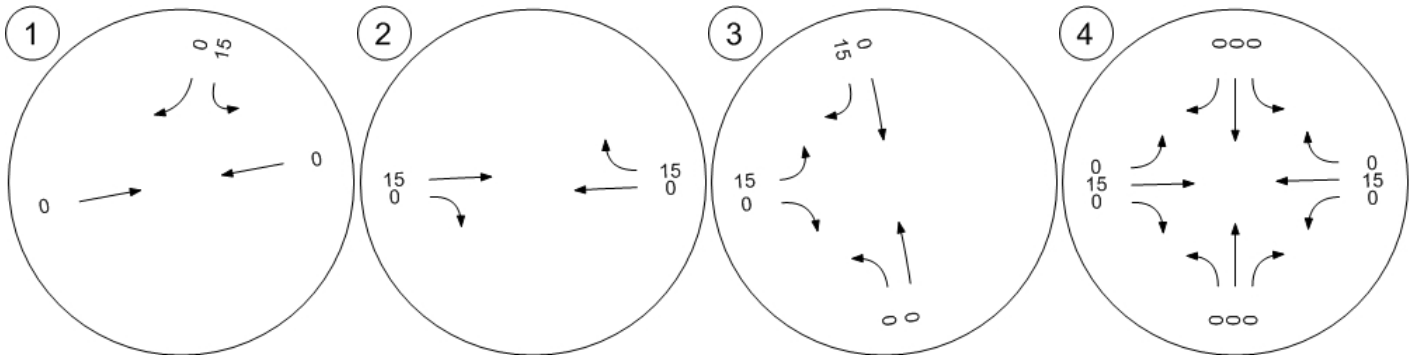


ATTACHMENT C – PROJECT TRIP DISTRIBUTION

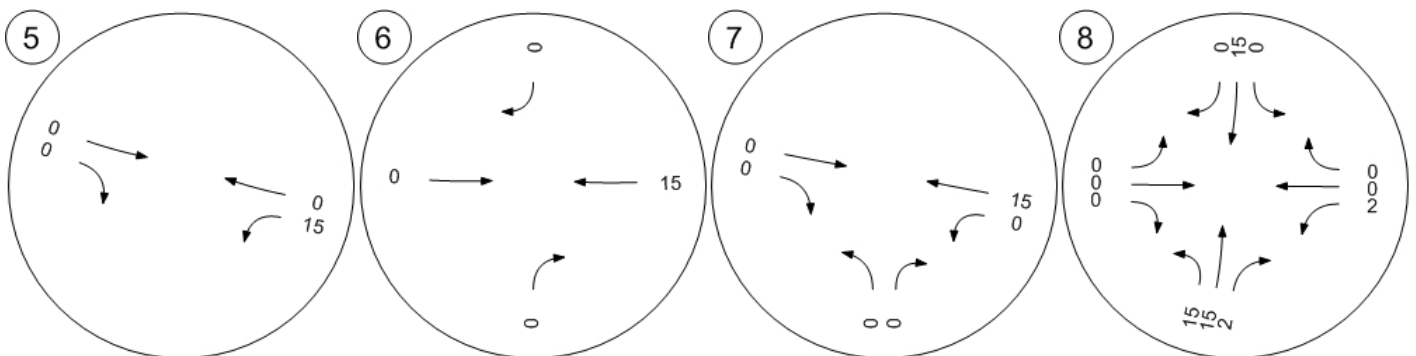
Traffic Volume - Future Total Volume



Arrow Highway and I-605 SB Arrow Highway and I-605 NB Rivergrade Rd and Arrow Hw Rivergrade Rd and Stewart A



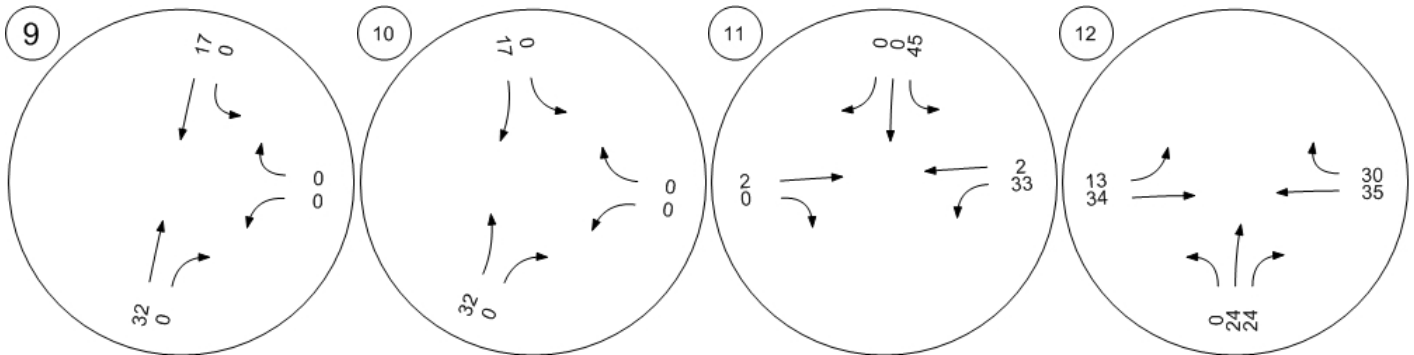
Live Oak Avenue and I-605 S Live Oak Ave and I-605 NB O Live Oak Avenue and Graha Rivergrade Rd and Live Oak



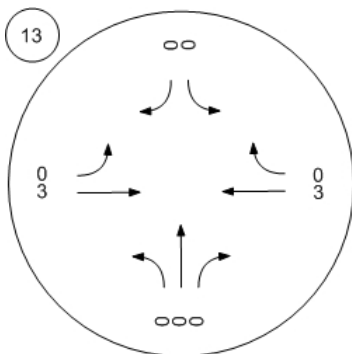
Traffic Volume - Future Total Volume



Rivergrade Road and Comm Rivergrade Road and Brooks I-605 SB Ramps/Los Angeles I-605 NB ramps/Los Angeles



Littlejohn St and Los Angeles

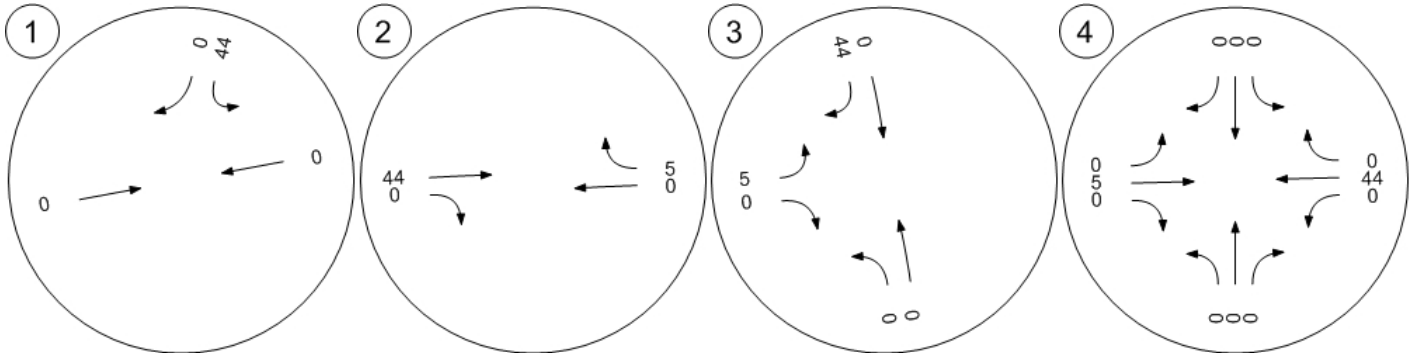


ATTACHMENT D1 – PROJECT TRIP ASSIGNMENT, AM PEAK HOUR

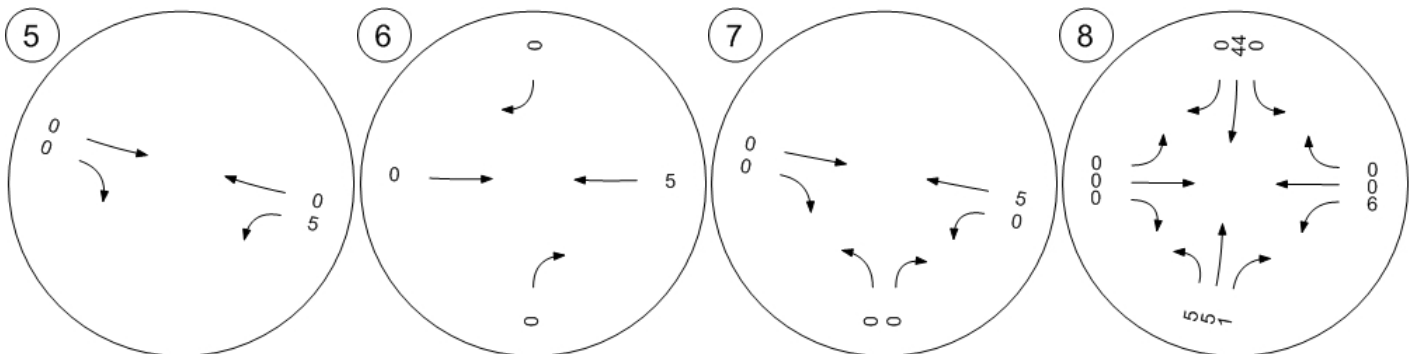
Traffic Volume - Net New Site Trips



Arrow Highway and I-605 SB Arrow Highway and I-605 NB Rivergrade Rd and Arrow Hw Rivergrade Rd and Stewart A



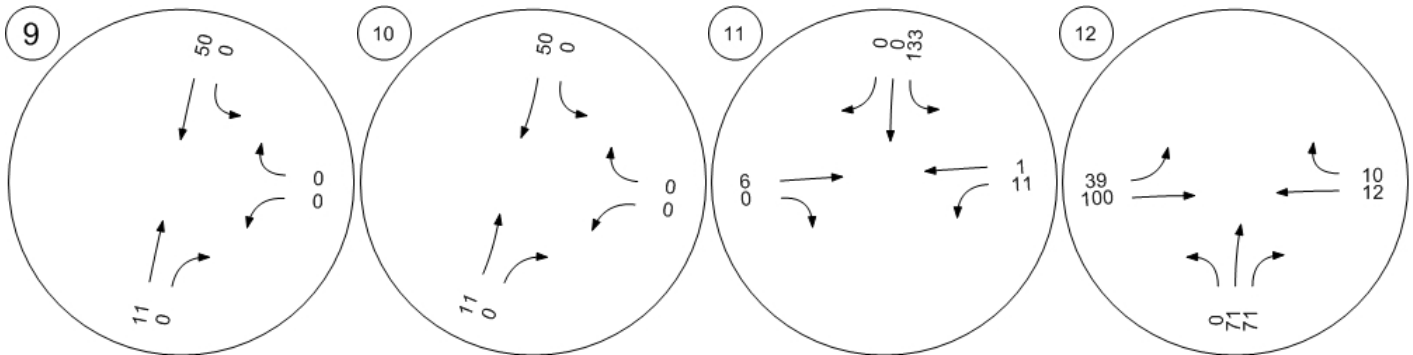
Live Oak Avenue and I-605 S Live Oak Ave and I-605 NB O Live Oak Avenue and Graha Rivergrade Rd and Live Oak



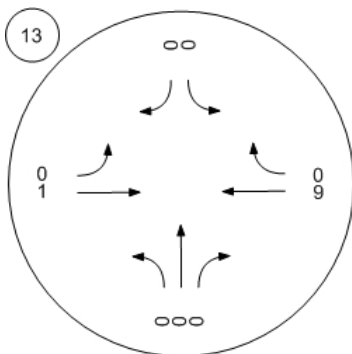
Traffic Volume - Net New Site Trips



Rivergrade Road and Comm Rivergrade Road and Brooks I-605 SB Ramps/Los Angeles I-605 NB ramps/Los Angeles



Littlejohn St and Los Angeles

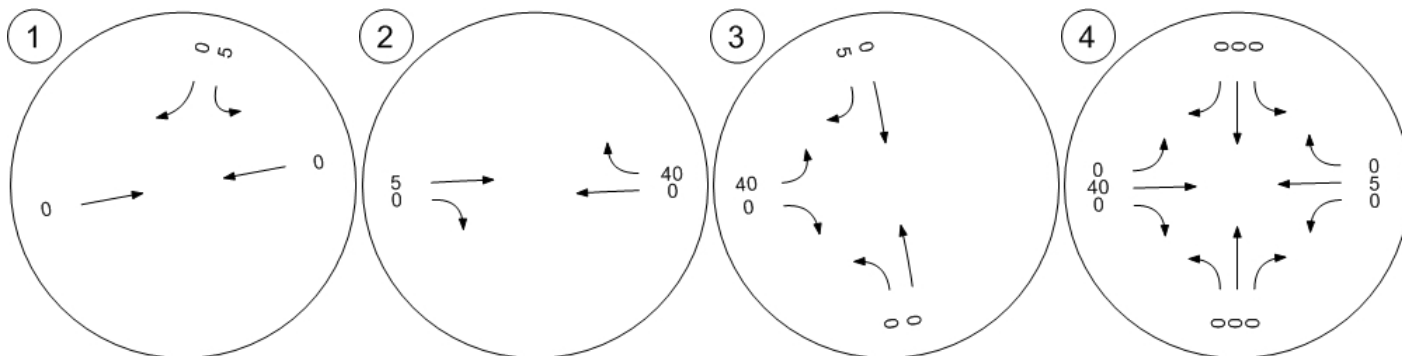


ATTACHMENT D2 – TRIP ASSIGNMENT, PM PEAK HOUR

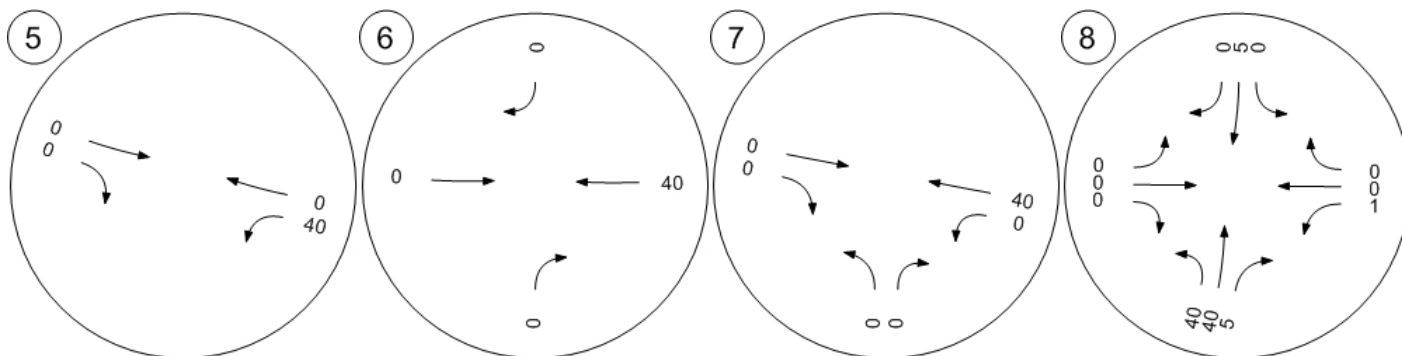
Traffic Volume - Net New Site Trips



Arrow Highway and I-605 SB Arrow Highway and I-605 NB Rivergrade Rd and Arrow Hw Rivergrade Rd and Stewart A



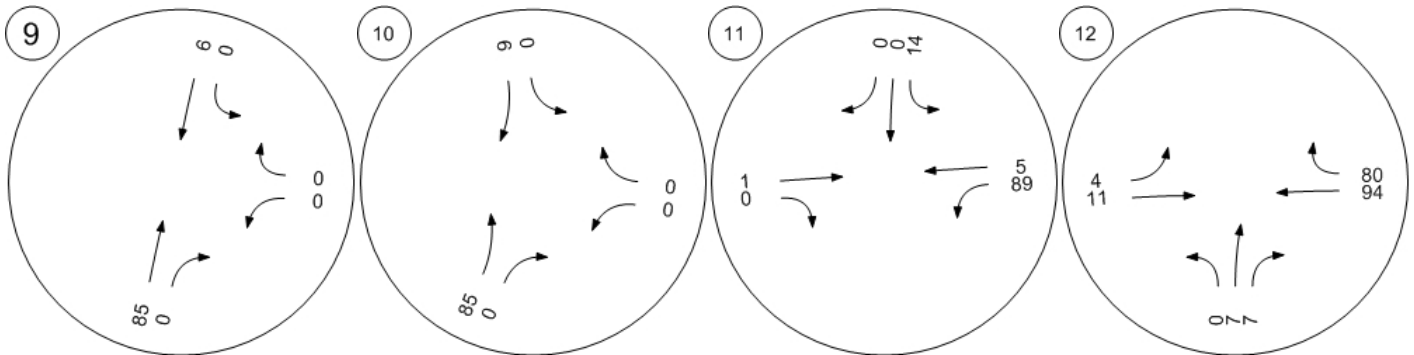
Live Oak Avenue and I-605 S Live Oak Ave and I-605 NB O Live Oak Avenue and Graha Rivergrade Rd and Live Oak



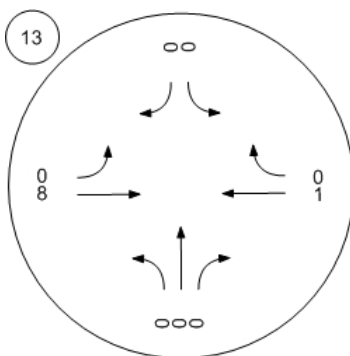
Traffic Volume - Net New Site Trips



Rivergrade Road and Comm Rivergrade Road and Brooks I-605 SB Ramps/Los Angeles I-605 NB ramps/Los Angeles



Littlejohn St and Los Angeles



APPENDIX B
Traffic Count Data

National Data & Surveying Services

Location: I-605 SB off-ramp & Arrow Hwy

City: Irwindale

Control: Signalized

Project ID: 19-05193-001

Date: 4/10/2019

Cars

NS/EW Streets:		I-605 SB off-ramp				I-605 SB off-ramp				Arrow Hwy				Arrow Hwy				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	1 SR	0 SU	0 EL	3 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU		
	7:00 AM	0	0	0	0	70	0	101	0	0	72	0	0	0	393	0	0	636
	7:15 AM	0	0	0	0	85	0	144	0	0	91	0	0	0	414	0	0	734
	7:30 AM	0	0	0	0	97	0	189	0	0	117	0	0	0	368	0	0	771
	7:45 AM	0	0	0	0	147	0	154	0	0	150	0	0	0	335	0	0	786
	8:00 AM	0	0	0	0	128	0	175	0	0	123	0	0	0	284	0	0	710
	8:15 AM	0	0	0	0	116	0	119	0	0	126	0	0	0	248	0	0	609
	8:30 AM	0	0	0	0	124	0	137	0	0	100	0	0	0	230	0	0	591
	8:45 AM	0	0	0	0	96	0	104	0	0	100	0	0	0	210	0	0	510
TOTAL VOLUMES : APPROACH %'s :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
	0	0	0	0	863	0	1123	0	0	879	0	0	0	2482	0	0	5347	
					43.45%	0.00%	56.55%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%		
PEAK HR :	07:15 AM - 08:15 AM																TOTAL	
PEAK HR VOL :	0	0	0	0	457	0	662	0	0	481	0	0	0	1401	0	0	3001	
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.777	0.000	0.876	0.000	0.000	0.802	0.000	0.000	0.000	0.846	0.000	0.000	0.955	
					0.923				0.802				0.846					

PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	1 SR	0 SU	0 EL	3 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU		
	4:00 PM	0	0	0	0	57	0	49	0	0	286	0	0	0	94	0	0	486
	4:15 PM	0	0	0	0	75	0	54	0	0	252	0	0	0	86	0	0	467
	4:30 PM	0	0	0	0	50	0	47	0	0	307	0	0	0	107	0	0	511
	4:45 PM	0	0	0	0	80	0	48	0	0	269	0	0	0	101	0	0	498
	5:00 PM	0	0	0	0	50	0	48	0	0	333	0	0	0	104	0	0	535
	5:15 PM	0	0	0	0	52	0	72	0	0	349	0	0	0	97	0	0	570
	5:30 PM	0	0	0	0	43	0	80	0	0	334	0	0	0	123	0	0	580
	5:45 PM	0	0	0	0	67	0	67	0	0	301	0	0	0	135	0	0	570
TOTAL VOLUMES : APPROACH %'s :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
	0	0	0	0	474	0	465	0	0	2431	0	0	0	847	0	0	4217	
					50.48%	0.00%	49.52%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%		
PEAK HR :	05:00 PM - 06:00 PM																TOTAL	
PEAK HR VOL :	0	0	0	0	212	0	267	0	0	1317	0	0	0	459	0	0	2255	
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.791	0.000	0.834	0.000	0.000	0.943	0.000	0.000	0.000	0.850	0.000	0.000	0.972	
					0.894				0.943				0.850					

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB off-ramp & Arrow Hwy
City: Irwindale
Control: Signalized

Project ID: 19-05193-001
Date: 4/10/2019

2axle

NS/EW Streets:	I-605 SB off-ramp				I-605 SB off-ramp				Arrow Hwy				Arrow Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	1 SR	0 SU	0 EL	3 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	1	0	1	0	0	4	0	0	0	6	0	1	13
7:15 AM	0	0	0	0	0	0	1	0	0	6	0	1	0	10	0	0	18
7:30 AM	0	0	0	0	1	0	1	0	0	7	0	0	0	4	0	0	13
7:45 AM	0	0	0	0	2	0	5	0	0	6	0	3	0	6	0	0	22
8:00 AM	0	0	0	0	0	0	1	0	0	4	0	4	0	2	0	0	11
8:15 AM	0	0	0	0	3	0	0	0	0	7	0	1	0	10	0	0	21
8:30 AM	0	0	0	0	1	0	1	0	0	4	0	0	0	6	0	0	12
8:45 AM	0	0	0	0	0	0	0	0	0	5	0	0	0	8	0	0	13
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 8	ST 0	SR 10	SU 0	EL 0	ET 43	ER 0	EU 9	WL 0	WT 52	WR 0	WU 1	TOTAL 123
APPROACH %'s :					44.44%	0.00%	55.56%	0.00%	0.00%	82.69%	0.00%	17.31%	0.00%	98.11%	0.00%	1.89%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	3	0	8	0	0	23	0	8	0	22	0	0	64
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.375	0.000	0.400	0.000	0.000	0.821	0.000	0.500	0.000	0.550	0.000	0.000	0.727
					0.393				0.861				0.550				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	1 SR	0 SU	0 EL	3 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	7	0	0	14
4:15 PM	0	0	0	0	0	0	3	0	0	4	0	0	0	1	0	0	8
4:30 PM	0	0	0	0	2	0	1	0	0	3	0	0	0	3	0	0	9
4:45 PM	0	0	0	0	2	0	1	0	0	6	0	0	0	3	0	0	12
5:00 PM	0	0	0	0	0	0	3	0	0	5	0	0	0	1	0	0	9
5:15 PM	0	0	0	0	0	0	1	0	0	3	0	0	0	1	0	0	5
5:30 PM	0	0	0	0	0	0	4	0	0	2	0	0	0	2	0	0	8
5:45 PM	0	0	0	0	1	0	2	0	0	0	0	0	0	2	0	0	5
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 5	ST 0	SR 15	SU 0	EL 0	ET 30	ER 0	EU 0	WL 0	WT 20	WR 0	WU 0	TOTAL 70
APPROACH %'s :					25.00%	0.00%	75.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	1	0	10	0	0	10	0	0	0	6	0	0	27
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.250	0.000	0.625	0.000	0.000	0.500	0.000	0.000	0.000	0.750	0.000	0.000	0.750
					0.688				0.500				0.750				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB off-ramp & Arrow Hwy
City: Irwindale
Control: Signalized

Project ID: 19-05193-001
Date: 4/10/2019

3axle

NS/EW Streets:	I-605 SB off-ramp				I-605 SB off-ramp				Arrow Hwy				Arrow Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	1 SR	0 SU	0 EL	3 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	2	0	1	0	0	4	0	0	0	7	0	0	14
7:15 AM	0	0	0	0	1	0	3	0	0	4	0	0	0	1	0	0	9
7:30 AM	0	0	0	0	3	0	2	0	0	3	0	0	0	0	0	0	8
7:45 AM	0	0	0	0	1	0	6	0	0	3	0	0	0	4	0	0	14
8:00 AM	0	0	0	0	1	0	5	0	0	3	0	0	0	2	0	0	11
8:15 AM	0	0	0	0	1	0	3	0	0	6	0	0	0	4	0	0	14
8:30 AM	0	0	0	0	1	0	1	0	0	7	0	0	0	2	0	0	11
8:45 AM	0	0	0	0	1	0	4	0	0	2	0	0	0	2	0	0	9
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 11	ST 0	SR 25	SU 0	EL 0	ET 32	ER 0	EU 0	WL 0	WT 22	WR 0	WU 0	TOTAL 90
APPROACH %'s :					30.56%	0.00%	69.44%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	6	0	16	0	0	13	0	0	0	7	0	0	42
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.500	0.000	0.667	0.000	0.000	0.813	0.000	0.000	0.000	0.438	0.000	0.000	0.750
					0.786				0.813				0.438				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	1 SR	0 SU	0 EL	3 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	1	0	1	0	0	3	0	0	0	0	0	0	5
4:45 PM	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	3
5:00 PM	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	3
5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	1	0	0	0	0	5	0	0	0	0	0	0	6
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 6	ST 0	SR 1	SU 0	EL 0	ET 13	ER 0	EU 0	WL 0	WT 2	WR 0	WU 0	TOTAL 22
APPROACH %'s :					85.71%	0.00%	14.29%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	4	0	0	0	0	7	0	0	0	1	0	0	12
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.350	0.000	0.000	0.000	0.250	0.000	0.000	0.500
					0.500				0.350				0.250				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB off-ramp & Arrow Hwy
City: Irwindale
Control: Signalized

Project ID: 19-05193-001
Date: 4/10/2019

4axle

NS/EW Streets:	I-605 SB off-ramp				I-605 SB off-ramp				Arrow Hwy				Arrow Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	1 SR	0 SU	0 EL	3 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	2	0	9	0	0	9	0	0	0	5	0	0	25
7:15 AM	0	0	0	0	2	0	6	0	0	7	0	0	0	8	0	0	23
7:30 AM	0	0	0	0	5	0	10	0	0	8	0	0	0	10	0	0	33
7:45 AM	0	0	0	0	0	0	13	0	0	19	0	0	0	11	0	0	43
8:00 AM	0	0	0	0	0	0	13	0	0	11	0	0	0	12	0	0	36
8:15 AM	0	0	0	0	2	0	11	0	0	14	0	0	0	18	0	0	45
8:30 AM	0	0	0	0	5	0	8	0	0	23	0	0	0	15	0	0	51
8:45 AM	0	0	0	0	2	0	8	0	0	21	0	0	0	8	0	0	39
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 18	ST 0	SR 78	SU 0	EL 0	ET 112	ER 0	EU 0	WL 0	WT 87	WR 0	WU 0	TOTAL 295
APPROACH %'s :					18.75%	0.00%	81.25%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	7	0	42	0	0	45	0	0	0	41	0	0	135
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.350	0.000	0.808	0.000	0.000	0.592	0.000	0.000	0.000	0.854	0.000	0.000	0.785
					0.817				0.592				0.854				

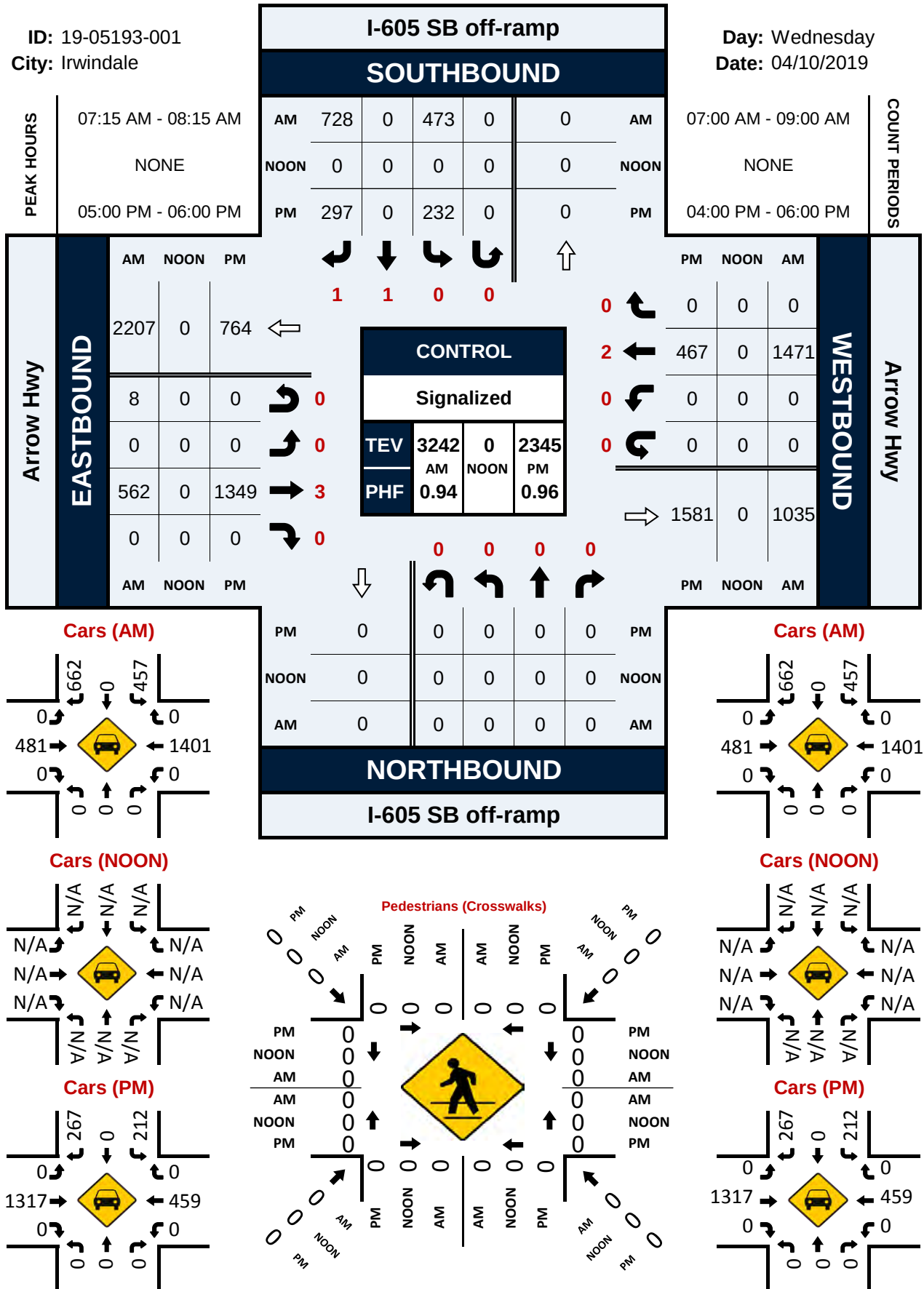
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	1 ST	1 SR	0 SU	0 EL	3 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	2	0	3	0	0	5	0	0	0	3	0	0	13
4:15 PM	0	0	0	0	1	0	6	0	0	4	0	0	0	2	0	0	13
4:30 PM	0	0	0	0	2	0	2	0	0	9	0	0	0	1	0	0	14
4:45 PM	0	0	0	0	1	0	10	0	0	8	0	0	0	2	0	0	21
5:00 PM	0	0	0	0	6	0	6	0	0	3	0	0	0	0	0	0	15
5:15 PM	0	0	0	0	0	0	5	0	0	2	0	0	0	1	0	0	8
5:30 PM	0	0	0	0	3	0	6	0	0	7	0	0	0	0	0	0	16
5:45 PM	0	0	0	0	6	0	3	0	0	3	0	0	0	0	0	0	12
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 21	ST 0	SR 41	SU 0	EL 0	ET 41	ER 0	EU 0	WL 0	WT 9	WR 0	WU 0	TOTAL 112
APPROACH %'s :					33.87%	0.00%	66.13%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	15	0	20	0	0	15	0	0	0	1	0	0	51
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.625	0.000	0.833	0.000	0.000	0.536	0.000	0.000	0.000	0.250	0.000	0.000	0.797
					0.729				0.536				0.250				

I-605 SB off-ramp & Arrow Hwy

Peak Hour Turning Movement Count

ID: 19-05193-001
City: Irwindale

Day: Wednesday
Date: 04/10/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB on-ramp & Arrow Hwy
City: Irwindale
Control: No Control

Project ID: 19-05193-002
Date: 4/10/2019

Total																			
NS/EW Streets:		I-605 NB on-ramp				I-605 NB on-ramp				Arrow Hwy				Arrow Hwy					
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0 NL	1 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	1 ER	0 EU	0 WL	2 WT	1 WR	0 WU	TOTAL	
	7:00 AM	0	0	0	0	0	0	0	0	0	106	49	0	0	426	83	0	664	
	7:15 AM	0	0	0	0	0	0	0	0	0	140	63	0	0	420	92	0	715	
	7:30 AM	0	0	0	0	0	0	0	0	0	174	65	0	0	385	74	0	698	
	7:45 AM	0	0	0	0	0	0	0	0	0	252	71	0	0	349	102	0	774	
	8:00 AM	0	0	0	0	0	0	0	0	0	210	58	0	0	303	84	0	655	
	8:15 AM	0	0	0	0	0	0	0	0	0	218	57	0	0	279	65	0	619	
	8:30 AM	0	0	0	0	0	0	0	0	0	209	48	0	0	265	52	0	574	
	8:45 AM	0	0	0	0	0	0	0	0	0	169	47	0	0	213	56	0	485	
TOTAL VOLUMES :		NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 1478	ER 458	EU 0	WL 0	WT 2640	WR 608	WU 0	TOTAL 5184	
APPROACH %'s :										0.00%	76.34%	23.66%	0.00%	0.00%	81.28%	18.72%	0.00%		
PEAK HR :		07:00 AM - 08:00 AM																TOTAL	
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	672	248	0	0	1580	351	0	2851	
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.873	0.000	0.000	0.927	0.860	0.000	0.921	
										0.712				0.943					
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0 NL	1 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	1 ER	0 EU	0 WL	2 WT	1 WR	0 WU	TOTAL	
	4:00 PM	0	0	0	0	0	0	0	0	0	340	24	0	0	97	57	0	518	
	4:15 PM	0	0	0	0	0	0	0	0	0	320	27	0	0	95	62	0	504	
	4:30 PM	0	0	0	0	0	0	0	0	0	332	30	0	0	106	63	0	531	
	4:45 PM	0	0	0	0	0	0	0	0	0	326	31	0	0	111	58	0	526	
	5:00 PM	0	0	0	0	0	0	0	0	0	380	29	0	0	104	61	0	574	
	5:15 PM	0	0	0	0	0	0	0	0	0	360	36	0	0	107	89	0	592	
	5:30 PM	0	0	0	0	0	0	0	0	0	365	40	0	0	117	65	0	587	
	5:45 PM	0	0	0	0	0	0	0	0	0	357	26	0	0	137	79	0	599	
TOTAL VOLUMES :		NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 2780	ER 243	EU 0	WL 0	WT 874	WR 534	WU 0	TOTAL 4431	
APPROACH %'s :										0.00%	91.96%	8.04%	0.00%	0.00%	62.07%	37.93%	0.00%		
PEAK HR :		04:00 PM - 05:00 PM																TOTAL	
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	1318	112	0	0	409	240	0	2079	
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.969	0.903	0.000	0.000	0.921	0.952	0.000	0.979	
										0.982				0.960					

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB on-ramp & Arrow Hwy

City: Irwindale

Control: No Control

Project ID: 19-05193-002

Date: 4/10/2019

Cars																			
NS/EW Streets:		I-605 NB on-ramp				I-605 NB on-ramp				Arrow Hwy				Arrow Hwy					
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	1	0	0	0	0	0	0	0	2	1	0	0	2	1	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
7:00 AM 7:15 AM 7:30 AM 7:45 AM	7:00 AM	0	0	1	0	0	0	0	0	0	98	35	0	0	407	72	0	613	
	7:15 AM	0	0	1	0	0	0	0	0	0	133	50	0	0	402	80	0	666	
	7:30 AM	0	0	0	0	0	0	0	0	0	161	55	0	0	371	69	0	656	
	7:45 AM	0	0	3	0	0	0	0	0	0	239	56	0	0	329	94	0	721	
8:00 AM 8:15 AM 8:30 AM 8:45 AM	8:00 AM	0	0	2	0	0	0	0	0	0	205	46	0	0	284	81	0	618	
	8:15 AM	0	0	2	0	0	0	0	0	0	205	45	0	0	249	64	0	565	
	8:30 AM	0	0	0	0	0	0	0	0	0	188	35	0	0	240	47	0	510	
	8:45 AM	0	0	1	0	0	0	0	0	0	152	38	0	0	197	51	0	439	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	0	10	0	0	0	0	0	0	1381	360	0	0	2479	558	0	4788	
		0.00%	0.00%	100.00%	0.00%					0.00%	79.32%	20.68%	0.00%	0.00%	81.63%	18.37%	0.00%		
PEAK HR :		07:00 AM - 08:00 AM																TOTAL	
PEAK HR VOL :		0	0	5	0	0	0	0	0	0	631	196	0	0	1509	315	0	2656	
PEAK HR FACTOR :		0.00	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.660	0.875	0.000	0.000	0.927	0.838	0.000	0.921	
		0.417								0.701				0.946					

PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	1	0	0	0	0	0	0	0	2	1	0	0	2	1	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
4:00 PM 4:15 PM 4:30 PM 4:45 PM	4:00 PM	0	0	1	0	0	0	0	0	0	331	20	0	0	87	56	0	495	
	4:15 PM	0	0	4	0	0	0	0	0	0	313	26	0	0	90	57	0	490	
	4:30 PM	0	0	6	0	0	0	0	0	0	321	22	0	0	103	62	0	514	
	4:45 PM	0	0	4	0	0	0	0	0	0	309	29	0	0	106	55	0	503	
5:00 PM 5:15 PM 5:30 PM 5:45 PM	5:00 PM	0	0	10	0	0	0	0	0	0	366	28	0	0	102	61	0	567	
	5:15 PM	0	0	6	0	0	0	0	0	0	353	36	0	0	106	88	0	589	
	5:30 PM	0	0	1	0	0	0	0	0	0	349	39	0	0	115	63	0	567	
	5:45 PM	0	0	3	0	0	0	0	0	0	352	25	0	0	134	78	0	592	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	0	35	0	0	0	0	0	0	2694	225	0	0	843	520	0	4317	
		0.00%	0.00%	100.00%	0.00%					0.00%	92.29%	7.71%	0.00%	0.00%	61.85%	38.15%	0.00%		
PEAK HR :		04:00 PM - 05:00 PM																TOTAL	
PEAK HR VOL :		0	0	15	0	0	0	0	0	0	1274	97	0	0	386	230	0	2002	
PEAK HR FACTOR :		0.00	0.000	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.962	0.836	0.000	0.000	0.910	0.927	0.000	0.974	
		0.625								0.976				0.933					

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB on-ramp & Arrow Hwy
City: Irwindale
Control: No Control

Project ID: 19-05193-002
Date: 4/10/2019

2axle																			
NS/EW Streets:		I-605 NB on-ramp				I-605 NB on-ramp				Arrow Hwy				Arrow Hwy					
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	1	0	0	0	0	0	0	0	2	1	0	0	2	1	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
7:00 AM 7:15 AM 7:30 AM 7:45 AM	7:00 AM	0	0	0	0	0	0	0	0	0	5	1	0	0	7	7	0	20	
	7:15 AM	0	0	0	0	0	0	0	0	0	1	5	0	0	9	4	0	19	
	7:30 AM	0	0	0	0	0	0	0	0	0	4	3	0	0	5	4	0	16	
	7:45 AM	0	0	0	0	0	0	0	0	0	7	2	0	0	5	7	0	21	
8:00 AM 8:15 AM 8:30 AM 8:45 AM	8:00 AM	0	0	0	0	0	0	0	0	0	3	2	0	0	3	2	0	10	
	8:15 AM	0	0	0	0	0	0	0	0	0	5	3	0	0	9	0	0	17	
	8:30 AM	0	0	0	0	0	0	0	0	0	3	2	0	0	7	1	0	13	
	8:45 AM	0	0	0	0	0	0	0	0	0	1	2	0	0	7	3	0	13	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	0	0	0	0	0	0	0	0	29	20	0	0	52	28	0	129	
PEAK HR :		07:00 AM - 08:00 AM								0.00% 59.18% 40.82% 0.00%				0.00% 65.00% 35.00% 0.00%					
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	17	11	0	0	26	22	0	TOTAL	
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.607	0.550	0.000	0.000	0.722	0.786	0.000	76	
										0.778				0.857				0.905	

PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	1	0	0	0	0	0	0	0	2	1	0	0	2	1	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
4:00 PM 4:15 PM 4:30 PM 4:45 PM	4:00 PM	0	0	0	0	0	0	0	0	0	5	1	0	0	8	0	0	14	
	4:15 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	2	3	0	9	
	4:30 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	2	1	0	8	
	4:45 PM	0	0	0	0	0	0	0	0	0	7	1	0	0	2	0	0	10	
5:00 PM 5:15 PM 5:30 PM 5:45 PM	5:00 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0	6	
	5:15 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	4	
	5:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	0	5	
	5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	0	0	0	0	0	0	0	0	31	2	0	0	20	6	0	59	
PEAK HR :		04:00 PM - 05:00 PM								0.00% 93.94% 6.06% 0.00%				0.00% 76.92% 23.08% 0.00%					
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	21	2	0	0	14	4	0	TOTAL	
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.500	0.000	0.000	0.438	0.333	0.000	41	
										0.719				0.563				0.732	

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB on-ramp & Arrow Hwy

City: Irwindale

Control: No Control

Project ID: 19-05193-002

Date: 4/10/2019

3axle																			
NS/EW Streets:		I-605 NB on-ramp				I-605 NB on-ramp				Arrow Hwy				Arrow Hwy					
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	1	0	0	0	0	0	0	0	2	1	0	0	2	1	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
7:00 AM 7:15 AM 7:30 AM 7:45 AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	6	1	0	14	
	7:15 AM	0	0	0	0	0	0	0	0	0	2	2	0	0	2	4	0	10	
	7:30 AM	0	0	0	0	0	0	0	0	0	3	3	0	0	1	0	0	7	
	7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	4	
8:00 AM 8:15 AM 8:30 AM 8:45 AM	8:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	3	0	0	5	
	8:15 AM	0	0	0	0	0	0	0	0	0	3	1	0	0	4	0	0	8	
	8:30 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4	
	8:45 AM	0	0	0	0	0	0	0	0	0	3	1	0	0	2	0	0	6	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	0	0	0	0	0	0	0	0	13	18	0	0	22	5	0	58	
PEAK HR :		07:00 AM - 08:00 AM																TOTAL	
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	5	14	0	0	11	5	0	35	
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.417	0.500	0.000	0.000	0.458	0.313	0.000	0.625	
										0.679				0.571					
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	1	0	0	0	0	0	0	0	2	1	0	0	2	1	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
4:00 PM 4:15 PM 4:30 PM 4:45 PM	4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
	4:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
	4:30 PM	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4	
	4:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3	
5:00 PM 5:15 PM 5:30 PM 5:45 PM	5:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	
	5:15 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	
	5:30 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	7	
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	0	0	0	0	0	0	0	0	18	1	0	0	2	0	0	21	
PEAK HR :		04:00 PM - 05:00 PM																TOTAL	
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	7	1	0	0	1	0	0	9	
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.250	0.000	0.000	0.250	0.000	0.000	0.563	
										0.500				0.250					

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB on-ramp & Arrow Hwy

City: Irwindale

Control: No Control

Project ID: 19-05193-002

Date: 4/10/2019

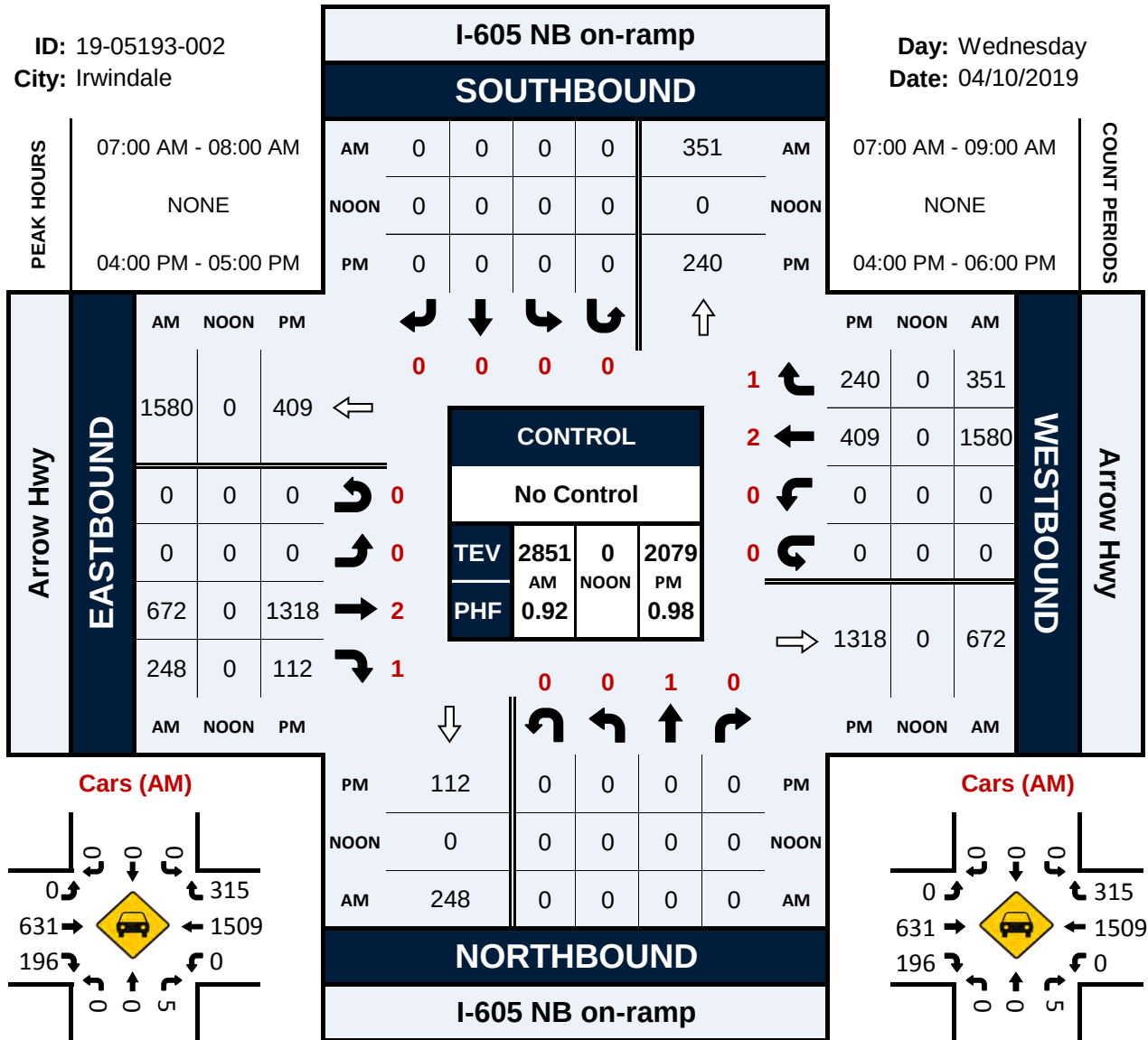
4axle																					
NS/EW Streets:		I-605 NB on-ramp				I-605 NB on-ramp				Arrow Hwy				Arrow Hwy							
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND							
	0	1	0	0	0	0	0	0	0	0	2	1	0	0	2	1	0				
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL				
	7:00 AM	0	0	0	0	0	0	0	0	3	6	0	0	6	3	0	18				
	7:15 AM	0	0	0	0	0	0	0	0	4	6	0	0	7	4	0	21				
	7:30 AM	0	0	0	0	0	0	0	0	6	4	0	0	8	1	0	19				
	7:45 AM	0	0	0	0	0	0	0	0	6	11	0	0	13	1	0	31				
	8:00 AM	0	0	0	0	0	0	0	0	2	8	0	0	13	1	0	24				
	8:15 AM	0	0	0	0	0	0	0	0	5	8	0	0	17	1	0	31				
	8:30 AM	0	0	0	0	0	0	0	0	16	11	0	0	16	4	0	47				
	8:45 AM	0	0	0	0	0	0	0	0	13	6	0	0	7	2	0	28				
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL			
APPROACH %'s :		0	0	0	0	0	0	0	0	0	55	60	0	0	87	17	0	219			
		0.00%				47.83%				52.17%				0.00%				0.00%			
PEAK HR :		07:00 AM - 08:00 AM																TOTAL			
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	19	27	0	0	34	9	0	89			
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.792	0.614	0.000	0.000	0.654	0.563	0.000	0.718			
										0.676				0.768							
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND							
	0	1	0	0	0	0	0	0	0	2	1	0	0	2	1	0					
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL				
	4:00 PM	0	0	0	0	0	0	0	0	3	3	0	0	2	1	0	9				
	4:15 PM	0	0	0	0	0	0	0	0	2	1	0	0	3	2	0	8				
	4:30 PM	0	0	0	0	0	0	0	0	3	7	0	0	1	0	0	11				
	4:45 PM	0	0	0	0	0	0	0	0	8	1	0	0	2	3	0	14				
	5:00 PM	0	0	0	0	0	0	0	0	8	1	0	0	0	0	0	9				
	5:15 PM	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3				
	5:30 PM	0	0	0	0	0	0	0	0	7	1	0	0	0	1	0	9				
	5:45 PM	0	0	0	0	0	0	0	0	4	1	0	0	0	1	0	6				
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL			
APPROACH %'s :		0	0	0	0	0	0	0	0	0	37	15	0	0	9	8	0	69			
		0.00%				71.15%				28.85%				0.00%				0.00%			
PEAK HR :		04:00 PM - 05:00 PM																TOTAL			
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	16	12	0	0	8	6	0	42			
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.429	0.000	0.000	0.667	0.500	0.000	0.750			
										0.700				0.700							

I-605 NB on-ramp & Arrow Hwy

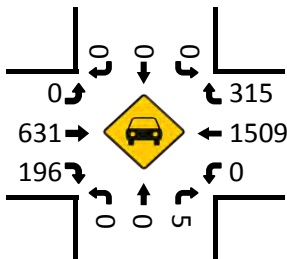
Peak Hour Turning Movement Count

ID: 19-05193-002
City: Irwindale

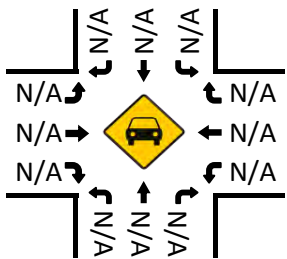
Day: Wednesday
Date: 04/10/2019



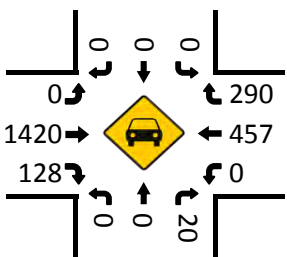
Cars (AM)



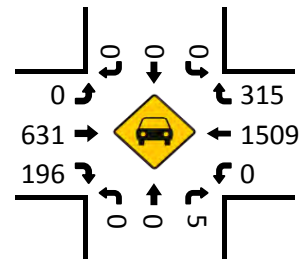
Cars (NOON)



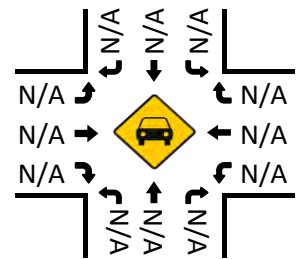
Cars (PM)



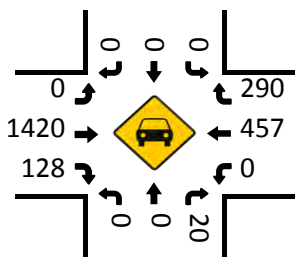
Cars (AM)



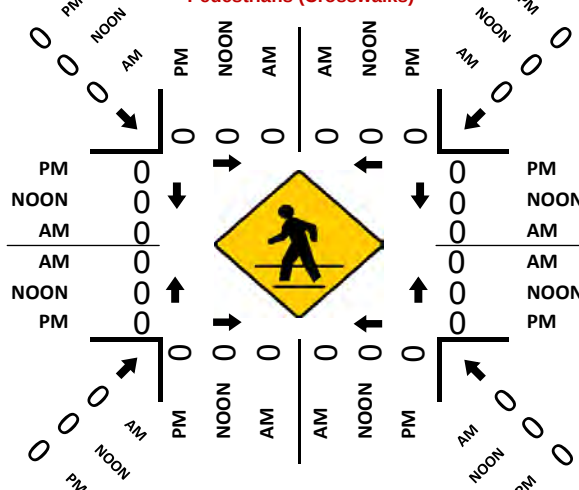
Cars (NOON)



Cars (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Arrow Hwy & Rivergrade Rd
City: Irwindale
Control: Signalized

Project ID: 19-05193-003
Date: 4/10/2019

Total																	
NS/EW Streets:	Arrow Hwy				Arrow Hwy				Rivergrade Rd				Rivergrade Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	1 SR	0 SU	2 EL	0 ET	1 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
7:00 AM	16	447	0	0	0	63	43	0	42	0	2	0	0	0	0	0	613
7:15 AM	26	456	0	0	0	68	54	0	52	0	2	0	0	0	0	0	658
7:30 AM	45	418	0	0	0	118	78	0	52	0	2	0	0	0	0	0	713
7:45 AM	38	364	0	2	0	149	84	0	65	0	0	0	0	0	0	0	702
8:00 AM	23	343	0	0	0	123	92	0	46	0	2	0	0	0	0	0	629
8:15 AM	21	314	0	0	0	129	80	0	38	0	0	0	0	0	0	0	582
8:30 AM	11	262	0	0	0	124	76	0	30	0	1	0	0	0	0	0	504
8:45 AM	13	251	0	0	0	114	62	0	27	0	2	0	0	0	0	0	469
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	193	2855	0	2	0	888	569	0	352	0	11	0	0	0	0	0	4870
	6.33%	93.61%	0.00%	0.07%	0.00%	60.95%	39.05%	0.00%	96.97%	0.00%	3.03%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	132	1581	0	2	0	458	308	0	215	0	6	0	0	0	0	0	2702
PEAK HR FACTOR :	0.733	0.867	0.000	0.250	0.000	0.768	0.837	0.000	0.827	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.947
	0.890				0.822				0.850								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	1 SR	0 SU	2 EL	0 ET	1 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
4:00 PM	3	140	0	0	0	287	42	0	36	0	4	0	0	0	0	0	512
4:15 PM	1	98	0	0	0	269	59	0	46	0	2	0	0	0	0	0	475
4:30 PM	4	133	0	0	0	289	52	0	50	0	8	0	0	0	0	0	536
4:45 PM	4	105	0	0	0	278	38	0	49	0	5	0	0	0	0	0	479
5:00 PM	3	123	0	0	0	359	53	0	65	0	7	0	0	0	0	0	610
5:15 PM	6	114	0	0	0	301	48	0	48	0	7	0	0	0	0	0	524
5:30 PM	9	141	0	0	0	309	67	0	58	0	8	0	0	0	0	0	592
5:45 PM	5	107	0	0	0	311	39	0	41	0	5	0	0	0	0	0	508
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	35	961	0	0	0	2403	398	0	393	0	46	0	0	0	0	0	4236
	3.51%	96.49%	0.00%	0.00%	0.00%	85.79%	14.21%	0.00%	89.52%	0.00%	10.48%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	23	485	0	0	0	1280	207	0	212	0	27	0	0	0	0	0	2234
PEAK HR FACTOR :	0.639	0.860	0.000	0.000	0.000	0.891	0.772	0.000	0.815	0.000	0.844	0.000	0.000	0.000	0.000	0.000	0.916
	0.847				0.902				0.830								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Arrow Hwy & Rivergrade Rd
City: Irwindale
Control: Signalized

Project ID: 19-05193-003
Date: 4/10/2019

Cars																	
NS/EW Streets:	Arrow Hwy				Arrow Hwy				Rivergrade Rd				Rivergrade Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	1 SR	0 SU	2 EL	0 ET	1 ER	0 EU	0 WL	0 WT	0 WR	0 WU	TOTAL
7:00 AM	15	432	0	0	0	59	37	0	28	0	2	0	0	0	0	0	573
7:15 AM	23	442	0	0	0	67	48	0	35	0	0	0	0	0	0	0	615
7:30 AM	45	414	0	0	0	107	72	0	38	0	1	0	0	0	0	0	677
7:45 AM	37	355	0	2	0	139	83	0	48	0	0	0	0	0	0	0	664
8:00 AM	23	335	0	0	0	116	90	0	28	0	1	0	0	0	0	0	593
8:15 AM	20	295	0	0	0	119	74	0	18	0	0	0	0	0	0	0	526
8:30 AM	11	255	0	0	0	117	61	0	21	0	1	0	0	0	0	0	466
8:45 AM	13	240	0	0	0	103	51	0	16	0	2	0	0	0	0	0	425
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	187	2768	0	2	0	827	516	0	232	0	7	0	0	0	0	0	4539
	6.32%	93.61%	0.00%	0.07%	0.00%	61.58%	38.42%	0.00%	97.07%	0.00%	2.93%	0.00%					
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	128	1546	0	2	0	429	293	0	149	0	2	0	0	0	0	0	2549
PEAK HR FACTOR :	0.71	0.874	0.000	0.250	0.000	0.772	0.814	0.000	0.776	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.941
	0.901				0.813				0.786								
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	1 SR	0 SU	2 EL	0 ET	1 ER	0 EU	0 WL	0 WT	0 WR	0 WU	TOTAL
4:00 PM	2	133	0	0	0	282	41	0	33	0	4	0	0	0	0	0	495
4:15 PM	0	92	0	0	0	260	56	0	44	0	2	0	0	0	0	0	454
4:30 PM	2	130	0	0	0	281	47	0	47	0	8	0	0	0	0	0	515
4:45 PM	2	103	0	0	0	265	35	0	45	0	4	0	0	0	0	0	454
5:00 PM	3	121	0	0	0	352	49	0	63	0	7	0	0	0	0	0	595
5:15 PM	1	113	0	0	0	295	45	0	47	0	7	0	0	0	0	0	508
5:30 PM	3	139	0	0	0	294	62	0	55	0	8	0	0	0	0	0	561
5:45 PM	1	106	0	0	0	309	39	0	39	0	5	0	0	0	0	0	499
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	14	937	0	0	0	2338	374	0	373	0	45	0	0	0	0	0	4081
	1.47%	98.53%	0.00%	0.00%	0.00%	86.21%	13.79%	0.00%	89.23%	0.00%	10.77%	0.00%					
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	8	479	0	0	0	1250	195	0	204	0	27	0	0	0	0	0	2163
PEAK HR FACTOR :	0.67	0.862	0.000	0.000	0.000	0.888	0.786	0.000	0.810	0.000	0.844	0.000	0.000	0.000	0.000	0.000	0.909
	0.857				0.901				0.825								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Arrow Hwy & Rivergrade Rd
City: Irwindale
Control: Signalized

Project ID: 19-05193-003
Date: 4/10/2019

2axle																		
NS/EW Streets:		Arrow Hwy				Arrow Hwy				Rivergrade Rd				Rivergrade Rd				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	1 SR	0 SU	2 EL	0 ET	1 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
	7:00 AM	0	8	0	0	0	3	2	0	3	0	0	0	0	0	0	0	16
	7:15 AM	1	9	0	0	0	1	0	0	6	0	1	0	0	0	0	0	18
	7:30 AM	0	3	0	0	0	5	1	0	2	0	0	0	0	0	0	0	11
	7:45 AM	1	5	0	0	0	4	0	0	5	0	0	0	0	0	0	0	15
	8:00 AM	0	5	0	0	0	3	1	0	0	0	1	0	0	0	0	0	10
	8:15 AM	0	11	0	0	0	5	2	0	1	0	0	0	0	0	0	0	19
	8:30 AM	0	5	0	0	0	2	0	0	1	0	0	0	0	0	0	0	8
	8:45 AM	0	8	0	0	0	4	1	0	1	0	0	0	0	0	0	0	14
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		2	54	0	0	0	27	7	0	19	0	2	0	0	0	0	0	111
PEAK HR :		07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :		2	22	0	0	0	13	2	0	13	0	2	0	0	0	0	0	54
PEAK HR FACTOR :		0.500	0.611	0.000	0.000	0.000	0.650	0.500	0.000	0.542	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.750
		0.600				0.625				0.536								

PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	1 SR	0 SU	2 EL	0 ET	1 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
	4:00 PM	0	3	0	0	0	2	1	0	2	0	0	0	0	0	0	0	8
	4:15 PM	0	4	0	0	0	5	1	0	0	0	0	0	0	0	0	0	10
	4:30 PM	0	2	0	0	0	5	1	0	1	0	0	0	0	0	0	0	9
	4:45 PM	0	0	0	0	0	5	1	0	1	0	0	0	0	0	0	0	7
	5:00 PM	0	2	0	0	0	3	1	0	0	0	0	0	0	0	0	0	6
	5:15 PM	0	1	0	0	0	1	2	0	0	0	0	0	0	0	0	0	4
	5:30 PM	0	2	0	0	0	5	3	0	2	0	0	0	0	0	0	0	12
	5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	15	0	0	0	27	10	0	6	0	0	0	0	0	0	0	58
PEAK HR :		05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :		0	6	0	0	0	10	6	0	2	0	0	0	0	0	0	0	24
PEAK HR FACTOR :		0.00	0.750	0.000	0.000	0.000	0.500	0.500	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
		0.750				0.500				0.250								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Arrow Hwy & Rivergrade Rd
City: Irwindale
Control: Signalized

Project ID: 19-05193-003
Date: 4/10/2019

3axle																	
NS/EW Streets:	Arrow Hwy				Arrow Hwy				Rivergrade Rd				Rivergrade Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	2	1	0	2	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	0	5	0	0	0	1	1	0	1	0	0	0	0	0	0	0	8
	0	4	0	0	0	0	2	0	3	0	0	0	0	0	0	0	9
7:00 AM	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	5
7:15 AM	0	3	0	0	0	1	1	0	0	0	0	0	0	0	0	0	5
7:30 AM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
7:45 AM	0	4	0	0	0	2	0	0	2	0	0	0	0	0	0	0	8
8:00 AM	0	1	0	0	0	1	2	0	0	0	0	0	0	0	0	0	4
8:15 AM	0	2	0	0	0	1	2	0	1	0	0	0	0	0	0	0	6
8:30 AM	0	2	0	0	0	1	2	0	1	0	0	0	0	0	0	0	6
8:45 AM	0	2	0	0	0	1	2	0	1	0	0	0	0	0	0	0	6
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	22	0	0	0	10	10	0	7	0	0	0	0	0	0	0	49
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	10	0	0	0	5	5	0	3	0	0	0	0	0	0	0	23
PEAK HR FACTOR :	0.000	0.625	0.000	0.000	0.000	0.417	0.625	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.639
	0.625				0.500				0.250								
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	0	2	1	0	2	0	1	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	1	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	4
4:00 PM	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
4:15 PM	2	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	6
4:30 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	9
5:00 PM	5	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	10
5:15 PM	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
5:30 PM	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5
5:45 PM	4	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	5
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	21	2	0	0	0	13	2	0	4	0	0	0	0	0	0	0	42
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	15	0	0	0	0	8	1	0	2	0	0	0	0	0	0	0	26
PEAK HR FACTOR :	0.63	0.000	0.000	0.000	0.000	0.500	0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.650
	0.625				0.563				0.500								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Arrow Hwy & Rivergrade Rd
City: Irwindale
Control: Signalized

Project ID: 19-05193-003
Date: 4/10/2019

4axle																		
NS/EW Streets:		Arrow Hwy				Arrow Hwy				Rivergrade Rd				Rivergrade Rd				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	1 SR	0 SU	2 EL	0 ET	1 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
	7:00 AM	1	2	0	0	0	0	3	0	10	0	0	0	0	0	0	0	16
	7:15 AM	2	1	0	0	0	0	4	0	8	0	1	0	0	0	0	0	16
	7:30 AM	0	1	0	0	0	3	3	0	12	0	1	0	0	0	0	0	20
	7:45 AM	0	1	0	0	0	5	0	0	12	0	0	0	0	0	0	0	18
	8:00 AM	0	0	0	0	0	3	1	0	18	0	0	0	0	0	0	0	22
	8:15 AM	1	4	0	0	0	3	4	0	17	0	0	0	0	0	0	0	29
	8:30 AM	0	1	0	0	0	4	13	0	8	0	0	0	0	0	0	0	26
	8:45 AM	0	1	0	0	0	6	8	0	9	0	0	0	0	0	0	0	24
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		4	11	0	0	0	24	36	0	94	0	2	0	0	0	0	0	171
PEAK HR :		07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :		2	3	0	0	0	11	8	0	50	0	2	0	0	0	0	0	76
PEAK HR FACTOR :		0.250	0.750	0.000	0.000	0.000	0.550	0.500	0.000	0.694	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.864
		0.417				0.792				0.722								
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	1 SR	0 SU	2 EL	0 ET	1 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
	4:00 PM	0	4	0	0	0	2	0	0	1	0	0	0	0	0	0	0	7
	4:15 PM	0	2	0	0	0	3	1	0	1	0	0	0	0	0	0	0	7
	4:30 PM	0	1	0	0	0	1	4	0	2	0	0	0	0	0	0	0	8
	4:45 PM	0	0	0	0	0	7	2	0	2	0	1	0	0	0	0	0	12
	5:00 PM	0	0	0	0	0	3	3	0	1	0	0	0	0	0	0	0	7
	5:15 PM	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	3
	5:30 PM	0	0	0	0	0	6	2	0	1	0	0	0	0	0	0	0	9
	5:45 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	7	0	0	0	25	12	0	10	0	1	0	0	0	0	0	55
PEAK HR :		05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :		0	0	0	0	0	12	5	0	4	0	0	0	0	0	0	0	21
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.000	0.500	0.417	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583
						0.531				1.000								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Stewart Ave & Rivergrade Rd
City: Irwindale
Control: Signalized

Project ID: 19-05193-004
Date: 4/10/2019

Total																	
NS/EW Streets:		Stewart Ave				Stewart Ave				Rivergrade Rd				Rivergrade Rd			
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1	1	0	0	0.5	1	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	1	3	22	0	1	0	0	0	6	24	2	0	15	40	5	0	119
7:15 AM	0	1	28	0	2	1	1	0	3	22	2	0	17	53	1	0	131
7:30 AM	1	2	27	0	2	1	4	0	4	27	0	0	22	95	1	0	186
7:45 AM	1	1	39	0	3	2	1	0	8	27	0	0	24	88	7	0	201
8:00 AM	0	2	26	0	0	4	1	0	5	27	7	0	31	83	6	0	192
8:15 AM	0	2	17	0	1	0	0	0	6	27	6	0	25	71	1	0	156
8:30 AM	1	3	12	0	1	1	2	0	0	19	2	0	19	73	2	0	135
8:45 AM	1	2	10	0	2	0	3	0	4	14	6	0	8	55	2	0	107
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	5	16	181	0	12	9	12	0	36	187	25	0	161	558	25	0	1227
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	7	109	0	6	7	6	0	23	108	13	0	102	337	15	0	735
PEAK HR FACTOR :	0.500	0.875	0.699	0.000	0.500	0.438	0.375	0.000	0.719	1.000	0.464	0.000	0.823	0.887	0.536	0.000	0.914
	0.720				0.679				0.923				0.946				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1	1	0	0	0.5	1	0.5	0	1	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	1	0	11	0	2	4	5	0	2	28	6	0	23	14	4	0	100
4:15 PM	0	0	13	0	3	0	3	0	3	33	4	0	41	13	2	0	115
4:30 PM	1	1	15	0	6	8	4	0	0	39	4	0	40	20	5	0	143
4:45 PM	1	1	17	0	4	5	11	0	3	30	7	0	35	12	2	0	128
5:00 PM	1	0	14	0	3	1	4	0	2	54	15	0	35	11	2	0	142
5:15 PM	2	2	15	0	5	0	1	0	1	43	8	0	47	13	2	0	139
5:30 PM	0	0	24	0	2	4	5	0	6	33	5	0	52	15	4	0	150
5:45 PM	2	0	18	0	3	1	1	0	3	27	6	0	38	11	2	0	112
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	8	4	127	0	28	23	34	0	20	287	55	0	311	109	23	0	1029
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	4	3	70	0	14	10	21	0	12	160	35	0	169	51	10	0	559
PEAK HR FACTOR :	0.500	0.375	0.729	0.000	0.700	0.500	0.477	0.000	0.500	0.741	0.583	0.000	0.813	0.850	0.625	0.000	0.932
	0.802				0.563				0.729				0.810				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Stewart Ave & Rivergrade Rd
City: Irwindale
Control: Signalized

Project ID: 19-05193-004
Date: 4/10/2019

Cars																	
NS/EW Streets:	Stewart Ave				Stewart Ave				Rivergrade Rd				Rivergrade Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1 NL	1 NT	0 NR	0 NU	0.5 SL	1 ST	0.5 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	1	3	21	0	0	0	0	0	6	10	1	0	14	37	3	0	96
7:15 AM	0	1	28	0	0	1	0	0	2	7	2	0	16	45	1	0	103
7:30 AM	1	1	27	0	0	1	0	0	4	15	0	0	20	90	1	0	160
7:45 AM	1	1	39	0	0	0	0	0	7	14	0	0	24	86	7	0	179
8:00 AM	0	2	24	0	0	4	0	0	3	8	5	0	31	79	6	0	162
8:15 AM	0	2	17	0	0	0	0	0	3	9	5	0	24	66	1	0	127
8:30 AM	1	2	11	0	0	1	0	0	0	10	2	0	19	60	0	0	106
8:45 AM	1	1	9	0	0	0	0	0	2	7	3	0	8	47	1	0	79
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	5	13	176	0	0	7	0	0	27	80	18	0	156	510	20	0	1012
	2.58%	6.70%	90.72%	0.00%	0.00%	100.00%	0.00%	0.00%	21.60%	64.00%	14.40%	0.00%	22.74%	74.34%	2.92%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	6	107	0	0	5	0	0	17	46	10	0	99	321	15	0	628
PEAK HR FACTOR :	0.50	0.750	0.686	0.000	0.000	0.313	0.000	0.000	0.607	0.767	0.500	0.000	0.798	0.892	0.536	0.000	0.877
	0.701				0.313				0.869				0.929				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1 NL	1 NT	0 NR	0 NU	0.5 SL	1 ST	0.5 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	1	0	11	0	0	2	4	0	0	24	5	0	21	13	2	0	83
4:15 PM	0	0	13	0	2	0	2	0	0	32	4	0	40	12	2	0	107
4:30 PM	1	1	15	0	4	8	4	0	0	37	3	0	37	17	3	0	130
4:45 PM	1	0	17	0	3	4	10	0	2	29	6	0	33	10	1	0	116
5:00 PM	1	0	14	0	2	1	3	0	1	54	14	0	35	9	2	0	136
5:15 PM	1	2	15	0	3	0	1	0	1	43	4	0	40	13	2	0	125
5:30 PM	0	0	23	0	2	3	5	0	2	32	5	0	45	11	2	0	130
5:45 PM	1	0	18	0	1	1	1	0	3	25	5	0	34	11	0	0	100
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	6	3	126	0	17	19	30	0	9	276	46	0	285	96	14	0	927
	4.44%	2.22%	93.33%	0.00%	25.76%	28.79%	45.45%	0.00%	2.72%	83.38%	13.90%	0.00%	72.15%	24.30%	3.54%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	3	2	69	0	10	8	19	0	6	158	29	0	153	43	7	0	507
PEAK HR FACTOR :	0.75	0.250	0.750	0.000	0.833	0.500	0.475	0.000	0.750	0.731	0.518	0.000	0.850	0.827	0.875	0.000	0.932
	0.804				0.544				0.699				0.875				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Stewart Ave & Rivergrade Rd
City: Irwindale
Control: Signalized

Project ID: 19-05193-004
Date: 4/10/2019

2axle																			
NS/EW Streets:		Stewart Ave				Stewart Ave				Rivergrade Rd				Rivergrade Rd					
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
		1 NL	1 NT	0 NR	0 NU	0.5 SL	1 ST	0.5 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU		
7:00 AM		0	0	1	0	0	0	0	0	0	2	0	0	0	1	1	0	0	4
7:15 AM		0	0	0	0	0	0	0	0	0	7	0	0	1	1	0	0	9	
7:30 AM		0	1	0	0	2	0	1	0	0	0	0	0	1	0	0	0	5	
7:45 AM		0	0	0	0	2	2	1	0	1	2	0	0	0	1	0	0	9	
8:00 AM		0	0	1	0	0	0	1	0	0	1	1	0	0	1	0	0	5	
8:15 AM		0	0	0	0	0	0	0	0	1	1	1	0	1	1	0	0	5	
8:30 AM		0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:45 AM		0	1	1	0	0	0	2	0	1	0	0	0	0	0	0	0	5	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	2	4	0	4	2	5	0	3	13	2	0	3	5	0	0	43	
		0.00%	33.33%	66.67%	0.00%	36.36%	18.18%	45.45%	0.00%	16.67%	72.22%	11.11%	0.00%	37.50%	62.50%	0.00%	0.00%		
PEAK HR :		07:30 AM - 08:30 AM																TOTAL	
PEAK HR VOL :		0	1	1	0	4	2	3	0	2	4	2	0	2	3	0	0	24	
PEAK HR FACTOR :		0.000	0.250	0.250	0.000	0.500	0.250	0.750	0.000	0.500	0.500	0.500	0.000	0.500	0.750	0.000	0.000	0.667	
		0.500				0.450				0.667				0.625					
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
		1 NL	1 NT	0 NR	0 NU	0.5 SL	1 ST	0.5 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU		
4:00 PM		0	0	0	0	0	0	0	0	2	2	1	0	1	0	1	0	7	
4:15 PM		0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2	
4:30 PM		0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	
4:45 PM		0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	3	
5:00 PM		0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
5:15 PM		1	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	5	
5:30 PM		0	0	1	0	0	0	0	0	3	0	0	0	0	2	0	0	6	
5:45 PM		0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	3	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		1	1	1	0	3	0	1	0	6	2	4	0	4	3	3	0	29	
		33.33%	33.33%	33.33%	0.00%	75.00%	0.00%	25.00%	0.00%	50.00%	16.67%	33.33%	0.00%	40.00%	30.00%	30.00%	0.00%		
PEAK HR :		04:45 PM - 05:45 PM																TOTAL	
PEAK HR VOL :		1	1	1	0	1	0	0	0	3	0	2	0	3	3	0	0	15	
PEAK HR FACTOR :		0.25	0.250	0.250	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.500	0.000	0.250	0.375	0.000	0.000	0.625	
		0.750				0.250				0.417				0.500					

National Data & Surveying Services

Intersection Turning Movement Count

Location: Stewart Ave & Rivergrade Rd
City: Irwindale
Control: Signalized

Project ID: 19-05193-004
Date: 4/10/2019

3axle																		
NS/EW Streets:		Stewart Ave				Stewart Ave				Rivergrade Rd				Rivergrade Rd				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1 NL	1 NT	0 NR	0 NU	0.5 SL	1 ST	0.5 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU	TOTAL	
	7:00 AM	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3	
	7:15 AM	0	0	0	0	0	1	0	0	2	0	0	0	2	0	0	5	
	7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	3	
	7:45 AM	0	0	0	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	1	0	0	1	0	0	2	
	8:15 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	
	8:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	2	1	0	4	
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
APPROACH %'s :		0	0	0	0	0	0	2	0	0	7	1	0	0	9	1	0	
						0.00%	0.00%	100.00%	0.00%	0.00%	87.50%	12.50%	0.00%	0.00%	90.00%	10.00%	0.00%	
PEAK HR :		07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :		0	0	0	0	0	0	1	0	0	2	1	0	0	3	0	0	
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.250	0.000	0.000	0.375	0.000	0.000	
						0.250				0.375				0.375				0.583

PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1 NL	1 NT	0 NR	0 NU	0.5 SL	1 ST	0.5 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU	TOTAL	
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	
	4:15 PM	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	3	
	4:30 PM	0	0	0	0	0	0	0	0	1	0	0	2	1	0	0	4	
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	
	5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
	5:15 PM	0	0	0	0	0	0	0	0	0	1	0	4	0	0	0	5	
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	7	1	0	0	8	
	5:45 PM	1	0	0	0	0	0	0	0	1	0	0	4	0	0	0	6	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
APPROACH %'s :		1	0	0	0	1	0	0	0	1	3	1	0	21	3	0	0	
		100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	20.00%	60.00%	20.00%	0.00%	87.50%	12.50%	0.00%	0.00%	
PEAK HR :		04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :		0	0	0	0	1	0	0	0	0	0	1	0	13	1	0	0	
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.464	0.250	0.000	0.000	
						0.250				0.250				0.438				0.500

National Data & Surveying Services

Intersection Turning Movement Count

Location: Stewart Ave & Rivergrade Rd
City: Irwindale
Control: Signalized

Project ID: 19-05193-004
Date: 4/10/2019

NS/EW Streets:		Stewart Ave				Stewart Ave				Rivergrade Rd				Rivergrade Rd				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		1	1	0	0	0.5	1	0.5	0	1	2	0	0	1	2	0	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	7:00 AM	0	0	0	0	1	0	0	0	0	10	1	0	1	1	2	0	16
	7:15 AM	0	0	0	0	2	0	0	0	1	6	0	0	0	5	0	0	14
	7:30 AM	0	0	0	0	0	0	2	0	0	12	0	0	1	3	0	0	18
	7:45 AM	0	0	0	0	1	0	0	0	0	11	0	0	0	1	0	0	13
	8:00 AM	0	0	1	0	0	0	0	0	2	18	0	0	0	2	0	0	23
	8:15 AM	0	0	0	0	1	0	0	0	2	15	0	0	0	4	0	0	22
	8:30 AM	0	1	0	0	1	0	2	0	0	8	0	0	0	11	1	0	24
8:45 AM	0	0	0	0	2	0	1	0	1	7	3	0	0	7	1	0	22	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	1	1	0	8	0	5	0	6	87	4	0	2	34	4	0	152
		0.00%	50.00%	50.00%	0.00%	61.54%	0.00%	38.46%	0.00%	6.19%	89.69%	4.12%	0.00%	5.00%	85.00%	10.00%	0.00%	
PEAK HR :		07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :		0	0	1	0	2	0	2	0	4	56	0	0	1	10	0	0	76
PEAK HR FACTOR :		0.000	0.000	0.250	0.000	0.500	0.000	0.250	0.000	0.500	0.778	0.000	0.000	0.250	0.625	0.000	0.000	0.826
		0.250				0.500				0.750				0.688				

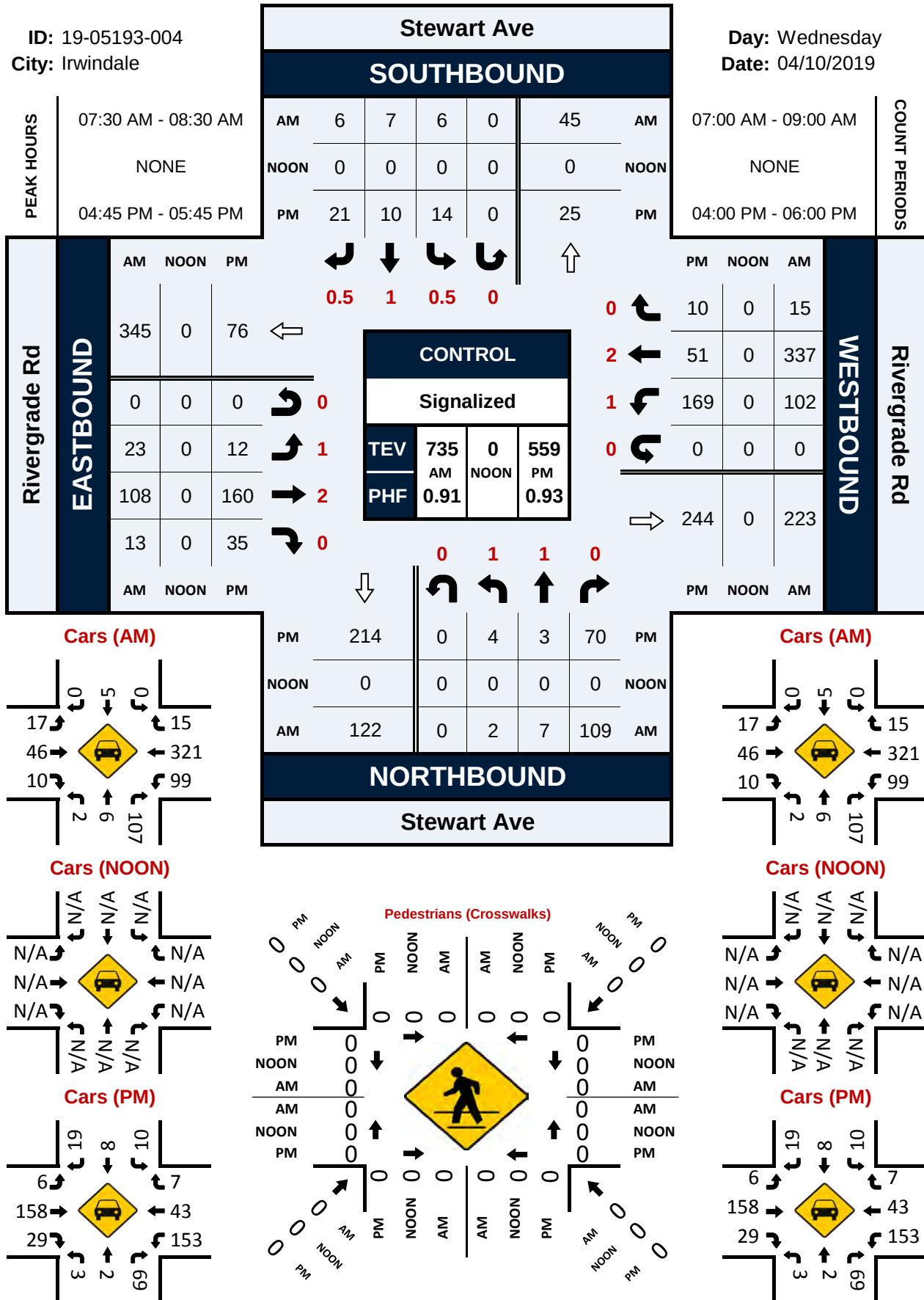
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		1	1	0	0	0.5	1	0.5	0	1	2	0	0	1	2	0	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
	4:00 PM	0	0	0	0	2	2	1	0	0	2	0	0	0	0	0	1	0	8
	4:15 PM	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	3	
	4:30 PM	0	0	0	0	2	0	0	0	0	1	0	0	1	2	1	0	7	
	4:45 PM	0	0	0	0	1	1	1	0	1	1	0	0	0	1	1	0	7	
	5:00 PM	0	0	0	0	0	0	1	0	1	0	0	0	0	2	0	0	4	
	5:15 PM	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	4	
	5:30 PM	0	0	0	0	0	1	0	0	1	1	0	0	0	1	2	0	6	
5:45 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	3		
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	0	0	0	7	4	3	0	4	6	4	0	1	7	6	0	42	
						50.00%	28.57%	21.43%	0.00%	28.57%	42.86%	28.57%	0.00%	7.14%	50.00%	42.86%	0.00%		
PEAK HR :		04:45 PM - 05:45 PM																TOTAL	
PEAK HR VOL :		0	0	0	0	2	2	2	0	3	2	3	0	0	4	3	0	21	
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.500	0.500	0.500	0.000	0.750	0.500	0.250	0.000	0.000	0.500	0.375	0.000	0.750	
						0.500				0.667				0.583					

Stewart Ave & Rivergrade Rd

Peak Hour Turning Movement Count

ID: 19-05193-004
City: Irwindale

Day: Wednesday
Date: 04/10/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB On-ramp & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-005
Date: 4/10/2019

Total																	
NS/EW Streets:	I-605 SB On-ramp				I-605 SB On-ramp				Live Oak Ave				Live Oak Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	0	0	0	0	38	101	0	170	293	0	0	602
7:15 AM	0	0	0	0	0	0	0	0	0	63	93	0	127	332	0	0	615
7:30 AM	0	0	0	0	0	0	0	0	0	67	98	0	94	340	0	0	599
7:45 AM	0	0	0	0	0	0	0	0	0	100	118	0	104	323	0	0	645
8:00 AM	0	0	0	0	0	0	0	0	0	95	117	0	102	288	0	0	602
8:15 AM	0	0	0	0	0	0	0	0	0	110	113	0	96	255	0	1	575
8:30 AM	0	0	0	0	0	0	0	0	0	96	139	0	103	292	0	0	630
8:45 AM	0	0	0	0	0	0	0	0	0	107	115	0	86	251	0	1	560
TOTAL VOLUMES : APPROACH %'s :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	0	0	0	0	0	0	0	0	0	676	894	0	882	2374	0	2	4828
PEAK HR :	07:00 AM - 08:00 AM								0.00% 43.06% 56.94% 0.00%				27.07% 72.87% 0.00% 0.06%				TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	268	410	0	495	1288	0	0	2461
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.670	0.869	0.000	0.728	0.947	0.000	0.000	0.954
									0.778				0.963				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	203	245	0	120	201	0	1	770
4:15 PM	0	0	0	0	0	0	0	0	0	218	237	0	117	211	0	4	787
4:30 PM	0	0	0	0	0	0	0	0	0	256	277	0	142	199	0	1	875
4:45 PM	0	0	0	0	0	0	0	0	0	242	281	0	119	207	0	0	849
5:00 PM	0	0	0	0	0	0	0	0	0	222	320	0	153	247	0	1	943
5:15 PM	0	0	0	0	0	0	0	0	0	272	316	0	134	228	0	2	952
5:30 PM	0	0	0	0	0	0	0	0	0	258	280	0	110	232	0	2	882
5:45 PM	0	0	0	0	0	0	0	0	0	243	303	0	103	186	0	2	837
TOTAL VOLUMES : APPROACH %'s :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	0	0	0	0	0	0	0	0	0	1914	2259	0	998	1711	0	13	6895
PEAK HR :	04:45 PM - 05:45 PM								0.00% 45.87% 54.13% 0.00%				36.66% 62.86% 0.00% 0.48%				TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	994	1197	0	516	914	0	5	3626
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.914	0.935	0.000	0.843	0.925	0.000	0.625	0.952
									0.932				0.895				

National Data & Surveying Services

Location: I-605 SB On-ramp & Live Oak Ave

City: Irwindale

Control: Signalized

Project ID: 19-05193-005

Date: 4/10/2019

Cars

NS/EW Streets:	I-605 SB On-ramp				I-605 SB On-ramp				Live Oak Ave				Live Oak Ave																			
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL															
	0 NL	0 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU																
7:00 AM	0	0	0	0	0	0	0	0	0	31	80	0	146	269	0	0	526															
7:15 AM	0	0	0	0	0	0	0	0	0	53	74	0	104	307	0	0	538															
7:30 AM	0	0	0	0	0	0	0	0	0	59	76	0	79	312	0	0	526															
7:45 AM	0	0	0	0	0	0	0	0	0	94	100	0	80	309	0	0	583															
8:00 AM	0	0	0	0	0	0	0	0	0	89	94	0	86	256	0	0	525															
8:15 AM	0	0	0	0	0	0	0	0	0	100	91	0	74	233	0	1	499															
8:30 AM	0	0	0	0	0	0	0	0	0	91	107	0	75	263	0	0	536															
8:45 AM	0	0	0	0	0	0	0	0	0	91	90	0	53	226	0	1	461															
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL															
APPROACH %'s :	0	0	0	0	0	0	0	0	0	608	712	0	697	2175	0	2	4194															
	0.00%				46.06%				53.94%				0.00%				24.25%				75.68%				0.00%				0.07%			
PEAK HR :	07:00 AM - 08:00 AM																								TOTAL							
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	237	330	0	409	1197	0	0	2173															
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.630	0.825	0.000	0.700	0.959	0.000	0.000	0.932															
									0.731				0.967																			

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	196	228	0	109	178	0	1	712
4:15 PM	0	0	0	0	0	0	0	0	0	209	226	0	103	193	0	4	735
4:30 PM	0	0	0	0	0	0	0	0	0	248	262	0	136	180	0	1	827
4:45 PM	0	0	0	0	0	0	0	0	0	230	268	0	117	195	0	0	810
5:00 PM	0	0	0	0	0	0	0	0	0	216	306	0	150	228	0	1	901
5:15 PM	0	0	0	0	0	0	0	0	0	267	299	0	128	219	0	2	915
5:30 PM	0	0	0	0	0	0	0	0	0	251	272	0	107	222	0	2	854
5:45 PM	0	0	0	0	0	0	0	0	0	238	290	0	98	173	0	2	801
TOTAL VOLUMES : APPROACH %'s :	NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 1855	ER 2151	EU 0	WL 948	WT 1588	WR 0	WU 13	TOTAL 6555
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	964	1145	0	502	864	0	5	3480
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.903	0.935	0.000	0.837	0.947	0.000	0.625	0.951

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB On-ramp & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-005
Date: 4/10/2019

2axle																	
NS/EW Streets:	I-605 SB On-ramp				I-605 SB On-ramp				Live Oak Ave				Live Oak Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	0	0	0	0	0	2	6	0	9	7	0	0	24
7:15 AM	0	0	0	0	0	0	0	0	0	3	5	0	7	11	0	0	26
7:30 AM	0	0	0	0	0	0	0	0	0	2	2	0	4	8	0	0	16
7:45 AM	0	0	0	0	0	0	0	0	0	1	4	0	1	4	0	0	10
8:00 AM	0	0	0	0	0	0	0	0	0	0	7	0	4	13	0	0	24
8:15 AM	0	0	0	0	0	0	0	0	0	5	5	0	6	4	0	0	20
8:30 AM	0	0	0	0	0	0	0	0	0	1	7	0	7	8	0	0	23
8:45 AM	0	0	0	0	0	0	0	0	0	3	3	0	4	6	0	0	16
TOTAL VOLUMES : APPROACH %'s :	NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 17	ER 39	EU 0	WL 42	WT 61	WR 0	WU 0	TOTAL 159
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL : PEAK HR FACTOR :	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	8 0.667	17 0.708	0 0.000	21 0.583	30 0.682	0 0.000	0 0.000	76 0.731
									0.781				0.708				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	0	0	0	0	0	4	8	0	3	6	0	0	21
4:15 PM	0	0	0	0	0	0	0	0	0	5	6	0	5	3	0	0	19
4:30 PM	0	0	0	0	0	0	0	0	0	5	4	0	1	4	0	0	14
4:45 PM	0	0	0	0	0	0	0	0	0	6	3	0	0	4	0	0	13
5:00 PM	0	0	0	0	0	0	0	0	0	3	6	0	1	3	0	0	13
5:15 PM	0	0	0	0	0	0	0	0	0	2	8	0	2	0	0	0	12
5:30 PM	0	0	0	0	0	0	0	0	0	1	3	0	1	3	0	0	8
5:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	1	4	0	0	9
TOTAL VOLUMES : APPROACH %'s :	NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 26	ER 42	EU 0	WL 14	WT 27	WR 0	WU 0	TOTAL 109
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL : PEAK HR FACTOR :	0 0.00	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	12 0.500	20 0.625	0 0.000	4 0.500	10 0.625	0 0.000	0 0.000	46 0.885
									0.800				0.875				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB On-ramp & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-005
Date: 4/10/2019

3axle																			
NS/EW Streets:		I-605 SB On-ramp				I-605 SB On-ramp				Live Oak Ave				Live Oak Ave					
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	0	0	0	0	0	0	0	0	2	1	0	1	2	0	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
7:00 AM 7:15 AM 7:30 AM 7:45 AM	7:00 AM	0	0	0	0	0	0	0	0	0	1	7	0	3	5	0	0	16	
	7:15 AM	0	0	0	0	0	0	0	0	0	1	7	0	5	6	0	0	19	
	7:30 AM	0	0	0	0	0	0	0	0	0	0	6	0	2	5	0	0	13	
	7:45 AM	0	0	0	0	0	0	0	0	0	1	4	0	5	4	0	0	14	
8:00 AM 8:15 AM 8:30 AM 8:45 AM	8:00 AM	0	0	0	0	0	0	0	0	0	4	4	0	2	7	0	0	17	
	8:15 AM	0	0	0	0	0	0	0	0	0	1	6	0	2	3	0	0	12	
	8:30 AM	0	0	0	0	0	0	0	0	0	1	9	0	4	6	0	0	20	
	8:45 AM	0	0	0	0	0	0	0	0	0	4	2	0	0	5	0	0	11	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	0	0	0	0	0	0	0	0	13	45	0	23	41	0	0	122	
										0.00% 22.41% 77.59% 0.00%				35.94% 64.06% 0.00% 0.00%					
PEAK HR :		07:00 AM - 08:00 AM																TOTAL	
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	3	24	0	15	20	0	0	62	
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.857	0.000	0.750	0.833	0.000	0.000	0.816	
										0.844				0.795					
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	0	0	0	0	0	0	0	0	2	1	0	1	2	0	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
4:00 PM 4:15 PM 4:30 PM 4:45 PM	4:00 PM	0	0	0	0	0	0	0	0	0	1	1	0	3	9	0	0	14	
	4:15 PM	0	0	0	0	0	0	0	0	0	1	1	0	1	7	0	0	10	
	4:30 PM	0	0	0	0	0	0	0	0	0	1	8	0	2	9	0	0	20	
	4:45 PM	0	0	0	0	0	0	0	0	0	3	5	0	0	2	0	0	10	
5:00 PM 5:15 PM 5:30 PM 5:45 PM	5:00 PM	0	0	0	0	0	0	0	0	0	2	4	0	0	7	0	0	13	
	5:15 PM	0	0	0	0	0	0	0	0	0	1	4	0	1	5	0	0	11	
	5:30 PM	0	0	0	0	0	0	0	0	0	2	1	0	0	2	0	0	5	
	5:45 PM	0	0	0	0	0	0	0	0	0	2	3	0	3	3	0	0	11	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	0	0	0	0	0	0	0	0	13	27	0	10	44	0	0	94	
										0.00% 32.50% 67.50% 0.00%				18.52% 81.48% 0.00% 0.00%					
PEAK HR :		04:45 PM - 05:45 PM																TOTAL	
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	8	14	0	1	16	0	0	39	
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.667	0.700	0.000	0.250	0.571	0.000	0.000	0.750	
										0.688				0.607					

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB On-ramp & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-005
Date: 4/10/2019

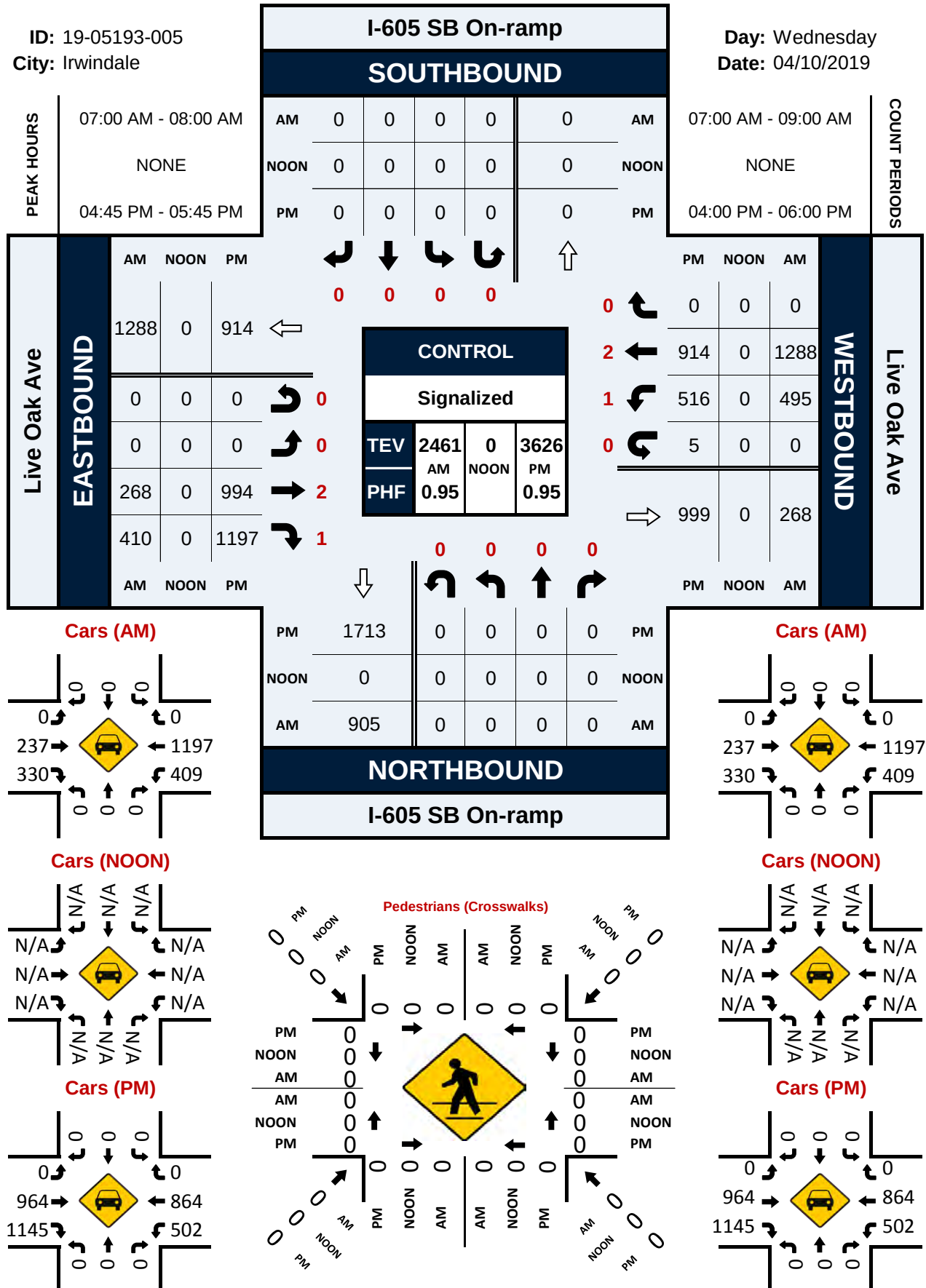
4axle																		
NS/EW Streets:		I-605 SB On-ramp				I-605 SB On-ramp				Live Oak Ave				Live Oak Ave				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0	0	0	0	0	0	0	0	0	2	1	0	1	2	0	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM 7:15 AM 7:30 AM 7:45 AM		0	0	0	0	0	0	0	0	0	4	8	0	12	12	0	0	36
		0	0	0	0	0	0	0	0	0	6	7	0	11	8	0	0	32
		0	0	0	0	0	0	0	0	0	6	14	0	9	15	0	0	44
		0	0	0	0	0	0	0	0	0	4	10	0	18	6	0	0	38
8:00 AM 8:15 AM 8:30 AM 8:45 AM		0	0	0	0	0	0	0	0	0	2	12	0	10	12	0	0	36
		0	0	0	0	0	0	0	0	0	4	11	0	14	15	0	0	44
		0	0	0	0	0	0	0	0	0	3	16	0	17	15	0	0	51
		0	0	0	0	0	0	0	0	0	9	20	0	29	14	0	0	72
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	0	0	0	0	0	0	0	0	38	98	0	120	97	0	0	353
										0.00% 27.94% 72.06% 0.00%				55.30% 44.70% 0.00% 0.00%				
PEAK HR :		07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	20	39	0	50	41	0	0	150
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.833	0.696	0.000	0.694	0.683	0.000	0.000	0.852
										0.738				0.948				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0	0	0	0	0	0	0	0	0	2	1	0	1	2	0	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM 4:15 PM 4:30 PM 4:45 PM		0	0	0	0	0	0	0	0	0	2	8	0	5	8	0	0	23
		0	0	0	0	0	0	0	0	0	3	4	0	8	8	0	0	23
		0	0	0	0	0	0	0	0	0	2	3	0	3	6	0	0	14
		0	0	0	0	0	0	0	0	0	3	5	0	2	6	0	0	16
5:00 PM 5:15 PM 5:30 PM 5:45 PM		0	0	0	0	0	0	0	0	0	1	4	0	2	9	0	0	16
		0	0	0	0	0	0	0	0	0	2	5	0	3	4	0	0	14
		0	0	0	0	0	0	0	0	0	4	4	0	2	5	0	0	15
		0	0	0	0	0	0	0	0	0	3	6	0	1	6	0	0	16
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	0	0	0	0	0	0	0	0	20	39	0	26	52	0	0	137
										0.00% 33.90% 66.10% 0.00%				33.33% 66.67% 0.00% 0.00%				
PEAK HR :		04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	10	18	0	9	24	0	0	61
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.900	0.000	0.750	0.667	0.000	0.000	0.953
										0.875				0.750				

I-605 SB On-ramp & Live Oak Ave

Peak Hour Turning Movement Count

ID: 19-05193-005
City: Irwindale

Day: Wednesday
Date: 04/10/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB Off-ramps & Live Oak Ave

City: Irwindale

Control: 2-Way Stop (NB/SB)

Project ID: 19-05193-006

Date: 4/10/2019

Total																	
NS/EW Streets:		I-605 NB Off-ramps				I-605 NB Off-ramps				Live Oak Ave				Live Oak Ave			
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	0	1	0	0	0	1	0	0	2	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	0	85	0	0	0	95	0	0	40	0	0	0	370	0	0	590
7:15 AM	0	0	102	0	0	0	124	0	0	60	0	0	0	335	0	0	621
7:30 AM	0	0	118	0	0	0	140	0	0	68	0	0	0	289	0	0	615
7:45 AM	0	0	152	0	0	0	139	0	0	96	0	0	0	293	0	0	680
8:00 AM	0	0	129	0	0	0	121	0	0	99	0	0	0	265	0	0	614
8:15 AM	0	0	119	0	0	0	141	0	0	113	0	0	0	215	0	0	588
8:30 AM	0	0	132	0	0	0	141	0	0	95	0	0	0	246	0	0	614
8:45 AM	0	0	117	0	0	0	140	0	0	105	0	0	0	206	0	0	568
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	954	0	0	0	1041	0	0	676	0	0	0	2219	0	0	4890
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	501	0	0	0	524	0	0	323	0	0	0	1182	0	0	2530
PEAK HR FACTOR :	0.000	0.000	0.824	0.000	0.000	0.000	0.936	0.000	0.000	0.816	0.000	0.000	0.000	0.882	0.000	0.000	0.930
	0.824				0.936				0.816				0.882				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	0	1	0	0	0	1	0	0	2	0	0	0	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	0	149	0	0	0	142	0	0	205	0	0	0	182	0	0	678
4:15 PM	0	0	156	0	0	0	146	0	0	222	0	0	0	182	0	0	706
4:30 PM	0	0	172	0	0	0	130	0	0	250	0	0	0	210	0	0	762
4:45 PM	0	0	158	0	0	0	138	0	0	247	0	0	0	188	0	0	731
5:00 PM	0	0	146	0	0	0	134	0	0	226	0	0	0	261	0	0	767
5:15 PM	0	0	146	0	0	0	127	0	0	272	0	0	0	243	0	0	788
5:30 PM	0	0	113	0	0	0	147	0	0	242	0	0	0	197	0	0	699
5:45 PM	0	0	131	0	0	0	120	0	0	265	0	0	0	173	0	0	689
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	1171	0	0	0	1084	0	0	1929	0	0	0	1636	0	0	5820
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	622	0	0	0	529	0	0	995	0	0	0	902	0	0	3048
PEAK HR FACTOR :	0.000	0.000	0.904	0.000	0.000	0.000	0.958	0.000	0.000	0.915	0.000	0.000	0.000	0.864	0.000	0.000	0.967
	0.904				0.958				0.915				0.864				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB Off-ramps & Live Oak Ave
City: Irwindale
Control: 2-Way Stop (NB/SB)

Project ID: 19-05193-006
Date: 4/10/2019

Cars																	
NS/EW Streets:	I-605 NB Off-ramps				I-605 NB Off-ramps				Live Oak Ave				Live Oak Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	1 NR	0 NU	0 SL	0 ST	1 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	67	0	0	0	84	0	0	33	0	0	0	334	0	0	518
7:15 AM	0	0	80	0	0	0	110	0	0	51	0	0	0	298	0	0	539
7:30 AM	0	0	97	0	0	0	122	0	0	59	0	0	0	263	0	0	541
7:45 AM	0	0	135	0	0	0	130	0	0	90	0	0	0	265	0	0	620
8:00 AM	0	0	104	0	0	0	106	0	0	93	0	0	0	235	0	0	538
8:15 AM	0	0	89	0	0	0	122	0	0	102	0	0	0	187	0	0	500
8:30 AM	0	0	100	0	0	0	126	0	0	90	0	0	0	206	0	0	522
8:45 AM	0	0	83	0	0	0	123	0	0	90	0	0	0	165	0	0	461
TOTAL VOLUMES : APPROACH %'s :	NL 0	NT 0	NR 755	NU 0	SL 0	ST 0	SR 923	SU 0	EL 0	ET 608	ER 0	EU 0	WL 0	WT 1953	WR 0	WU 0	TOTAL 4239
	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	416	0	0	0	468	0	0	293	0	0	0	1061	0	0	2238
PEAK HR FACTOR :	0.00	0.000	0.770	0.000	0.000	0.000	0.900	0.000	0.000	0.788	0.000	0.000	0.000	0.890	0.000	0.000	0.902
	0.770				0.900				0.788				0.890				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	1 NR	0 NU	0 SL	0 ST	1 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	138	0	0	0	126	0	0	199	0	0	0	164	0	0	627
4:15 PM	0	0	146	0	0	0	136	0	0	211	0	0	0	160	0	0	653
4:30 PM	0	0	163	0	0	0	115	0	0	243	0	0	0	200	0	0	721
4:45 PM	0	0	153	0	0	0	134	0	0	236	0	0	0	178	0	0	701
5:00 PM	0	0	138	0	0	0	119	0	0	219	0	0	0	253	0	0	729
5:15 PM	0	0	141	0	0	0	121	0	0	267	0	0	0	235	0	0	764
5:30 PM	0	0	106	0	0	0	142	0	0	237	0	0	0	188	0	0	673
5:45 PM	0	0	127	0	0	0	110	0	0	258	0	0	0	166	0	0	661
TOTAL VOLUMES : APPROACH %'s :	NL 0	NT 0	NR 1112	NU 0	SL 0	ST 0	SR 1003	SU 0	EL 0	ET 1870	ER 0	EU 0	WL 0	WT 1544	WR 0	WU 0	TOTAL 5529
	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	595	0	0	0	489	0	0	965	0	0	0	866	0	0	2915
PEAK HR FACTOR :	0.00	0.000	0.913	0.000	0.000	0.000	0.912	0.000	0.000	0.904	0.000	0.000	0.000	0.856	0.000	0.000	0.954
	0.913				0.912				0.904				0.856				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB Off-ramps & Live Oak Ave
City: Irwindale
Control: 2-Way Stop (NB/SB)

Project ID: 19-05193-006
Date: 4/10/2019

2axle																	
NS/EW Streets:	I-605 NB Off-ramps				I-605 NB Off-ramps				Live Oak Ave				Live Oak Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	1 NR	0 NU	0 SL	0 ST	1 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	3	0	0	0	3	0	0	2	0	0	0	13	0	0	21
7:15 AM	0	0	2	0	0	0	4	0	0	2	0	0	0	14	0	0	22
7:30 AM	0	0	5	0	0	0	5	0	0	3	0	0	0	7	0	0	20
7:45 AM	0	0	1	0	0	0	2	0	0	1	0	0	0	4	0	0	8
8:00 AM	0	0	1	0	0	0	5	0	0	0	0	0	0	11	0	0	17
8:15 AM	0	0	4	0	0	0	3	0	0	5	0	0	0	7	0	0	19
8:30 AM	0	0	1	0	0	0	2	0	0	1	0	0	0	13	0	0	17
8:45 AM	0	0	5	0	0	0	3	0	0	3	0	0	0	7	0	0	18
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	22	0	0	0	27	0	0	17	0	0	0	76	0	0	142
	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	9	0	0	0	16	0	0	6	0	0	0	36	0	0	67
PEAK HR FACTOR :	0.000	0.000	0.450	0.000	0.000	0.000	0.800	0.000	0.000	0.500	0.000	0.000	0.000	0.643	0.000	0.000	0.761
	0.450				0.800				0.500				0.643				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	1 NR	0 NU	0 SL	0 ST	1 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	4	0	0	0	2	0	0	4	0	0	0	6	0	0	16
4:15 PM	0	0	3	0	0	0	1	0	0	6	0	0	0	8	0	0	18
4:30 PM	0	0	4	0	0	0	4	0	0	4	0	0	0	1	0	0	13
4:45 PM	0	0	1	0	0	0	0	0	0	5	0	0	0	4	0	0	10
5:00 PM	0	0	4	0	0	0	2	0	0	4	0	0	0	2	0	0	12
5:15 PM	0	0	3	0	0	0	0	0	0	2	0	0	0	2	0	0	7
5:30 PM	0	0	3	0	0	0	1	0	0	1	0	0	0	3	0	0	8
5:45 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	3	0	0	7
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	24	0	0	0	12	0	0	26	0	0	0	29	0	0	91
	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	12	0	0	0	6	0	0	15	0	0	0	9	0	0	42
PEAK HR FACTOR :	0.00	0.000	0.750	0.000	0.000	0.000	0.375	0.000	0.000	0.750	0.000	0.000	0.000	0.563	0.000	0.000	0.808
	0.750				0.375				0.750				0.563				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB Off-ramps & Live Oak Ave
City: Irwindale
Control: 2-Way Stop (NB/SB)

Project ID: 19-05193-006
Date: 4/10/2019

3axle																		
NS/EW Streets:		I-605 NB Off-ramps				I-605 NB Off-ramps				Live Oak Ave				Live Oak Ave				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0 NL	0 NT	1 NR	0 NU	0 SL	0 ST	1 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
7:00 AM		0	0	1	0	0	0	5	0	0	1	0	0	0	3	0	0	10
7:15 AM		0	0	4	0	0	0	5	0	0	1	0	0	0	7	0	0	17
7:30 AM		0	0	2	0	0	0	5	0	0	0	0	0	0	5	0	0	12
7:45 AM		0	0	3	0	0	0	1	0	0	1	0	0	0	5	0	0	10
8:00 AM		0	0	6	0	0	0	3	0	0	4	0	0	0	3	0	0	16
8:15 AM		0	0	3	0	0	0	3	0	0	1	0	0	0	3	0	0	10
8:30 AM		0	0	3	0	0	0	3	0	0	1	0	0	0	7	0	0	14
8:45 AM		0	0	1	0	0	0	4	0	0	4	0	0	0	2	0	0	11
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	0	23	0	0	0	29	0	0	13	0	0	0	35	0	0	100
		0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :		07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :		0	0	15	0	0	0	14	0	0	6	0	0	0	20	0	0	55
PEAK HR FACTOR :		0.000	0.000	0.625	0.000	0.000	0.000	0.700	0.000	0.000	0.375	0.000	0.000	0.000	0.714	0.000	0.000	0.809
		0.625				0.700				0.375				0.714				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0 NL	0 NT	1 NR	0 NU	0 SL	0 ST	1 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
4:00 PM		0	0	3	0	0	0	6	0	0	1	0	0	0	7	0	0	17
4:15 PM		0	0	3	0	0	0	5	0	0	1	0	0	0	2	0	0	11
4:30 PM		0	0	2	0	0	0	5	0	0	1	0	0	0	6	0	0	14
4:45 PM		0	0	3	0	0	0	1	0	0	3	0	0	0	1	0	0	8
5:00 PM		0	0	3	0	0	0	5	0	0	2	0	0	0	2	0	0	12
5:15 PM		0	0	1	0	0	0	3	0	0	1	0	0	0	3	0	0	8
5:30 PM		0	0	2	0	0	0	0	0	0	0	0	0	0	3	0	0	5
5:45 PM		0	0	0	0	0	0	2	0	0	4	0	0	0	3	0	0	9
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	0	17	0	0	0	27	0	0	13	0	0	0	27	0	0	84
		0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		0	0	9	0	0	0	14	0	0	7	0	0	0	12	0	0	42
PEAK HR FACTOR :		0.00	0.000	0.750	0.000	0.000	0.000	0.700	0.000	0.000	0.583	0.000	0.000	0.000	0.500	0.000	0.000	0.750
		0.750				0.700				0.583				0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB Off-ramps & Live Oak Ave
City: Irwindale
Control: 2-Way Stop (NB/SB)

Project ID: 19-05193-006
Date: 4/10/2019

4axle																	
NS/EW Streets:	I-605 NB Off-ramps				I-605 NB Off-ramps				Live Oak Ave				Live Oak Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	1 NR	0 NU	0 SL	0 ST	1 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	14	0	0	0	3	0	0	4	0	0	0	20	0	0	41
7:15 AM	0	0	16	0	0	0	5	0	0	6	0	0	0	16	0	0	43
7:30 AM	0	0	14	0	0	0	8	0	0	6	0	0	0	14	0	0	42
7:45 AM	0	0	13	0	0	0	6	0	0	4	0	0	0	19	0	0	42
8:00 AM	0	0	18	0	0	0	7	0	0	2	0	0	0	16	0	0	43
8:15 AM	0	0	23	0	0	0	13	0	0	5	0	0	0	18	0	0	59
8:30 AM	0	0	28	0	0	0	10	0	0	3	0	0	0	20	0	0	61
8:45 AM	0	0	28	0	0	0	10	0	0	8	0	0	0	32	0	0	78
TOTAL VOLUMES : APPROACH %'s :	NL 0	NT 0	NR 154	NU 0	SL 0	ST 0	SR 62	SU 0	EL 0	ET 38	ER 0	EU 0	WL 0	WT 155	WR 0	WU 0	TOTAL 409
	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	61	0	0	0	26	0	0	18	0	0	0	65	0	0	170
PEAK HR FACTOR :	0.000	0.000	0.847	0.000	0.000	0.000	0.813	0.000	0.000	0.750	0.000	0.000	0.000	0.855	0.000	0.000	0.988
	0.847				0.813				0.750				0.855				

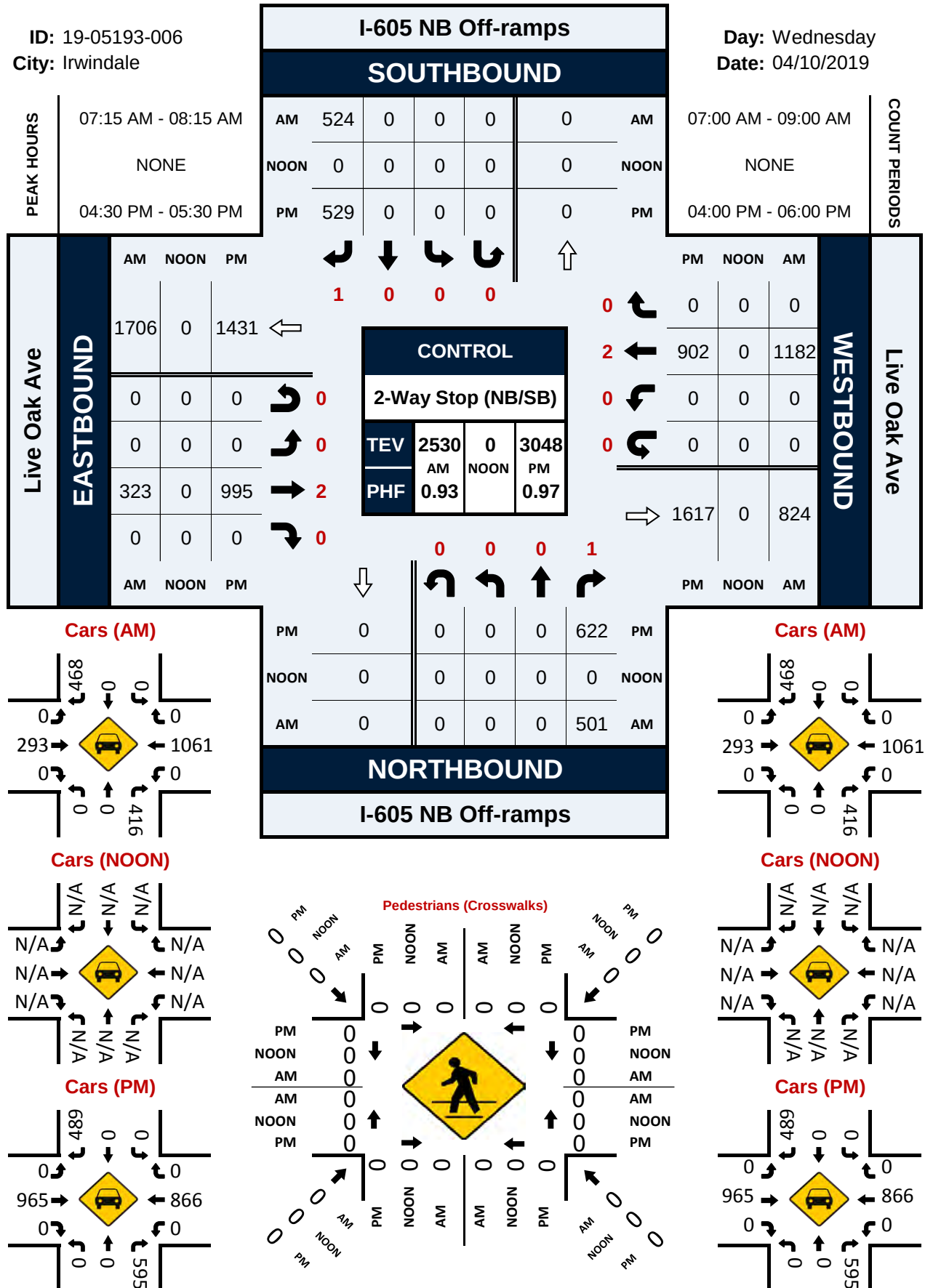
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	1 NR	0 NU	0 SL	0 ST	1 SR	0 SU	0 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	4	0	0	0	8	0	0	1	0	0	0	5	0	0	18
4:15 PM	0	0	4	0	0	0	4	0	0	4	0	0	0	12	0	0	24
4:30 PM	0	0	3	0	0	0	6	0	0	2	0	0	0	3	0	0	14
4:45 PM	0	0	1	0	0	0	3	0	0	3	0	0	0	5	0	0	12
5:00 PM	0	0	1	0	0	0	8	0	0	1	0	0	0	4	0	0	14
5:15 PM	0	0	1	0	0	0	3	0	0	2	0	0	0	3	0	0	9
5:30 PM	0	0	2	0	0	0	4	0	0	4	0	0	0	3	0	0	13
5:45 PM	0	0	2	0	0	0	6	0	0	3	0	0	0	1	0	0	12
TOTAL VOLUMES : APPROACH %'s :	NL 0	NT 0	NR 18	NU 0	SL 0	ST 0	SR 42	SU 0	EL 0	ET 20	ER 0	EU 0	WL 0	WT 36	WR 0	WU 0	TOTAL 116
	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	0	6	0	0	0	20	0	0	8	0	0	0	15	0	0	49
PEAK HR FACTOR :	0.00	0.000	0.500	0.000	0.000	0.000	0.625	0.000	0.000	0.667	0.000	0.000	0.000	0.750	0.000	0.000	0.875
	0.500				0.625				0.667				0.750				

I-605 NB Off-ramps & Live Oak Ave

Peak Hour Turning Movement Count

ID: 19-05193-006
City: Irwindale

Day: Wednesday
Date: 04/10/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Graham Access Rd & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-007
Date: 4/10/2019

Total																		
NS/EW Streets:		Graham Access Rd				Graham Access Rd				Live Oak Ave				Live Oak Ave				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0	1	0	0	0	0	0	0	0	2	0	0	1	2	0	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
	7:00 AM	8	0	11	0	0	0	0	0	0	117	10	0	4	364	0	1	515
	7:15 AM	20	0	12	0	0	0	0	0	0	146	14	0	2	307	0	0	501
	7:30 AM	4	0	3	0	0	0	0	0	0	175	12	0	2	295	0	0	491
	7:45 AM	13	0	8	0	0	0	0	0	0	236	13	0	4	269	0	0	543
	8:00 AM	7	0	3	0	0	0	0	0	0	214	12	0	3	266	0	0	505
	8:15 AM	4	0	10	0	0	0	0	0	0	209	17	0	2	208	0	0	450
	8:30 AM	5	0	6	0	0	0	0	0	0	215	19	0	1	242	0	1	489
	8:45 AM	14	0	3	0	0	0	0	0	0	194	22	0	6	190	0	0	429
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		75	0	56	0	0	0	0	0	0	1506	119	0	24	2141	0	2	3923
PEAK HR :		07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :		45	0	34	0	0	0	0	0	0	674	49	0	12	1235	0	1	2050
PEAK HR FACTOR :		0.563	0.000	0.708	0.000	0.000	0.000	0.000	0.000	0.000	0.714	0.875	0.000	0.750	0.848	0.000	0.250	0.944
		0.617								0.726				0.846				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0	1	0	0	0	0	0	0	0	2	0	0	1	2	0	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
	4:00 PM	6	0	2	0	0	0	0	0	0	350	4	0	1	173	0	1	537
	4:15 PM	4	0	4	0	0	0	0	0	0	370	8	0	0	181	0	3	570
	4:30 PM	5	0	3	0	0	0	0	0	0	426	2	0	0	205	0	1	642
	4:45 PM	3	0	4	0	0	0	0	0	0	396	3	0	1	185	0	0	592
	5:00 PM	7	0	5	0	0	0	0	0	0	368	3	0	3	256	0	2	644
	5:15 PM	2	0	1	0	0	0	0	0	0	417	2	0	0	239	0	1	662
	5:30 PM	1	0	3	0	0	0	0	0	0	354	1	0	3	195	0	2	559
	5:45 PM	5	0	4	0	0	0	0	0	0	390	4	0	2	164	0	1	570
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		33	0	26	0	0	0	0	0	0	3071	27	0	10	1598	0	11	4776
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		17	0	13	0	0	0	0	0	0	1607	10	0	4	885	0	4	2540
PEAK HR FACTOR :		0.607	0.000	0.650	0.000	0.000	0.000	0.000	0.000	0.000	0.943	0.833	0.000	0.333	0.864	0.000	0.500	0.959
		0.625								0.945				0.855				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Graham Access Rd & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-007
Date: 4/10/2019

Cars																	
NS/EW Streets:	Graham Access Rd				Graham Access Rd				Live Oak Ave				Live Oak Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	1	0	0	0	0	0	0	0	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	3	0	2	0	0	0	0	0	0	99	2	0	3	331	0	1	441
7:15 AM	6	0	2	0	0	0	0	0	0	126	4	0	1	286	0	0	425
7:30 AM	1	0	1	0	0	0	0	0	0	155	2	0	1	268	0	0	428
7:45 AM	3	0	3	0	0	0	0	0	0	221	3	0	4	253	0	0	487
8:00 AM	1	0	1	0	0	0	0	0	0	197	0	0	1	243	0	0	443
8:15 AM	0	0	1	0	0	0	0	0	0	185	0	0	1	185	0	0	372
8:30 AM	0	0	2	0	0	0	0	0	0	195	2	0	0	208	0	1	408
8:45 AM	0	0	1	0	0	0	0	0	0	164	3	0	5	162	0	0	335
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	14	0	13	0	0	0	0	0	0	1342	16	0	16	1936	0	2	3339
	51.85%	0.00%	48.15%	0.00%					0.00%	98.82%	1.18%	0.00%	0.82%	99.08%	0.00%	0.10%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	13	0	8	0	0	0	0	0	0	601	11	0	9	1138	0	1	1781
PEAK HR FACTOR :	0.54	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.680	0.688	0.000	0.563	0.860	0.000	0.250	0.914
	0.656								0.683				0.857				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	1	0	0	0	0	0	0	0	2	0	0	1	2	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	4	0	1	0	0	0	0	0	0	335	2	0	1	157	0	1	501
4:15 PM	1	0	3	0	0	0	0	0	0	353	4	0	0	162	0	3	526
4:30 PM	5	0	3	0	0	0	0	0	0	413	0	0	0	195	0	1	617
4:45 PM	2	0	3	0	0	0	0	0	0	382	0	0	1	176	0	0	564
5:00 PM	5	0	5	0	0	0	0	0	0	355	1	0	2	250	0	2	620
5:15 PM	1	0	1	0	0	0	0	0	0	409	0	0	0	232	0	1	644
5:30 PM	1	0	3	0	0	0	0	0	0	344	0	0	3	187	0	2	540
5:45 PM	4	0	3	0	0	0	0	0	0	379	3	0	1	157	0	1	548
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	23	0	22	0	0	0	0	0	0	2970	10	0	8	1516	0	11	4560
	51.11%	0.00%	48.89%	0.00%					0.00%	99.66%	0.34%	0.00%	0.52%	98.76%	0.00%	0.72%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	13	0	12	0	0	0	0	0	0	1559	1	0	3	853	0	4	2445
PEAK HR FACTOR :	0.65	0.000	0.600	0.000	0.000	0.000	0.000	0.000	0.000	0.944	0.250	0.000	0.375	0.853	0.000	0.500	0.949
	0.625								0.944				0.846				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Graham Access Rd & Live Oak Ave

City: Irwindale

Control: Signalized

Project ID: 19-05193-007

Date: 4/10/2019

2axle																		
NS/EW Streets:		Graham Access Rd				Graham Access Rd				Live Oak Ave				Live Oak Ave				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		0	1	0	0	0	0	0	0	0	2	0	0	1	2	0	0	TOTAL
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM		0	0	4	0	0	0	0	0	0	4	1	0	0	13	0	0	22
7:15 AM		8	0	5	0	0	0	0	0	0	4	0	0	0	6	0	0	23
7:30 AM		0	0	0	0	0	0	0	0	0	8	0	0	0	7	0	0	15
7:45 AM		0	0	1	0	0	0	0	0	0	2	0	0	0	4	0	0	7
8:00 AM		0	0	0	0	0	0	0	0	0	1	0	0	0	11	0	0	12
8:15 AM		0	0	0	0	0	0	0	0	0	9	0	0	0	7	0	0	16
8:30 AM		0	0	0	0	0	0	0	0	0	2	0	0	0	13	0	0	15
8:45 AM		0	0	0	0	0	0	0	0	0	8	0	0	0	7	0	0	15
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		8	0	10	0	0	0	0	0	0	38	1	0	0	68	0	0	125
		44.44%	0.00%	55.56%	0.00%					0.00%	97.44%	2.56%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :		07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :		8	0	10	0	0	0	0	0	0	18	1	0	0	30	0	0	67
PEAK HR FACTOR :		0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.563	0.250	0.000	0.000	0.577	0.000	0.000	0.728
		0.346								0.594				0.577				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		0	1	0	0	0	0	0	0	0	2	0	0	1	2	0	0	TOTAL
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM		1	0	1	0	0	0	0	0	0	6	2	0	0	5	0	0	15
4:15 PM		0	0	0	0	0	0	0	0	0	7	2	0	0	8	0	0	17
4:30 PM		0	0	0	0	0	0	0	0	0	8	0	0	0	1	0	0	9
4:45 PM		0	0	1	0	0	0	0	0	0	5	1	0	0	4	0	0	11
5:00 PM		2	0	0	0	0	0	0	0	0	6	2	0	1	0	0	0	11
5:15 PM		0	0	0	0	0	0	0	0	0	3	2	0	0	2	0	0	7
5:30 PM		0	0	0	0	0	0	0	0	0	4	0	0	0	3	0	0	7
5:45 PM		0	0	0	0	0	0	0	0	0	2	0	0	1	3	0	0	6
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		3	0	2	0	0	0	0	0	0	41	9	0	2	26	0	0	83
		60.00%	0.00%	40.00%	0.00%					0.00%	82.00%	18.00%	0.00%	7.14%	92.86%	0.00%	0.00%	
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		2	0	1	0	0	0	0	0	0	22	5	0	1	7	0	0	38
PEAK HR FACTOR :		0.25	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.688	0.625	0.000	0.250	0.438	0.000	0.000	0.864
		0.375								0.844				0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Graham Access Rd & Live Oak Ave

City: Irwindale

Control: Signalized

Project ID: 19-05193-007

Date: 4/10/2019

3axle																			
NS/EW Streets:		Graham Access Rd				Graham Access Rd				Live Oak Ave				Live Oak Ave					
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	1	0	0	0	0	0	0	0	2	0	0	1	2	0	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
7:00 AM 7:15 AM 7:30 AM 7:45 AM	7:00 AM	1	0	1	0	0	0	0	0	0	3	0	0	1	4	0	0	10	
	7:15 AM	0	0	0	0	0	0	0	0	0	3	1	0	0	5	0	0	9	
	7:30 AM	0	0	1	0	0	0	0	0	0	2	1	0	0	7	0	0	11	
	7:45 AM	0	0	0	0	0	0	0	0	0	4	1	0	0	3	0	0	8	
8:00 AM 8:15 AM 8:30 AM 8:45 AM	8:00 AM	1	0	0	0	0	0	0	0	0	7	1	0	2	3	0	0	14	
	8:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	1	2	0	0	7	
	8:30 AM	0	0	0	0	0	0	0	0	0	3	2	0	0	5	0	0	10	
	8:45 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	8	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		2	0	2	0	0	0	0	0	0	30	6	0	4	33	0	0	77	
		50.00%	0.00%	50.00%	0.00%					0.00%	83.33%	16.67%	0.00%	10.81%	89.19%	0.00%	0.00%		
PEAK HR :		07:00 AM - 08:00 AM																TOTAL	
PEAK HR VOL :		1	0	2	0	0	0	0	0	0	12	3	0	1	19	0	0	38	
PEAK HR FACTOR :		0.250	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.750	0.000	0.250	0.679	0.000	0.000	0.864	
		0.375								0.750				0.714					
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	1	0	0	0	0	0	0	0	2	0	0	1	2	0	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
4:00 PM 4:15 PM 4:30 PM 4:45 PM	4:00 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	0	11	
	4:15 PM	0	0	1	0	0	0	0	0	0	4	0	0	0	2	0	0	7	
	4:30 PM	0	0	0	0	0	0	0	0	0	1	1	0	0	6	0	0	8	
	4:45 PM	1	0	0	0	0	0	0	0	0	5	2	0	0	0	0	0	8	
5:00 PM 5:15 PM 5:30 PM 5:45 PM	5:00 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	0	7	
	5:15 PM	1	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	5	
	5:30 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4	
	5:45 PM	1	0	1	0	0	0	0	0	0	3	1	0	0	3	0	0	9	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		3	0	2	0	0	0	0	0	0	26	4	0	0	24	0	0	59	
		60.00%	0.00%	40.00%	0.00%					0.00%	86.67%	13.33%	0.00%	0.00%	100.00%	0.00%	0.00%		
PEAK HR :		04:30 PM - 05:30 PM																TOTAL	
PEAK HR VOL :		2	0	0	0	0	0	0	0	0	13	3	0	0	10	0	0	28	
PEAK HR FACTOR :		0.50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.650	0.375	0.000	0.000	0.417	0.000	0.000	0.875	
		0.500								0.571				0.417					

National Data & Surveying Services

Intersection Turning Movement Count

Location: Graham Access Rd & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-007
Date: 4/10/2019

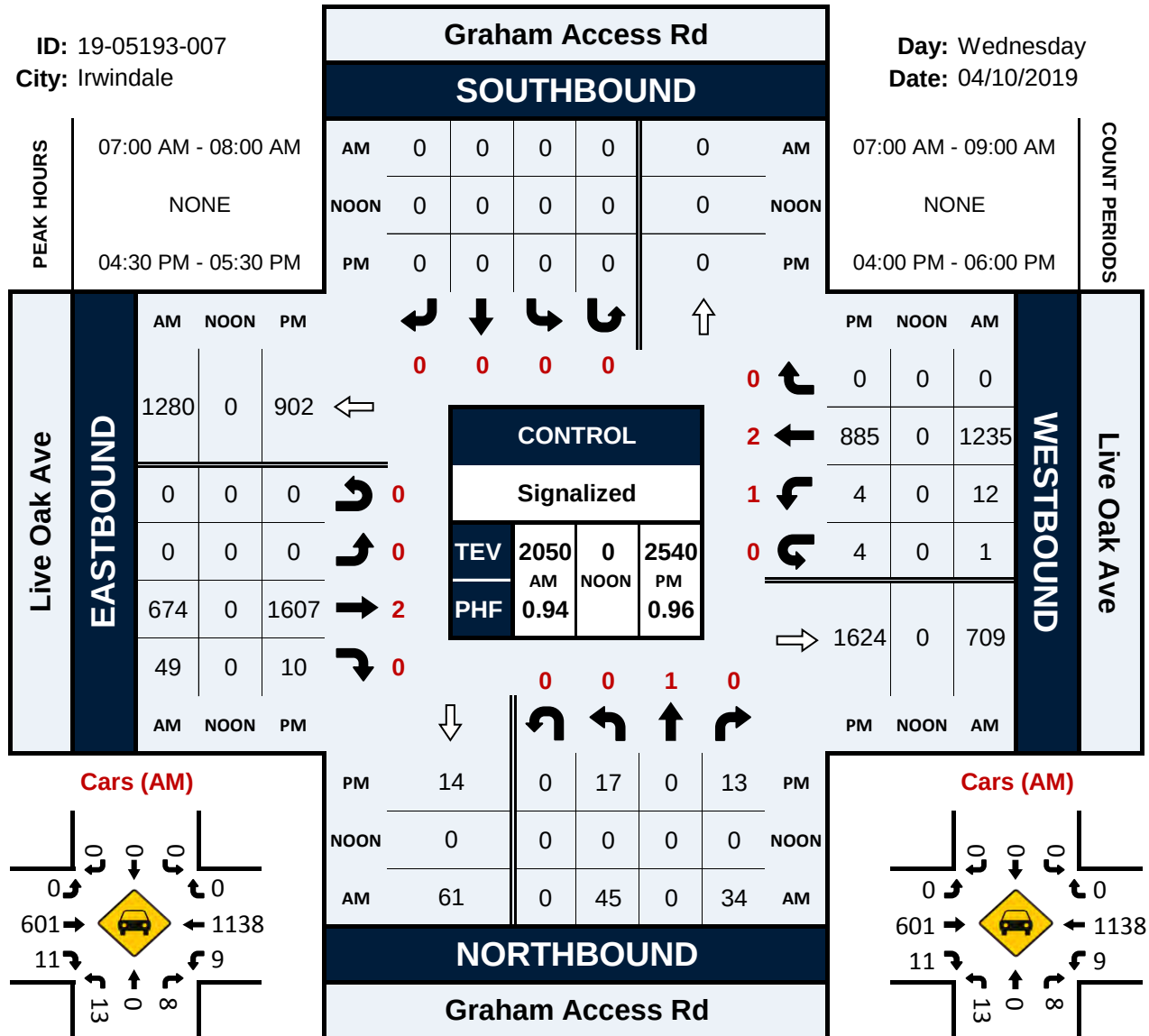
4axle																		
NS/EW Streets:		Graham Access Rd				Graham Access Rd				Live Oak Ave				Live Oak Ave				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0 NL	1 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
7:00 AM		4	0	4	0	0	0	0	0	0	11	7	0	0	16	0	0	42
7:15 AM		6	0	5	0	0	0	0	0	0	13	9	0	1	10	0	0	44
7:30 AM		3	0	1	0	0	0	0	0	0	10	9	0	1	13	0	0	37
7:45 AM		10	0	4	0	0	0	0	0	0	9	9	0	0	9	0	0	41
8:00 AM		5	0	2	0	0	0	0	0	0	9	11	0	0	9	0	0	36
8:15 AM		4	0	9	0	0	0	0	0	0	11	17	0	0	14	0	0	55
8:30 AM		5	0	4	0	0	0	0	0	0	15	15	0	1	16	0	0	56
8:45 AM		14	0	2	0	0	0	0	0	0	18	19	0	1	17	0	0	71
TOTAL VOLUMES :		NL 51	NT 0	NR 31	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 96	ER 96	EU 0	WL 4	WT 104	WR 0	WU 0	TOTAL 382
APPROACH %'s :		62.20%	0.00%	37.80%	0.00%					0.00%	50.00%	50.00%	0.00%	3.70%	96.30%	0.00%	0.00%	
PEAK HR :		07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :		23	0	14	0	0	0	0	0	0	43	34	0	2	48	0	0	164
PEAK HR FACTOR :		0.575	0.000	0.700	0.000	0.000	0.000	0.000	0.000	0.000	0.827	0.944	0.000	0.500	0.750	0.000	0.000	0.932
		0.661								0.875				0.781				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0 NL	1 NT	0 NR	0 NU	0 SL	0 ST	0 SR	0 SU	0 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
4:00 PM		1	0	0	0	0	0	0	0	0	5	0	0	0	4	0	0	10
4:15 PM		3	0	0	0	0	0	0	0	0	6	2	0	0	9	0	0	20
4:30 PM		0	0	0	0	0	0	0	0	0	4	1	0	0	3	0	0	8
4:45 PM		0	0	0	0	0	0	0	0	0	4	0	0	0	5	0	0	9
5:00 PM		0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	6
5:15 PM		0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	6
5:30 PM		0	0	0	0	0	0	0	0	0	4	1	0	0	3	0	0	8
5:45 PM		0	0	0	0	0	0	0	0	0	6	0	0	0	1	0	0	7
TOTAL VOLUMES :		NL 4	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 34	ER 4	EU 0	WL 0	WT 32	WR 0	WU 0	TOTAL 74
APPROACH %'s :		100.00%	0.00%	0.00%	0.00%					0.00%	89.47%	10.53%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	13	1	0	0	15	0	0	29
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.813	0.250	0.000	0.000	0.750	0.000	0.000	0.806
										0.700				0.750				

Graham Access Rd & Live Oak Ave

Peak Hour Turning Movement Count

ID: 19-05193-007
City: Irwindale

Day: Wednesday
Date: 04/10/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-008
Date: 4/10/2019

Total																	
NS/EW Streets:		Rivergrade Rd				Rivergrade Rd				Live Oak Ave				Live Oak Ave			
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1	1	1	0	1	2	1	0	1	1.5	0.5	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	9	14	12	0	3	35	9	0	23	96	8	0	78	323	0	0	610
7:15 AM	9	12	17	0	4	39	9	0	13	121	12	0	83	304	2	0	625
7:30 AM	16	15	37	0	6	91	6	0	16	132	13	0	81	243	2	0	658
7:45 AM	13	21	44	0	7	81	10	0	17	186	27	0	67	249	4	0	726
8:00 AM	12	26	52	0	2	69	6	0	9	178	26	0	65	257	4	0	706
8:15 AM	15	20	15	0	7	69	6	0	18	153	43	0	51	179	5	0	581
8:30 AM	6	15	23	0	4	58	11	0	19	160	41	0	43	222	3	0	605
8:45 AM	14	12	26	0	9	39	11	0	16	131	35	0	65	167	3	0	528
TOTAL VOLUMES :	NL 94	NT 135	NR 226	NU 0	SL 42	ST 481	SR 68	SU 0	EL 131	ET 1157	ER 205	EU 0	WL 533	WT 1944	WR 23	WU 0	TOTAL 5039
APPROACH %'s :	20.66%	29.67%	49.67%	0.00%	7.11%	81.39%	11.51%	0.00%	8.77%	77.49%	13.73%	0.00%	21.32%	77.76%	0.92%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	50	74	150	0	19	280	31	0	55	617	78	0	296	1053	12	0	2715
PEAK HR FACTOR :	0.781	0.712	0.721	0.000	0.679	0.769	0.775	0.000	0.809	0.829	0.722	0.000	0.892	0.866	0.750	0.000	0.935
	0.761				0.801				0.815				0.875				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1	1	1	0	1	2	1	0	1	1.5	0.5	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	17	25	127	0	4	8	8	0	8	340	5	0	21	153	2	0	718
4:15 PM	23	25	124	0	4	10	11	0	10	358	8	0	16	143	4	0	736
4:30 PM	31	34	144	0	5	6	17	0	10	377	4	0	35	155	5	0	823
4:45 PM	23	25	125	0	4	8	17	0	13	395	5	0	29	135	1	0	780
5:00 PM	59	53	145	0	9	9	19	0	10	337	10	0	19	174	8	0	852
5:15 PM	42	36	117	0	6	4	10	0	5	412	7	0	21	176	7	0	843
5:30 PM	34	33	135	0	5	8	19	0	8	296	6	0	25	145	6	0	720
5:45 PM	15	20	98	0	3	5	8	0	10	415	5	0	22	135	3	0	739
TOTAL VOLUMES :	NL 244	NT 251	NR 1015	NU 0	SL 40	ST 58	SR 109	SU 0	EL 74	ET 2930	ER 50	EU 0	WL 188	WT 1216	WR 36	WU 0	TOTAL 6211
APPROACH %'s :	16.16%	16.62%	67.22%	0.00%	19.32%	28.02%	52.66%	0.00%	2.42%	95.94%	1.64%	0.00%	13.06%	84.44%	2.50%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	155	148	531	0	24	27	63	0	38	1521	26	0	104	640	21	0	3298
PEAK HR FACTOR :	0.657	0.698	0.916	0.000	0.667	0.750	0.829	0.000	0.731	0.923	0.650	0.000	0.743	0.909	0.656	0.000	0.968
	0.811				0.770				0.935				0.938				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-008
Date: 4/10/2019

Cars																
NS/EW Streets:	Rivergrade Rd				Rivergrade Rd				Live Oak Ave				Live Oak Ave			
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	1	1	1	0	1	2	1	0	1	1.5	0.5	0	1	2	1	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU
7:00 AM	9	7	11	0	3	33	6	0	11	87	6	0	74	302	0	0
7:15 AM	8	7	16	0	4	35	6	0	8	109	3	0	81	291	1	0
7:30 AM	15	6	34	0	6	87	3	0	11	126	10	0	77	229	1	0
7:45 AM	13	14	37	0	7	79	8	0	13	181	22	0	63	240	4	0
8:00 AM	7	10	43	0	2	67	2	0	5	169	23	0	65	240	2	0
8:15 AM	11	8	13	0	6	66	2	0	9	140	33	0	50	166	4	0
8:30 AM	4	13	21	0	4	54	3	0	12	155	32	0	41	201	3	0
8:45 AM	13	8	24	0	9	36	4	0	8	119	29	0	62	150	1	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU
APPROACH %'s :	80	73	199	0	41	457	34	0	77	1086	158	0	513	1819	16	0
	22.73%	20.74%	56.53%	0.00%	7.71%	85.90%	6.39%	0.00%	5.83%	82.21%	11.96%	0.00%	21.85%	77.47%	0.68%	0.00%
PEAK HR :	07:15 AM - 08:15 AM															
PEAK HR VOL :	43	37	130	0	19	268	19	0	37	585	58	0	286	1000	8	0
PEAK HR FACTOR :	0.72	0.661	0.756	0.000	0.679	0.770	0.594	0.000	0.712	0.808	0.630	0.000	0.883	0.859	0.500	0.000
	0.820				0.797				0.787				0.867			
TOTAL																
2490																
0.914																
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	1	1	1	0	1	2	1	0	1	1.5	0.5	0	1	2	1	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU
4:00 PM	15	21	121	0	4	7	6	0	7	329	5	0	20	141	2	0
4:15 PM	20	24	117	0	4	10	8	0	7	342	7	0	13	132	3	0
4:30 PM	29	33	138	0	5	6	14	0	9	366	4	0	34	148	2	0
4:45 PM	22	25	119	0	4	8	15	0	12	385	3	0	29	132	1	0
5:00 PM	58	51	141	0	9	8	17	0	10	327	10	0	18	172	8	0
5:15 PM	41	34	117	0	6	4	9	0	5	408	7	0	19	172	6	0
5:30 PM	33	30	133	0	5	6	18	0	7	287	6	0	24	139	5	0
5:45 PM	15	20	93	0	3	5	7	0	8	409	5	0	21	129	3	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU
APPROACH %'s :	233	238	979	0	40	54	94	0	65	2853	47	0	178	1165	30	0
	16.07%	16.41%	67.52%	0.00%	21.28%	28.72%	50.00%	0.00%	2.19%	96.22%	1.59%	0.00%	12.96%	84.85%	2.18%	0.00%
PEAK HR :	04:30 PM - 05:30 PM															
PEAK HR VOL :	150	143	515	0	24	26	55	0	36	1486	24	0	100	624	17	0
PEAK HR FACTOR :	0.65	0.701	0.913	0.000	0.667	0.813	0.809	0.000	0.750	0.911	0.600	0.000	0.735	0.907	0.531	0.000
	0.808				0.772				0.920				0.936			
TOTAL																
3200																
0.965																

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-008
Date: 4/10/2019

		2axle																	
NS/EW Streets:		Rivergrade Rd				Rivergrade Rd				Live Oak Ave				Live Oak Ave					
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
		1	1	1	0	1	2	1	0	1	1.5	0.5	0	1	2	1	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
	7:00 AM	0	2	1	0	0	1	0	0	4	2	0	0	2	12	0	0	24	
	7:15 AM	0	1	1	0	0	1	0	0	3	7	0	0	1	6	0	0	20	
	7:30 AM	0	0	2	0	0	0	0	0	2	3	0	0	2	7	0	0	16	
	7:45 AM	0	1	1	0	0	1	0	0	0	3	0	0	0	3	0	0	9	
	8:00 AM	2	0	1	0	0	1	2	0	0	2	0	0	0	9	0	0	17	
	8:15 AM	0	1	1	0	1	0	1	0	1	5	0	0	0	6	0	0	16	
	8:30 AM	1	0	1	0	0	0	0	0	0	2	1	0	1	12	0	0	18	
	8:45 AM	0	1	1	0	0	0	1	0	1	6	0	0	2	6	0	0	18	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		3	6	9	0	1	4	4	0	11	30	1	0	8	61	0	0	138	
PEAK HR :		07:15 AM - 08:15 AM																TOTAL	
PEAK HR VOL :		2	2	5	0	0	3	2	0	5	15	0	0	3	25	0	0	62	
PEAK HR FACTOR :		0.250	0.500	0.625	0.000	0.000	0.750	0.250	0.000	0.417	0.536	0.000	0.000	0.375	0.694	0.000	0.000	0.775	
		0.750				0.417				0.500				0.778					
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
		1	1	1	0	1	2	1	0	1	1.5	0.5	0	1	2	1	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
	4:00 PM	1	3	2	0	0	0	1	0	0	7	0	0	1	5	0	0	20	
	4:15 PM	0	1	5	0	0	0	2	0	1	6	0	0	2	5	0	0	22	
	4:30 PM	1	1	3	0	0	0	0	0	0	7	0	0	1	2	0	0	15	
	4:45 PM	0	0	3	0	0	0	0	0	0	5	2	0	0	3	0	0	13	
	5:00 PM	0	1	3	0	0	0	0	0	0	5	0	0	0	1	0	0	10	
	5:15 PM	0	0	0	0	0	0	1	0	0	2	0	0	1	1	0	0	5	
	5:30 PM	0	2	1	0	0	1	1	0	0	6	0	0	0	4	1	0	16	
	5:45 PM	0	0	4	0	0	0	0	0	0	2	0	0	0	3	0	0	9	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		2	8	21	0	0	1	5	0	1	40	2	0	5	24	1	0	110	
PEAK HR :		04:30 PM - 05:30 PM																TOTAL	
PEAK HR VOL :		1	2	9	0	0	0	1	0	0	19	2	0	2	7	0	0	43	
PEAK HR FACTOR :		0.25	0.500	0.750	0.000	0.000	0.000	0.250	0.000	0.000	0.679	0.250	0.000	0.500	0.583	0.000	0.000	0.717	
		0.600				0.250				0.750				0.750					

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-008
Date: 4/10/2019

3axle																	
NS/EW Streets:	Rivergrade Rd				Rivergrade Rd				Live Oak Ave				Live Oak Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	1 EL	1.5 ET	0.5 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
7:00 AM	0	1	0	0	0	0	1	0	2	2	0	0	0	2	0	0	8
7:15 AM	1	0	0	0	0	1	2	0	0	2	0	0	0	3	1	0	10
7:30 AM	0	0	1	0	0	1	1	0	0	1	0	0	0	2	0	0	6
7:45 AM	0	0	3	0	0	1	0	0	0	0	0	0	0	3	0	0	7
8:00 AM	2	0	1	0	0	0	0	0	0	4	1	0	0	4	1	0	13
8:15 AM	0	0	0	0	0	0	1	0	2	4	0	0	0	2	1	0	10
8:30 AM	0	0	1	0	0	1	1	0	0	2	1	0	0	4	0	0	10
8:45 AM	0	0	0	0	0	1	0	0	0	1	1	0	0	3	0	0	6
TOTAL VOLUMES :	NL 3	NT 1	NR 6	NU 0	SL 0	ST 5	SR 6	SU 0	EL 4	ET 16	ER 3	EU 0	WL 0	WT 23	WR 3	WU 0	TOTAL 70
APPROACH %'s :	30.00%	10.00%	60.00%	0.00%	0.00%	45.45%	54.55%	0.00%	17.39%	69.57%	13.04%	0.00%	0.00%	88.46%	11.54%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	3	0	5	0	0	3	3	0	0	7	1	0	0	12	2	0	36
PEAK HR FACTOR :	0.375	0.000	0.417	0.000	0.000	0.750	0.375	0.000	0.000	0.438	0.250	0.000	0.000	0.750	0.500	0.000	0.692
	0.667				0.500				0.400				0.700				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	1 EL	1.5 ET	0.5 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
4:00 PM	0	0	3	0	0	0	0	0	0	2	0	0	0	5	0	0	10
4:15 PM	1	0	2	0	0	0	1	0	2	3	0	0	0	0	0	0	9
4:30 PM	1	0	1	0	0	0	1	0	1	1	0	0	0	4	0	0	9
4:45 PM	0	0	2	0	0	0	0	0	0	3	0	0	0	0	0	0	5
5:00 PM	0	0	1	0	0	0	0	0	0	4	0	0	1	0	0	0	6
5:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	4
5:30 PM	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	4
5:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	4
TOTAL VOLUMES :	NL 2	NT 1	NR 9	NU 0	SL 0	ST 1	SR 3	SU 0	EL 3	ET 16	ER 0	EU 0	WL 3	WT 12	WR 1	WU 0	TOTAL 51
APPROACH %'s :	16.67%	8.33%	75.00%	0.00%	0.00%	25.00%	75.00%	0.00%	15.79%	84.21%	0.00%	0.00%	18.75%	75.00%	6.25%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	1	0	4	0	0	0	1	0	1	9	0	0	2	5	1	0	24
PEAK HR FACTOR :	0.25	0.000	0.500	0.000	0.000	0.000	0.250	0.000	0.250	0.563	0.000	0.000	0.500	0.313	0.250	0.000	0.667
	0.625				0.250				0.625				0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Live Oak Ave
City: Irwindale
Control: Signalized

Project ID: 19-05193-008
Date: 4/10/2019

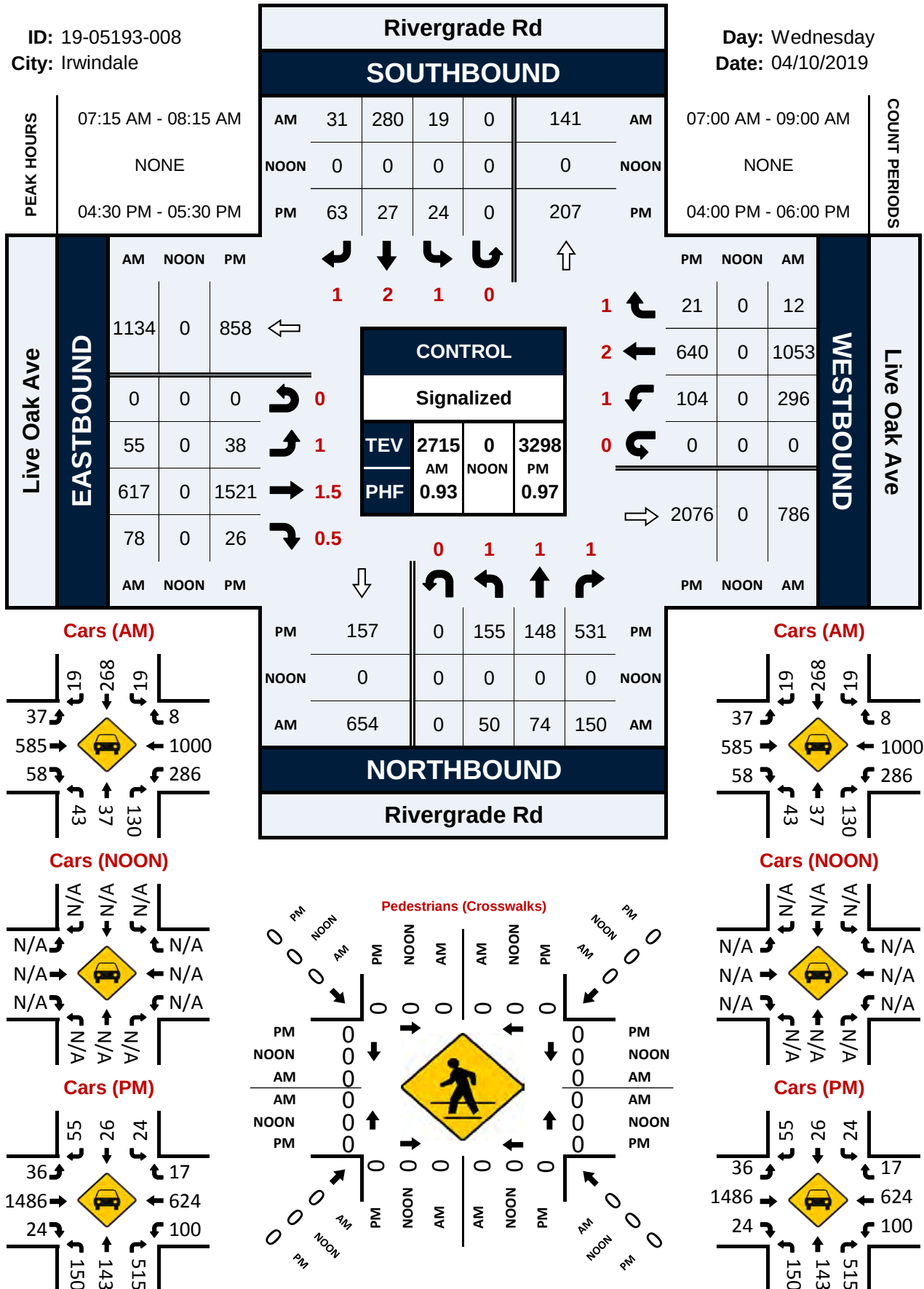
4axle																	
NS/EW Streets:	Rivergrade Rd				Rivergrade Rd				Live Oak Ave				Live Oak Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	1	0	1	1.5	0.5	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	0	4	0	0	0	1	2	0	6	5	2	0	2	7	0	0	29
	0	4	0	0	0	2	1	0	2	3	9	0	1	4	0	0	26
7:00 AM	1	9	0	0	0	3	2	0	3	2	3	0	2	5	1	0	31
7:15 AM	0	6	3	0	0	0	2	0	4	2	5	0	4	3	0	0	29
7:30 AM	1	16	7	0	0	1	2	0	4	3	2	0	0	4	1	0	41
7:45 AM	4	11	1	0	0	3	2	0	6	4	10	0	1	5	0	0	47
8:00 AM	1	2	0	0	0	3	7	0	7	1	7	0	1	5	0	0	34
8:15 AM	1	3	1	0	0	2	6	0	7	5	5	0	1	8	2	0	41
8:30 AM																	
8:45 AM																	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	8	55	12	0	0	15	24	0	39	25	43	0	12	41	4	0	278
	10.67%	73.33%	16.00%	0.00%	0.00%	38.46%	61.54%	0.00%	36.45%	23.36%	40.19%	0.00%	21.05%	71.93%	7.02%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	2	35	10	0	0	6	7	0	13	10	19	0	7	16	2	0	127
PEAK HR FACTOR :	0.500	0.547	0.357	0.000	0.000	0.500	0.875	0.000	0.813	0.833	0.528	0.000	0.438	0.800	0.500	0.000	0.774
	0.490				0.650				0.750				0.781				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	1	0	1	2	1	0	1	1.5	0.5	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	1	1	1	0	0	1	1	0	1	2	0	0	0	2	0	0	10
	2	0	0	0	0	0	0	0	0	7	1	0	1	6	1	0	18
4:00 PM	0	0	2	0	0	0	2	0	0	3	0	0	0	1	3	0	11
4:15 PM	1	0	1	0	0	0	2	0	1	2	0	0	0	0	0	0	7
4:30 PM	1	1	0	0	0	1	2	0	0	1	0	0	0	1	0	0	7
4:45 PM	1	2	0	0	0	0	0	0	0	1	0	0	0	2	0	0	6
5:00 PM	1	0	1	0	0	0	0	0	1	2	0	0	0	2	0	0	7
5:15 PM	0	0	1	0	0	0	0	0	2	3	0	0	1	1	0	0	8
5:30 PM																	
5:45 PM																	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	7	4	6	0	0	2	7	0	5	21	1	0	2	15	4	0	74
	41.18%	23.53%	35.29%	0.00%	0.00%	22.22%	77.78%	0.00%	18.52%	77.78%	3.70%	0.00%	9.52%	71.43%	19.05%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	3	3	3	0	0	1	6	0	1	7	0	0	0	4	3	0	31
PEAK HR FACTOR :	0.75	0.375	0.375	0.000	0.000	0.250	0.750	0.000	0.250	0.583	0.000	0.000	0.000	0.500	0.250	0.000	0.705
	0.750				0.583				0.667				0.438				

Rivergrade Rd & Live Oak Ave

Peak Hour Turning Movement Count

ID: 19-05193-008
City: Irwindale

Day: Wednesday
Date: 04/10/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Commerce Dr
City: Irwindale
Control: 1-Way Stop (WB)

Project ID: 19-05193-009
Date: 4/10/2019

Total																	
NS/EW Streets:	Rivergrade Rd				Rivergrade Rd				Commerce Dr				Commerce Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU	
7:00 AM	0	48	21	0	3	108	0	0	0	0	0	0	23	0	3	0	206
7:15 AM	0	40	16	0	3	124	0	0	0	0	0	0	33	0	0	0	216
7:30 AM	0	64	20	0	6	152	0	0	0	0	0	0	32	0	1	0	275
7:45 AM	0	84	23	0	4	172	0	0	0	0	0	0	21	0	2	0	306
8:00 AM	0	93	31	0	5	153	0	0	0	0	0	0	15	0	2	0	299
8:15 AM	0	66	26	0	5	147	0	0	0	0	0	0	12	0	1	0	257
8:30 AM	0	64	14	0	1	111	0	0	0	0	0	0	7	0	3	0	200
8:45 AM	0	63	18	0	2	121	0	0	0	0	0	0	7	0	2	0	213
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	522	169	0	29	1088	0	0	0	0	0	0	150	0	14	0	1972
	0.00%	75.54%	24.46%	0.00%	2.60%	97.40%	0.00%	0.00%					91.46%	0.00%	8.54%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	307	100	0	20	624	0	0	0	0	0	0	80	0	6	0	1137
PEAK HR FACTOR :	0.000	0.825	0.806	0.000	0.833	0.907	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.750	0.000	0.929
	0.821				0.915								0.652				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU	
4:00 PM	0	150	5	0	0	41	0	0	0	0	0	0	11	0	9	0	216
4:15 PM	0	156	3	0	1	33	0	0	0	0	0	0	15	0	5	0	213
4:30 PM	0	175	10	0	2	62	0	0	0	0	0	0	22	0	14	0	285
4:45 PM	0	157	8	0	0	40	0	0	0	0	0	0	21	0	5	0	231
5:00 PM	0	178	5	0	3	44	0	0	0	0	0	0	56	0	20	0	306
5:15 PM	0	170	2	0	0	59	0	0	0	0	0	0	17	0	14	0	262
5:30 PM	0	166	6	0	0	46	0	0	0	0	0	0	19	0	10	0	247
5:45 PM	0	138	3	0	1	38	0	0	0	0	0	0	20	0	9	0	209
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	1290	42	0	7	363	0	0	0	0	0	0	181	0	86	0	1969
	0.00%	96.85%	3.15%	0.00%	1.89%	98.11%	0.00%	0.00%					67.79%	0.00%	32.21%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	680	25	0	5	205	0	0	0	0	0	0	116	0	53	0	1084
PEAK HR FACTOR :	0.000	0.955	0.625	0.000	0.417	0.827	0.000	0.000	0.000	0.000	0.000	0.000	0.518	0.000	0.663	0.000	0.886
	0.953				0.820								0.556				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Commerce Dr
City: Irwindale
Control: 1-Way Stop (WB)

Project ID: 19-05193-009
Date: 4/10/2019

Cars																	
NS/EW Streets:	Rivergrade Rd				Rivergrade Rd				Commerce Dr				Commerce Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU	
7:00 AM	0	28	20	0	3	93	0	0	0	0	0	0	23	0	2	0	169
7:15 AM	0	33	15	0	3	110	0	0	0	0	0	0	33	0	0	0	194
7:30 AM	0	47	19	0	6	141	0	0	0	0	0	0	30	0	1	0	244
7:45 AM	0	69	23	0	4	163	0	0	0	0	0	0	20	0	1	0	280
8:00 AM	0	65	30	0	5	142	0	0	0	0	0	0	13	0	1	0	256
8:15 AM	0	47	26	0	5	135	0	0	0	0	0	0	12	0	1	0	226
8:30 AM	0	57	13	0	1	94	0	0	0	0	0	0	6	0	2	0	173
8:45 AM	0	53	18	0	2	107	0	0	0	0	0	0	6	0	1	0	187
TOTAL VOLUMES : APPROACH %'s :	NL 0	NT 399	NR 164	NU 0	SL 29	ST 985	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 143	WT 0	WR 9	WU 0	TOTAL 1729
	0.00%	70.87%	29.13%	0.00%	2.86%	97.14%	0.00%	0.00%					94.08%	0.00%	5.92%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	228	98	0	20	581	0	0	0	0	0	0	75	0	4	0	1006
PEAK HR FACTOR :	0.00	0.826	0.817	0.000	0.833	0.891	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	1.000	0.000	0.898
	0.858				0.900								0.637				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU	
4:00 PM	0	142	4	0	0	39	0	0	0	0	0	0	11	0	5	0	201
4:15 PM	0	147	3	0	0	30	0	0	0	0	0	0	13	0	4	0	197
4:30 PM	0	166	9	0	2	61	0	0	0	0	0	0	22	0	14	0	274
4:45 PM	0	148	7	0	0	39	0	0	0	0	0	0	20	0	5	0	219
5:00 PM	0	172	5	0	3	41	0	0	0	0	0	0	55	0	20	0	296
5:15 PM	0	169	2	0	0	57	0	0	0	0	0	0	15	0	14	0	257
5:30 PM	0	158	6	0	0	43	0	0	0	0	0	0	19	0	10	0	236
5:45 PM	0	134	2	0	1	37	0	0	0	0	0	0	20	0	9	0	203
TOTAL VOLUMES : APPROACH %'s :	NL 0	NT 1236	NR 38	NU 0	SL 6	ST 347	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 175	WT 0	WR 81	WU 0	TOTAL 1883
	0.00%	97.02%	2.98%	0.00%	1.70%	98.30%	0.00%	0.00%					68.36%	0.00%	31.64%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	655	23	0	5	198	0	0	0	0	0	0	112	0	53	0	1046
PEAK HR FACTOR :	0.00	0.952	0.639	0.000	0.417	0.811	0.000	0.000	0.000	0.000	0.000	0.000	0.509	0.000	0.663	0.000	0.883
	0.958				0.806								0.550				

National Data & Surveying Services

Location: Rivergrade Rd & Commerce Dr

City: Irwindale

Control: 1-Way Stop (WB)

Project ID: 19-05193-009

Date: 4/10/2019

2axle

NS/EW Streets:	Rivergrade Rd				Rivergrade Rd				Commerce Dr				Commerce Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU	
7:00 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	1	0	5
7:15 AM	0	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	6
7:30 AM	0	2	0	0	0	2	0	0	0	0	0	0	2	0	0	0	6
7:45 AM	0	3	0	0	0	1	0	0	0	0	0	0	1	0	0	0	5
8:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	2	0	0	0	5
8:15 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	2	1	0	0	2	0	0	0	0	0	0	1	0	1	0	7
8:45 AM	0	1	0	0	0	2	0	0	0	0	0	0	1	0	1	0	5
TOTAL VOLUMES:	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s:	0	15	3	0	0	13	0	0	0	0	0	0	7	0	3	0	41
	0.00%	83.33%	16.67%	0.00%	0.00%	100.00%	0.00%	0.00%					70.00%	0.00%	30.00%	0.00%	
PEAK HR:	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL:	0	8	1	0	0	4	0	0	0	0	0	0	5	0	0	0	18
PEAK HR FACTOR:	0.000	0.667	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.750

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU	
4:00 PM	0	3	1	0	0	1	0	0	0	0	0	0	0	0	3	0	8
4:15 PM	0	4	0	0	1	1	0	0	0	0	0	0	2	0	1	0	9
4:30 PM	0	6	1	0	0	1	0	0	0	0	0	0	0	0	0	0	8
4:45 PM	0	3	1	0	0	1	0	0	0	0	0	0	1	0	0	0	6
5:00 PM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	3
5:30 PM	0	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
5:45 PM	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
TOTAL VOLUMES : APPROACH %'s :	NL 0 0.00%	NT 27 87.10%	NR 4 12.90%	NU 0 0.00%	SL 1 12.50%	ST 7 87.50%	SR 0 0.00%	SU 0 0.00%	EL 0	ET 0	ER 0	EU 0	WL 5 55.56%	WT 0 0.00%	WR 4 44.44%	WU 0 0.00%	TOTAL 48
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	13	2	0	0	4	0	0	0	0	0	0	3	0	0	0	22
PEAK HR FACTOR :	0.00	0.542	0.500	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.688

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Commerce Dr
City: Irwindale
Control: 1-Way Stop (WB)

Project ID: 19-05193-009
Date: 4/10/2019

		3axle																
NS/EW Streets:		Rivergrade Rd				Rivergrade Rd				Commerce Dr				Commerce Dr				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		0	2	0	0	1	2	0	0	0	0	0	0	0	1	0	1	0
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	7:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	7:30 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
	7:45 AM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	1	0	4
	8:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
	8:45 AM	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	4
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	9	1	0	0	8	0	0	0	0	0	0	0	0	2	0	20
		0.00%	90.00%	10.00%	0.00%	0.00%	100.00%	0.00%	0.00%					0.00%	0.00%	100.00%	0.00%	
PEAK HR :		07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :		0	6	0	0	0	2	0	0	0	0	0	0	0	0	2	0	10
PEAK HR FACTOR :		0.000	0.750	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.625
		0.750				0.500								0.500				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		0	2	0	0	1	2	0	0	0	0	0	0	1	0	1	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	4:00 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	4:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	4:45 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	5:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
	5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
	5:30 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	11	0	0	0	4	0	0	0	0	0	0	0	0	0	0	15
		0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		0	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	7
PEAK HR FACTOR :		0.00	0.417	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583
		0.417				0.500												

National Data & Surveying Services

Location: Rivergrade Rd & Commerce Dr

City: Irwindale

Control: 1-Way Stop (WB)

Project ID: 19-05193-009

Date: 4/10/2019

4axle

[illegible]

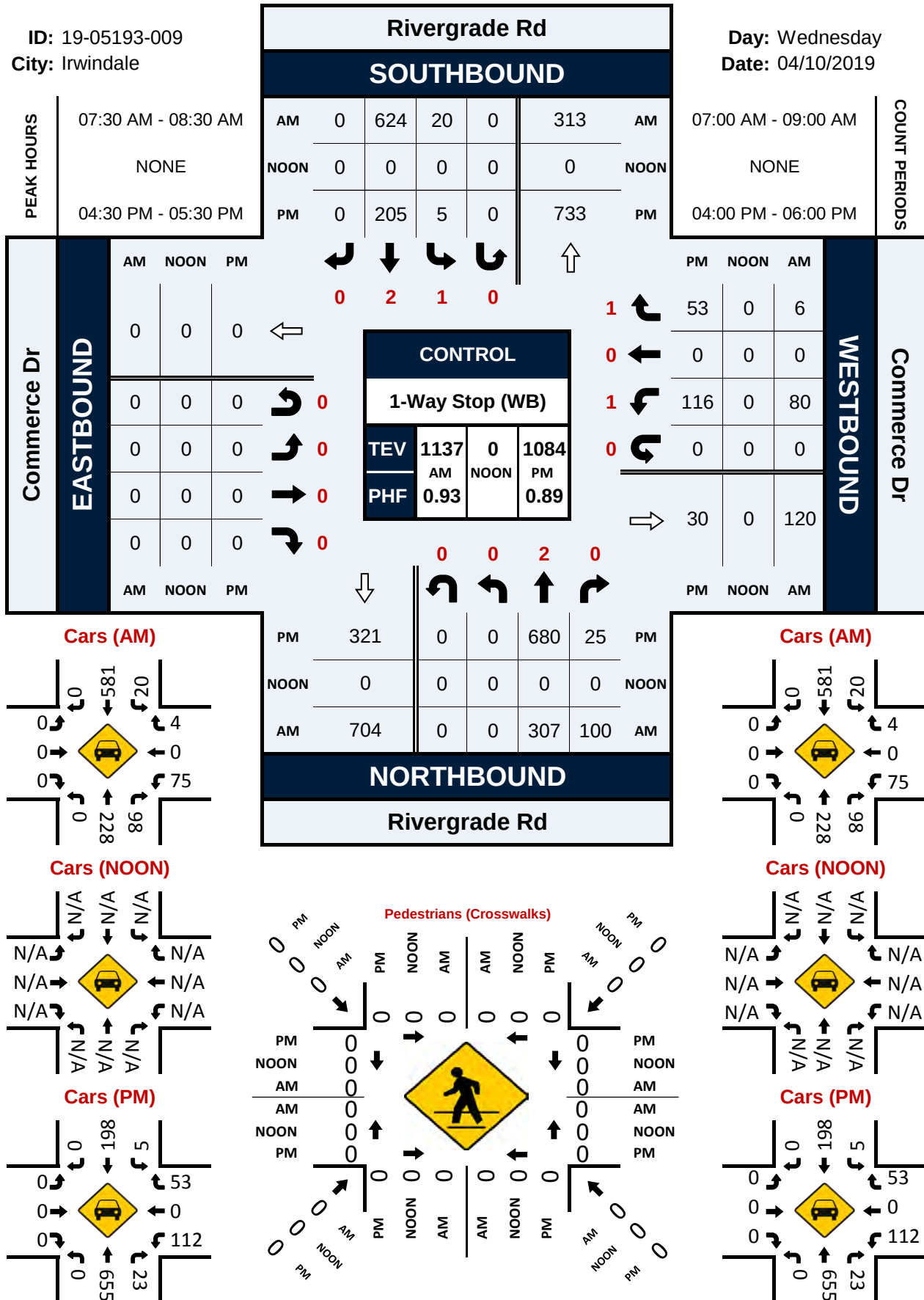
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU	
4:00 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	1	0	4
4:15 PM	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	5
4:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	3
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	16	0	0	0	5	0	0	0	0	0	0	1	0	1	0	23
	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					50.00%	0.00%	50.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	7	0	0	0	1	0	0	0	0	0	0	1	0	0	0	9
PEAK HR FACTOR :	0.00	0.583	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.750
	0.583				0.250								0.250				

Rivergrade Rd & Commerce Dr

Peak Hour Turning Movement Count

ID: 19-05193-009
City: Irwindale

Day: Wednesday
Date: 04/10/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Brooks Dr
City: Irwindale
Control: Signalized

Project ID: 19-05193-010
Date: 4/10/2019

Total																	
NS/EW Streets:	Rivergrade Rd				Rivergrade Rd				Brooks Dr				Brooks Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU	
7:00 AM	0	55	5	0	8	115	0	0	0	0	0	0	12	0	21	0	216
7:15 AM	0	60	7	0	6	121	0	0	0	0	0	0	17	0	25	0	236
7:30 AM	0	76	13	0	15	137	0	0	0	0	0	0	18	0	28	0	287
7:45 AM	0	130	16	0	27	116	0	0	0	0	0	0	17	0	33	0	339
8:00 AM	0	134	23	0	33	85	0	0	0	0	0	0	6	0	31	0	312
8:15 AM	0	102	21	0	25	70	0	0	0	0	0	0	3	0	20	0	241
8:30 AM	0	86	17	0	26	59	0	0	0	0	0	0	5	0	14	0	207
8:45 AM	0	74	18	0	25	70	0	2	0	0	0	0	4	0	13	0	206
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	0	717	120	0	165	773	0	2	0	0	0	0	82	0	185	0	2044
APPROACH %'s :	0.00%	85.66%	14.34%	0.00%	17.55%	82.23%	0.00%	0.21%					30.71%	0.00%	69.29%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	442	73	0	100	408	0	0	0	0	0	0	44	0	112	0	1179
PEAK HR FACTOR :	0.000	0.825	0.793	0.000	0.758	0.745	0.000	0.000	0.000	0.000	0.000	0.000	0.611	0.000	0.848	0.000	0.869
	0.820				0.836								0.780				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU	
4:00 PM	0	113	3	0	12	54	0	0	0	0	0	0	10	0	18	0	210
4:15 PM	0	126	1	0	13	55	0	0	0	0	0	0	15	0	16	0	226
4:30 PM	0	123	3	0	21	98	0	0	0	0	0	0	32	0	32	0	309
4:45 PM	0	114	2	0	8	75	0	0	0	0	0	0	6	0	15	0	220
5:00 PM	0	95	1	0	26	122	0	0	0	0	0	0	28	0	24	0	296
5:15 PM	0	91	6	0	20	81	0	0	0	0	0	0	8	0	21	0	227
5:30 PM	0	116	1	0	6	81	0	0	0	0	0	0	10	0	17	0	231
5:45 PM	0	99	1	0	8	57	0	0	0	0	0	0	9	0	13	0	187
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	0	877	18	0	114	623	0	0	0	0	0	0	118	0	156	0	1906
APPROACH %'s :	0.00%	97.99%	2.01%	0.00%	15.47%	84.53%	0.00%	0.00%					43.07%	0.00%	56.93%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	423	12	0	75	376	0	0	0	0	0	0	74	0	92	0	1052
PEAK HR FACTOR :	0.000	0.860	0.500	0.000	0.721	0.770	0.000	0.000	0.000	0.000	0.000	0.000	0.578	0.000	0.719	0.000	0.851
	0.863				0.762								0.648				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Brooks Dr
City: Irwindale
Control: Signalized

Project ID: 19-05193-010
Date: 4/10/2019

Cars																	
NS/EW Streets:	Rivergrade Rd				Rivergrade Rd				Brooks Dr				Brooks Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	2	0	0	1	2	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	49	4	0	6	101	0	0	0	0	0	0	8	0	9	0	177
7:15 AM	0	53	7	0	6	109	0	0	0	0	0	0	17	0	21	0	213
7:30 AM	0	63	12	0	13	127	0	0	0	0	0	0	17	0	26	0	258
7:45 AM	0	115	16	0	27	107	0	0	0	0	0	0	15	0	32	0	312
8:00 AM	0	114	23	0	22	81	0	0	0	0	0	0	5	0	20	0	265
8:15 AM	0	87	20	0	24	56	0	0	0	0	0	0	0	0	19	0	206
8:30 AM	0	76	15	0	24	46	0	0	0	0	0	0	4	0	13	0	178
8:45 AM	0	66	16	0	20	58	0	0	0	0	0	0	3	0	11	0	174
TOTAL VOLUMES :	0	623	113	0	142	685	0	0	0	0	0	0	69	0	151	0	TOTAL
APPROACH %'s :	0.00%	84.65%	15.35%	0.00%	17.17%	82.83%	0.00%	0.00%	0	0	0	0	31.36%	0.00%	68.64%	0.00%	1783
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	379	71	0	86	371	0	0	0	0	0	0	37	0	97	0	1041
PEAK HR FACTOR :	0.00	0.824	0.772	0.000	0.796	0.730	0.000	0.000	0.000	0.000	0.000	0.000	0.544	0.000	0.758	0.000	0.834
	0.821				0.816								0.713				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	2	0	0	1	2	0	0	0	0	0	0	1	0	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	107	3	0	11	53	0	0	0	0	0	0	10	0	15	0	199
4:15 PM	0	115	1	0	10	53	0	0	0	0	0	0	14	0	16	0	209
4:30 PM	0	115	3	0	20	97	0	0	0	0	0	0	31	0	29	0	295
4:45 PM	0	106	2	0	7	74	0	0	0	0	0	0	6	0	14	0	209
5:00 PM	0	90	1	0	24	120	0	0	0	0	0	0	28	0	23	0	286
5:15 PM	0	87	6	0	19	78	0	0	0	0	0	0	7	0	21	0	218
5:30 PM	0	111	1	0	6	79	0	0	0	0	0	0	10	0	17	0	224
5:45 PM	0	95	1	0	8	56	0	0	0	0	0	0	9	0	12	0	181
TOTAL VOLUMES :	0	826	18	0	105	610	0	0	0	0	0	0	115	0	147	0	TOTAL
APPROACH %'s :	0.00%	97.87%	2.13%	0.00%	14.69%	85.31%	0.00%	0.00%	0	0	0	0	43.89%	0.00%	56.11%	0.00%	1821
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	398	12	0	70	369	0	0	0	0	0	0	72	0	87	0	1008
PEAK HR FACTOR :	0.00	0.865	0.500	0.000	0.729	0.769	0.000	0.000	0.000	0.000	0.000	0.000	0.581	0.000	0.750	0.000	0.854
	0.869				0.762								0.663				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Brooks Dr
City: Irwindale
Control: Signalized

Project ID: 19-05193-010
Date: 4/10/2019

NS/EW Streets:		Rivergrade Rd				Rivergrade Rd				Brooks Dr				Brooks Dr				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU	TOTAL	
	7:00 AM	0	1	1	0	0	2	0	0	0	0	0	0	0	1	0	5	
	7:15 AM	0	1	0	0	0	3	0	0	0	0	0	0	0	2	0	6	
	7:30 AM	0	1	0	0	1	2	0	0	0	0	0	0	0	1	0	5	
	7:45 AM	0	2	0	0	0	3	0	0	0	0	0	0	0	1	0	6	
	8:00 AM	0	1	0	0	1	1	0	0	0	0	0	0	0	2	0	5	
	8:15 AM	0	1	0	0	0	2	0	0	0	0	0	1	0	0	0	4	
	8:30 AM	0	2	0	0	1	1	0	0	0	0	0	0	0	1	0	5	
	8:45 AM	0	1	1	0	0	3	0	0	0	0	0	0	0	0	0	5	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	10	2	0	3	17	0	0	0	0	0	0	1	0	8	0	41
		0.00%	83.33%	16.67%	0.00%	15.00%	85.00%	0.00%	0.00%					11.11%	0.00%	88.89%	0.00%	
PEAK HR :		07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :		0	5	0	0	2	8	0	0	0	0	0	0	1	0	4	0	20
PEAK HR FACTOR :		0.000	0.625	0.000	0.000	0.500	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.500	0.000	0.833
		0.625				0.833								0.625				

PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU	TOTAL	
	4:00 PM	0	3	0	0	1	0	0	0	0	0	0	0	0	2	0	6	
	4:15 PM	0	5	0	0	2	1	0	0	0	0	0	1	0	0	0	9	
	4:30 PM	0	4	0	0	1	0	0	0	0	0	0	0	0	2	0	7	
	4:45 PM	0	4	0	0	1	1	0	0	0	0	0	0	0	1	0	7	
	5:00 PM	0	2	0	0	1	0	0	0	0	0	0	0	0	1	0	4	
	5:15 PM	0	2	0	0	1	2	0	0	0	0	0	0	0	0	0	5	
	5:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
	5:45 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	4	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	25	0	0	7	4	0	0	0	0	0	0	1	0	7	0	44
		0.00%	100.00%	0.00%	0.00%	63.64%	36.36%	0.00%	0.00%					12.50%	0.00%	87.50%	0.00%	
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		0	12	0	0	4	3	0	0	0	0	0	0	0	0	4	0	23
PEAK HR FACTOR :		0.00	0.750	0.000	0.000	1.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.821
		0.750				0.583								0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Brooks Dr
City: Irwindale
Control: Signalized

Project ID: 19-05193-010
Date: 4/10/2019

NS/EW Streets:		Rivergrade Rd				Rivergrade Rd				Brooks Dr				Brooks Dr				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU		
	7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
	7:15 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	
	7:30 AM	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	3	
	7:45 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2	
	8:00 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	
	8:45 AM	0	1	0	0	1	2	0	0	0	0	0	0	0	0	0	4	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	APPROACH %'s :	0	9	0	0	2	6	0	0	0	0	0	0	1	0	0	0	18
		0.00%	100.00%	0.00%	0.00%	25.00%	75.00%	0.00%	0.00%					100.00%	0.00%	0.00%	0.00%	
PEAK HR :		07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :		0	5	0	0	1	1	0	0	0	0	0	0	1	0	0	0	8
PEAK HR FACTOR :		0.000	0.417	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.667
		0.417				0.500								0.250				

PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	1 WL	0 WT	1 WR	0 WU		
	4:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
	4:15 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
	4:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
	4:45 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
	5:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2	
	5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
	5:30 PM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	APPROACH %'s :	0	11	0	0	0	4	0	0	0	0	0	0	0	0	0	0	15
		0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		0	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0	7
PEAK HR FACTOR :		0.00	0.625	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.875
		0.625				0.500												

National Data & Surveying Services

Intersection Turning Movement Count

Location: Rivergrade Rd & Brooks Dr
City: Irwindale
Control: Signalized

Project ID: 19-05193-010
Date: 4/10/2019

4axle																			
NS/EW Streets:		Rivergrade Rd				Rivergrade Rd				Brooks Dr				Brooks Dr					
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	2	0	0	1	2	0	0	0	0	0	0	1	0	1	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
7:00 AM		0	4	0	0	2	12	0	0	0	0	0	0	4	0	11	0	33	
7:15 AM		0	5	0	0	0	8	0	0	0	0	0	0	0	0	2	0	15	
7:30 AM		0	10	1	0	0	8	0	0	0	0	0	0	1	0	1	0	21	
7:45 AM		0	13	0	0	0	5	0	0	0	0	0	0	1	0	0	0	19	
8:00 AM		0	16	0	0	10	3	0	0	0	0	0	0	1	0	9	0	39	
8:15 AM		0	14	1	0	1	12	0	0	0	0	0	0	2	0	1	0	31	
8:30 AM		0	7	2	0	1	10	0	0	0	0	0	0	1	0	0	0	21	
8:45 AM		0	6	1	0	4	7	0	2	0	0	0	0	1	0	2	0	23	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	75	5	0	18	65	0	2	0	0	0	0	11	0	26	0	202	
		0.00%	93.75%	6.25%	0.00%	21.18%	76.47%	0.00%	2.35%					29.73%	0.00%	70.27%	0.00%		
PEAK HR :		07:30 AM - 08:30 AM																TOTAL	
PEAK HR VOL :		0	53	2	0	11	28	0	0	0	0	0	0	5	0	11	0	110	
PEAK HR FACTOR :		0.000	0.828	0.500	0.000	0.275	0.583	0.000	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.306	0.000	0.705	
		0.859				0.750								0.400					
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
		0	2	0	0	1	2	0	0	0	0	0	0	1	0	1	0		
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
4:00 PM		0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	3	
4:15 PM		0	3	0	0	1	1	0	0	0	0	0	0	0	0	0	0	5	
4:30 PM		0	2	0	0	0	1	0	0	0	0	0	0	1	0	1	0	5	
4:45 PM		0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
5:00 PM		0	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4	
5:15 PM		0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	
5:30 PM		0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
5:45 PM		0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :		0	15	0	0	2	5	0	0	0	0	0	0	2	0	2	0	26	
		0.00%	100.00%	0.00%	0.00%	28.57%	71.43%	0.00%	0.00%					50.00%	0.00%	50.00%	0.00%		
PEAK HR :		04:30 PM - 05:30 PM																TOTAL	
PEAK HR VOL :		0	8	0	0	1	2	0	0	0	0	0	0	2	0	1	0	14	
PEAK HR FACTOR :		0.00	1.000	0.000	0.000	0.250	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.700	
		1.000				0.375								0.375					

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB Ramps & Los Angeles St
City: Irwindale
Control: Signalized

Project ID: 19-05193-011
Date: 4/10/2019

Total																	
NS/EW Streets:		I-605 SB Ramps				I-605 SB Ramps				Los Angeles St				Los Angeles St			
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0.5 SL	1 ST	1.5 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
7:00 AM	0	0	0	0	14	50	124	0	0	79	93	0	106	241	0	0	707
7:15 AM	0	0	0	0	24	66	127	0	0	100	96	0	95	221	0	0	729
7:30 AM	0	0	0	0	20	66	130	0	0	135	85	0	74	213	0	0	723
7:45 AM	0	0	0	0	19	72	118	0	0	162	71	0	73	209	0	0	724
8:00 AM	0	0	0	0	17	37	117	0	0	167	89	0	85	193	0	0	705
8:15 AM	0	0	0	0	19	38	80	0	0	128	91	0	87	179	0	0	622
8:30 AM	0	0	0	0	25	49	57	0	0	127	94	0	78	184	0	0	614
8:45 AM	0	0	0	0	19	34	87	0	0	127	72	0	85	208	0	0	632
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 157	ST 412	SR 840	SU 0	EL 0	ET 1025	ER 691	EU 0	WL 683	WT 1648	WR 0	WU 0	TOTAL 5456
APPROACH %'s :					11.14%	29.24%	59.62%	0.00%	0.00%	59.73%	40.27%	0.00%	29.30%	70.70%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	77	254	499	0	0	476	345	0	348	884	0	0	2883
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.802	0.882	0.960	0.000	0.000	0.735	0.898	0.000	0.821	0.917	0.000	0.000	0.989
						0.956					0.881				0.888		
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	0.5 SL	1 ST	1.5 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
4:00 PM	0	0	0	0	40	53	53	0	0	259	104	0	61	163	0	0	733
4:15 PM	0	0	0	0	32	53	63	0	0	253	117	0	74	150	0	0	742
4:30 PM	0	0	0	0	29	87	71	0	0	274	119	0	86	163	0	0	829
4:45 PM	0	0	0	0	38	62	62	0	0	298	94	0	67	144	0	0	765
5:00 PM	0	0	0	0	20	95	58	0	0	274	126	0	62	170	0	0	805
5:15 PM	0	0	0	0	33	93	68	0	0	302	96	0	65	180	0	0	837
5:30 PM	0	0	0	0	37	65	80	0	0	299	140	0	57	164	0	0	842
5:45 PM	0	0	0	0	46	43	63	0	0	252	92	0	57	181	0	0	734
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 275	ST 551	SR 518	SU 0	EL 0	ET 2211	ER 888	EU 0	WL 529	WT 1315	WR 0	WU 0	TOTAL 6287
APPROACH %'s :					20.46%	41.00%	38.54%	0.00%	0.00%	71.35%	28.65%	0.00%	28.69%	71.31%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	128	315	268	0	0	1173	456	0	251	658	0	0	3249
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.842	0.829	0.838	0.000	0.000	0.971	0.814	0.000	0.937	0.914	0.000	0.000	0.965
						0.916					0.928				0.928		

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB Ramps & Los Angeles St
City: Irwindale
Control: Signalized

Project ID: 19-05193-011
Date: 4/10/2019

Cars																	
NS/EW Streets:	I-605 SB Ramps				I-605 SB Ramps				Los Angeles St				Los Angeles St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	0 NT	0 NR	0 NU	0.5 SL	1 ST	1.5 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	0	0	0	0	14	46	120	0	0	73	93	0	95	236	0	0	677
7:15 AM	0	0	0	0	22	59	124	0	0	98	92	0	86	215	0	0	696
7:30 AM	0	0	0	0	17	54	129	0	0	132	84	0	61	208	0	0	685
7:45 AM	0	0	0	0	16	60	117	0	0	155	68	0	64	201	0	0	681
8:00 AM	0	0	0	0	17	33	96	0	0	157	84	0	74	190	0	0	651
8:15 AM	0	0	0	0	16	27	78	0	0	119	77	0	80	169	0	0	566
8:30 AM	0	0	0	0	24	33	51	0	0	112	76	0	60	179	0	0	535
8:45 AM	0	0	0	0	18	26	84	0	0	118	63	0	66	198	0	0	573
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	144	338	799	0	0	964	637	0	586	1596	0	0	5064
					11.24%	26.39%	62.37%	0.00%	0.00%	60.21%	39.79%	0.00%	26.86%	73.14%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	69	219	490	0	0	458	337	0	306	860	0	0	2739
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.784	0.913	0.950	0.000	0.000	0.739	0.906	0.000	0.805	0.911	0.000	0.000	0.984
					0.949				0.891				0.881				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	0 NT	0 NR	0 NU	0.5 SL	1 ST	1.5 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	0	0	0	0	39	51	51	0	0	254	96	0	57	153	0	0	701
4:15 PM	0	0	0	0	32	51	57	0	0	252	113	0	74	143	0	0	722
4:30 PM	0	0	0	0	29	86	70	0	0	265	112	0	85	154	0	0	801
4:45 PM	0	0	0	0	35	60	58	0	0	293	89	0	67	134	0	0	736
5:00 PM	0	0	0	0	18	94	56	0	0	271	121	0	60	156	0	0	776
5:15 PM	0	0	0	0	33	92	66	0	0	300	89	0	64	167	0	0	811
5:30 PM	0	0	0	0	37	63	74	0	0	299	124	0	57	156	0	0	810
5:45 PM	0	0	0	0	43	42	61	0	0	250	87	0	56	169	0	0	708
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	266	539	493	0	0	2184	831	0	520	1232	0	0	6065
					20.49%	41.53%	37.98%	0.00%	0.00%	72.44%	27.56%	0.00%	29.68%	70.32%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	123	309	254	0	0	1163	423	0	248	613	0	0	3133
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.831	0.822	0.858	0.000	0.000	0.969	0.853	0.000	0.925	0.918	0.000	0.000	0.966
					0.898				0.937				0.932				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB Ramps & Los Angeles St

City: Irwindale

Control: Signalized

Project ID: 19-05193-011

Date: 4/10/2019

2axle																	
NS/EW Streets:	I-605 SB Ramps				I-605 SB Ramps				Los Angeles St				Los Angeles St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	0 NT	0 NR	0 NU	0.5 SL	1 ST	1.5 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	TOTAL
7:00 AM	0	0	0	0	0	1	2	0	0	5	0	0	1	5	0	0	14
7:15 AM	0	0	0	0	1	2	2	0	0	2	2	0	1	4	0	0	14
7:30 AM	0	0	0	0	0	1	1	0	0	2	1	0	3	1	0	0	9
7:45 AM	0	0	0	0	2	3	1	0	0	5	1	0	3	8	0	0	23
8:00 AM	0	0	0	0	0	0	2	0	0	9	5	0	2	0	0	0	18
8:15 AM	0	0	0	0	1	1	0	0	0	9	13	0	0	4	0	0	28
8:30 AM	0	0	0	0	1	0	4	0	0	15	16	0	2	3	0	0	41
8:45 AM	0	0	0	0	0	3	2	0	0	8	9	0	0	6	0	0	28
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	5	11	14	0	0	55	47	0	12	31	0	0	175
					16.67%	36.67%	46.67%	0.00%	0.00%	53.92%	46.08%	0.00%	27.91%	72.09%	0.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	0	0	0	0	3	7	6	0	0	14	4	0	8	18	0	0	60
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.375	0.583	0.750	0.000	0.000	0.700	0.500	0.000	0.667	0.563	0.000	0.000	0.652
				0.667				0.750				0.591					
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0 NL	0 NT	0 NR	0 NU	0.5 SL	1 ST	1.5 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	TOTAL
4:00 PM	0	0	0	0	0	1	2	0	0	2	2	0	2	4	0	0	13
4:15 PM	0	0	0	0	0	1	5	0	0	1	1	0	0	2	0	0	10
4:30 PM	0	0	0	0	0	0	1	0	0	6	5	0	0	3	0	0	15
4:45 PM	0	0	0	0	1	1	3	0	0	4	3	0	0	9	0	0	21
5:00 PM	0	0	0	0	1	0	1	0	0	3	4	0	2	7	0	0	18
5:15 PM	0	0	0	0	0	0	1	0	0	1	4	0	0	6	0	0	12
5:30 PM	0	0	0	0	0	2	4	0	0	0	6	0	0	6	0	0	18
5:45 PM	0	0	0	0	0	0	1	0	0	2	2	0	0	9	0	0	14
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	2	5	18	0	0	19	27	0	4	46	0	0	121
					8.00%	20.00%	72.00%	0.00%	0.00%	41.30%	58.70%	0.00%	8.00%	92.00%	0.00%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	2	3	9	0	0	8	17	0	2	28	0	0	69
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.500	0.375	0.563	0.000	0.000	0.500	0.708	0.000	0.250	0.778	0.000	0.000	0.821
				0.583				0.893				0.833					

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB Ramps & Los Angeles St
City: Irwindale
Control: Signalized

Project ID: 19-05193-011
Date: 4/10/2019

3axle																	
NS/EW Streets:		I-605 SB Ramps				I-605 SB Ramps				Los Angeles St				Los Angeles St			
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
		0	0	0	0	0.5	1	1.5	0	0	2	1	0	1	2	0	0
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU
7:00 AM		0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0
7:15 AM		0	0	0	0	1	1	0	0	0	0	1	0	1	1	0	0
7:30 AM		0	0	0	0	1	2	0	0	0	0	0	0	3	2	0	0
7:45 AM		0	0	0	0	1	2	0	0	0	1	0	0	0	0	0	0
8:00 AM		0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0
8:15 AM		0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
8:30 AM		0	0	0	0	0	3	2	0	0	0	1	0	3	1	0	0
8:45 AM		0	0	0	0	0	1	1	0	0	0	0	0	6	0	0	0
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU
APPROACH %'s :		0	0	0	0	3	10	3	0	0	1	3	0	15	6	0	0
		18.75%				62.50%				75.00%				0.00%			
PEAK HR :		07:00 AM - 08:00 AM															
PEAK HR VOL :		0	0	0	0	3	6	0	0	0	1	1	0	5	3	0	0
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.750	0.750	0.000	0.000	0.000	0.250	0.250	0.000	0.417	0.375	0.000	0.000
		0.750				0.500				0.400							
TOTAL																	
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National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 SB Ramps & Los Angeles St
City: Irwindale
Control: Signalized

Project ID: 19-05193-011
Date: 4/10/2019

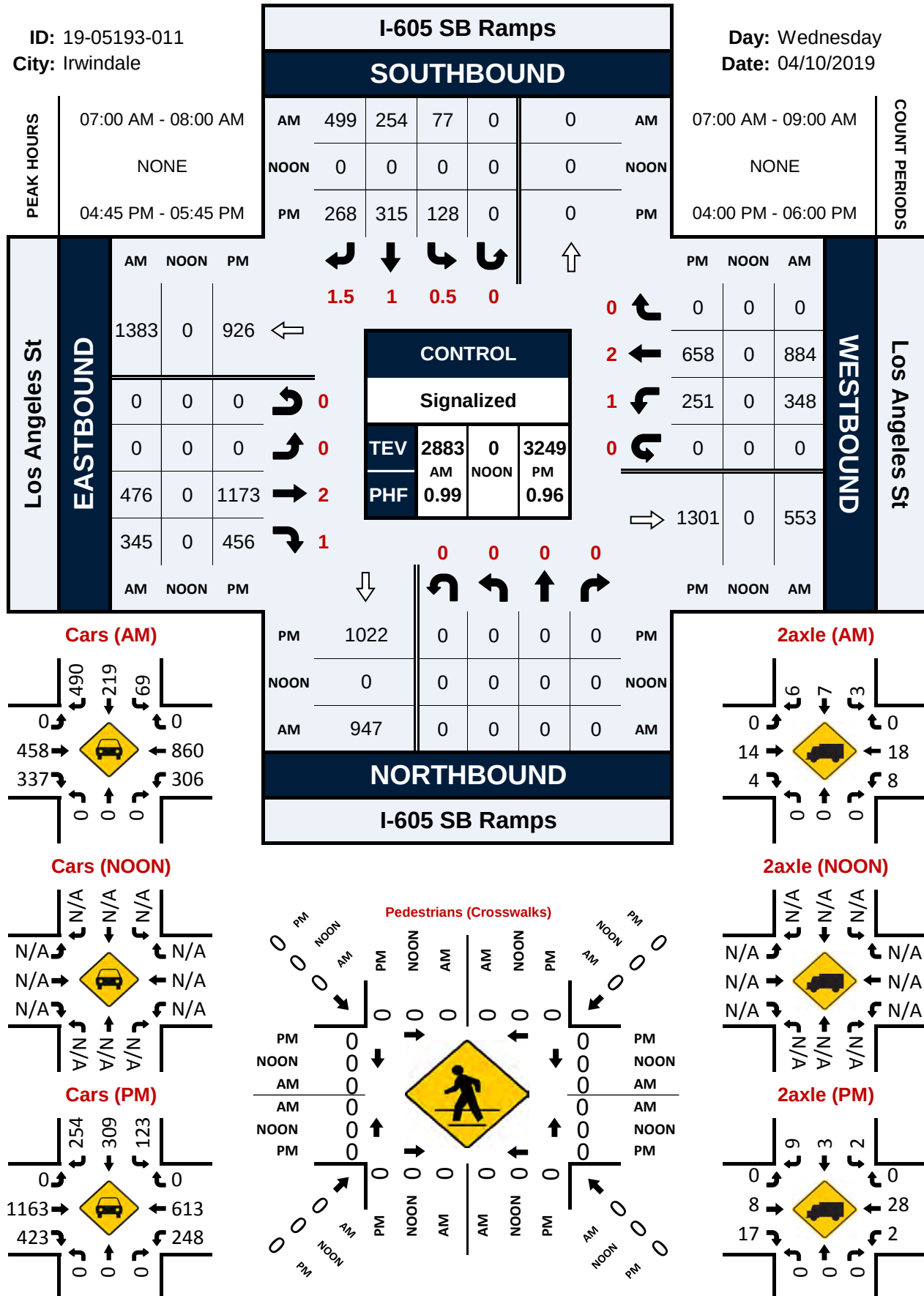
4axle																				
NS/EW Streets:	I-605 SB Ramps				I-605 SB Ramps				Los Angeles St				Los Angeles St							
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND							
	0 NL	0 NT	0 NR	0 NU	0.5 SL	1 ST	1.5 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	TOTAL			
7:00 AM	0	0	0	0	0	2	2	0	0	1	0	0	9	0	0	0	14			
7:15 AM	0	0	0	0	0	4	1	0	0	0	1	0	7	1	0	0	14			
7:30 AM	0	0	0	0	2	9	0	0	0	1	0	0	7	2	0	0	21			
7:45 AM	0	0	0	0	0	7	0	0	0	1	2	0	6	0	0	0	16			
8:00 AM	0	0	0	0	0	4	19	0	0	1	0	0	8	1	0	0	33			
8:15 AM	0	0	0	0	2	10	2	0	0	0	0	0	7	6	0	0	27			
8:30 AM	0	0	0	0	0	13	0	0	0	0	1	0	13	1	0	0	28			
8:45 AM	0	0	0	0	1	4	0	0	0	1	0	0	13	4	0	0	23			
TOTAL VOLUMES : APPROACH %'s :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL			
	0	0	0	0	5	53	24	0	0	5	4	0	70	15	0	0	176			
	6.10%				64.63%				29.27%				0.00%				0.00%			
PEAK HR :	07:00 AM - 08:00 AM																TOTAL			
PEAK HR VOL :	0	0	0	0	2	22	3	0	0	3	3	0	29	3	0	0	65			
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.250	0.611	0.375	0.000	0.000	0.750	0.375	0.000	0.806	0.375	0.000	0.000	0.774			
	0.614				0.614				0.500				0.889							
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND							
	0 NL	0 NT	0 NR	0 NU	0.5 SL	1 ST	1.5 SR	0 SU	0 EL	2 ET	1 ER	0 EU	1 WL	2 WT	0 WR	0 WU	TOTAL			
4:00 PM	0	0	0	0	1	1	0	0	0	2	3	0	2	4	0	0	13			
4:15 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	2	0	0	4			
4:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2			
4:45 PM	0	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0	4			
5:00 PM	0	0	0	0	1	1	1	0	0	0	1	0	0	2	0	0	6			
5:15 PM	0	0	0	0	0	1	0	0	0	1	1	0	1	3	0	0	7			
5:30 PM	0	0	0	0	0	0	1	0	0	0	5	0	0	2	0	0	8			
5:45 PM	0	0	0	0	1	1	0	0	0	0	2	0	1	1	0	0	6			
TOTAL VOLUMES : APPROACH %'s :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL			
	0	0	0	0	3	7	4	0	0	4	13	0	4	15	0	0	50			
	21.43%				50.00%				28.57%				0.00%				0.00%			
PEAK HR :	04:45 PM - 05:45 PM																TOTAL			
PEAK HR VOL :	0	0	0	0	1	3	3	0	0	1	8	0	1	8	0	0	25			
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.250	0.750	0.750	0.000	0.000	0.250	0.400	0.000	0.250	0.667	0.000	0.000	0.781			
	0.583				0.583				0.450				0.563							

I-605 SB Ramps & Los Angeles St

Peak Hour Turning Movement Count

ID: 19-05193-011
City: Irwindale

Day: Wednesday
Date: 04/10/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB Ramps & Los Angeles St
City: Irwindale
Control: Signalized

Project ID: 19-05193-012
Date: 4/10/2019

Total																		
NS/EW Streets:		I-605 NB Ramps				I-605 NB Ramps				Los Angeles St				Los Angeles St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0.5 NL	1 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	
	7:00 AM	87	60	38	0	0	0	0	0	42	45	0	0	0	252	28	0	552
	7:15 AM	107	82	50	0	0	0	0	0	56	75	0	0	0	217	48	0	635
	7:30 AM	74	81	45	0	0	0	0	0	75	75	0	0	0	218	30	0	598
	7:45 AM	88	104	62	0	0	0	0	0	76	97	0	0	0	191	36	0	654
	8:00 AM	96	108	38	0	0	0	0	0	88	112	0	0	0	192	33	0	667
	8:15 AM	59	103	47	0	0	0	0	0	54	81	0	0	0	201	26	0	571
	8:30 AM	57	81	49	0	0	0	0	0	61	99	0	0	0	209	23	0	579
	8:45 AM	115	72	44	0	0	0	0	0	58	82	0	0	0	172	26	0	569
TOTAL VOLUMES :		NL 683	NT 691	NR 373	NU 0	SL 0	ST 0	SR 0	SU 0	EL 510	ET 666	ER 0	EU 0	WL 0	WT 1652	WR 250	WU 0	TOTAL 4825
APPROACH %'s :		39.10%	39.55%	21.35%	0.00%					43.37%	56.63%	0.00%	0.00%	0.00%	86.86%	13.14%	0.00%	
PEAK HR :		07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :		365	375	195	0	0	0	0	0	295	359	0	0	0	818	147	0	2554
PEAK HR FACTOR :		0.853	0.868	0.786	0.000	0.000	0.000	0.000	0.000	0.838	0.801	0.000	0.000	0.000	0.938	0.766	0.000	0.957
		0.920								0.818				0.910				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0.5 NL	1 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	
	4:00 PM	99	76	163	0	0	0	0	0	74	221	0	0	0	116	18	0	767
	4:15 PM	121	77	177	0	0	0	0	0	69	226	0	0	0	111	29	0	810
	4:30 PM	105	68	162	0	0	0	0	0	62	231	0	0	0	140	19	0	787
	4:45 PM	108	68	178	0	0	0	0	0	60	266	0	0	0	114	13	0	807
	5:00 PM	126	73	195	0	0	0	0	0	63	215	0	0	0	102	16	0	790
	5:15 PM	115	67	184	0	0	0	0	0	75	277	0	0	0	121	15	0	854
	5:30 PM	105	63	172	0	0	0	0	0	74	261	0	0	0	126	19	0	820
	5:45 PM	123	44	174	0	0	0	0	0	73	239	0	0	0	108	11	0	772
TOTAL VOLUMES :		NL 902	NT 536	NR 1405	NU 0	SL 0	ST 0	SR 0	SU 0	EL 550	ET 1936	ER 0	EU 0	WL 0	WT 938	WR 140	WU 0	TOTAL 6407
APPROACH %'s :		31.73%	18.85%	49.42%	0.00%					22.12%	77.88%	0.00%	0.00%	0.00%	87.01%	12.99%	0.00%	
PEAK HR :		04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :		454	271	729	0	0	0	0	0	272	1019	0	0	0	463	63	0	3271
PEAK HR FACTOR :		0.901	0.928	0.935	0.000	0.000	0.000	0.000	0.000	0.907	0.920	0.000	0.000	0.000	0.919	0.829	0.000	0.958
		0.923								0.917				0.907				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB Ramps & Los Angeles St

City: Irwindale

Control: Signalized

Project ID: 19-05193-012

Date: 4/10/2019

Cars																	
NS/EW Streets:	I-605 NB Ramps				I-605 NB Ramps				Los Angeles St				Los Angeles St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0.5 NL	1 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	
7:00 AM	83	56	36	0	0	0	0	0	39	42	0	0	0	240	25	0	521
7:15 AM	106	73	50	0	0	0	0	0	55	72	0	0	0	203	48	0	607
7:30 AM	68	70	45	0	0	0	0	0	73	71	0	0	0	207	28	0	562
7:45 AM	86	89	60	0	0	0	0	0	72	92	0	0	0	176	35	0	610
8:00 AM	91	100	32	0	0	0	0	0	83	107	0	0	0	182	32	0	627
8:15 AM	58	94	43	0	0	0	0	0	50	76	0	0	0	184	22	0	527
8:30 AM	53	72	45	0	0	0	0	0	48	92	0	0	0	191	21	0	522
8:45 AM	105	64	42	0	0	0	0	0	52	78	0	0	0	153	25	0	519
TOTAL VOLUMES :	NL 650	NT 618	NR 353	NU 0	SL 0	ST 0	SR 0	SU 0	EL 472	ET 630	ER 0	EU 0	WL 0	WT 1536	WR 236	WU 0	TOTAL 4495
APPROACH %'s :	40.10%	38.12%	21.78%	0.00%					42.83%	57.17%	0.00%	0.00%	0.00%	86.68%	13.32%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	351	332	187	0	0	0	0	0	283	342	0	0	0	768	143	0	2406
PEAK HR FACTOR :	0.83	0.830	0.779	0.000	0.000	0.000	0.000	0.000	0.852	0.799	0.000	0.000	0.000	0.928	0.745	0.000	0.959
	0.926								0.822				0.907				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0.5 NL	1 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	
4:00 PM	92	65	160	0	0	0	0	0	71	218	0	0	0	111	16	0	733
4:15 PM	114	73	171	0	0	0	0	0	67	223	0	0	0	109	27	0	784
4:30 PM	98	60	159	0	0	0	0	0	57	229	0	0	0	136	18	0	757
4:45 PM	99	59	177	0	0	0	0	0	57	263	0	0	0	110	13	0	778
5:00 PM	117	71	191	0	0	0	0	0	63	214	0	0	0	101	16	0	773
5:15 PM	104	65	184	0	0	0	0	0	75	274	0	0	0	119	15	0	836
5:30 PM	98	57	170	0	0	0	0	0	72	259	0	0	0	121	19	0	796
5:45 PM	112	42	171	0	0	0	0	0	72	238	0	0	0	106	11	0	752
TOTAL VOLUMES :	NL 834	NT 492	NR 1383	NU 0	SL 0	ST 0	SR 0	SU 0	EL 534	ET 1918	ER 0	EU 0	WL 0	WT 913	WR 135	WU 0	TOTAL 6209
APPROACH %'s :	30.79%	18.16%	51.05%	0.00%					21.78%	78.22%	0.00%	0.00%	0.00%	87.12%	12.88%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	418	252	722	0	0	0	0	0	267	1010	0	0	0	451	63	0	3183
PEAK HR FACTOR :	0.89	0.887	0.945	0.000	0.000	0.000	0.000	0.000	0.890	0.922	0.000	0.000	0.000	0.932	0.829	0.000	0.952
	0.918								0.915				0.918				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB Ramps & Los Angeles St
City: Irwindale
Control: Signalized

Project ID: 19-05193-012
Date: 4/10/2019

2axle																	
NS/EW Streets:	I-605 NB Ramps				I-605 NB Ramps				Los Angeles St				Los Angeles St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0.5 NL	1 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	
7:00 AM	1	0	1	0	0	0	0	0	2	3	0	0	0	4	0	0	11
7:15 AM	1	1	0	0	0	0	0	0	0	3	0	0	0	5	0	0	10
7:30 AM	1	0	0	0	0	0	0	0	0	2	0	0	0	4	0	0	7
7:45 AM	2	3	1	0	0	0	0	0	4	3	0	0	0	6	0	0	19
8:00 AM	3	3	2	0	0	0	0	0	4	5	0	0	0	1	0	0	18
8:15 AM	1	3	0	0	0	0	0	0	4	4	0	0	0	3	0	0	15
8:30 AM	1	0	1	0	0	0	0	0	13	5	0	0	0	4	1	0	25
8:45 AM	4	3	1	0	0	0	0	0	5	3	0	0	0	2	0	0	18
TOTAL VOLUMES :	NL 14	NT 13	NR 6	NU 0	SL 0	ST 0	SR 0	SU 0	EL 32	ET 28	ER 0	EU 0	WL 0	WT 29	WR 1	WU 0	TOTAL 123
APPROACH %'s :	42.42%	39.39%	18.18%	0.00%					53.33%	46.67%	0.00%	0.00%	0.00%	96.67%	3.33%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	7	7	3	0	0	0	0	0	8	13	0	0	0	16	0	0	54
PEAK HR FACTOR :	0.583	0.583	0.375	0.000	0.000	0.000	0.000	0.000	0.500	0.650	0.000	0.000	0.000	0.667	0.000	0.000	0.711
	0.531								0.583				0.667				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0.5 NL	1 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	
4:00 PM	0	3	3	0	0	0	0	0	2	3	0	0	0	5	0	0	16
4:15 PM	1	1	4	0	0	0	0	0	1	2	0	0	0	2	1	0	12
4:30 PM	1	5	0	0	0	0	0	0	1	2	0	0	0	4	0	0	13
4:45 PM	5	3	0	0	0	0	0	0	1	3	0	0	0	3	0	0	15
5:00 PM	5	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	9
5:15 PM	6	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	11
5:30 PM	5	3	2	0	0	0	0	0	0	2	0	0	0	4	0	0	16
5:45 PM	6	0	2	0	0	0	0	0	1	0	0	0	0	1	0	0	10
TOTAL VOLUMES :	NL 29	NT 17	NR 14	NU 0	SL 0	ST 0	SR 0	SU 0	EL 6	ET 14	ER 0	EU 0	WL 0	WT 21	WR 1	WU 0	TOTAL 102
APPROACH %'s :	48.33%	28.33%	23.33%	0.00%					30.00%	70.00%	0.00%	0.00%	0.00%	95.45%	4.55%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	21	8	5	0	0	0	0	0	1	7	0	0	0	9	0	0	51
PEAK HR FACTOR :	0.88	0.667	0.417	0.000	0.000	0.000	0.000	0.000	0.250	0.583	0.000	0.000	0.000	0.563	0.000	0.000	0.797
	0.850								0.500				0.563				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB Ramps & Los Angeles St

City: Irwindale

Control: Signalized

Project ID: 19-05193-012

Date: 4/10/2019

3axle																		
NS/EW Streets:		I-605 NB Ramps				I-605 NB Ramps				Los Angeles St				Los Angeles St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0.5 NL	1 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	TOTAL	
	7:00 AM	1	1	0	0	0	0	0	0	1	0	0	0	0	0	2	0	5
	7:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4
	7:30 AM	3	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	5
	7:45 AM	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	3
	8:00 AM	1	0	1	0	0	0	0	0	0	0	0	0	2	1	0	0	5
	8:15 AM	0	2	2	0	0	0	0	0	0	0	0	0	1	1	0	0	6
	8:30 AM	3	1	2	0	0	0	0	0	0	1	0	0	0	0	0	0	7
	8:45 AM	6	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9
TOTAL VOLUMES :		NL 14	NT 8	NR 7	NU 0	SL 0	ST 0	SR 0	SU 0	EL 2	ET 2	ER 0	EU 0	WL 0	WT 7	WR 4	WU 0	TOTAL 44
APPROACH %'s :		48.28%	27.59%	24.14%	0.00%					50.00%	50.00%	0.00%	0.00%	0.00%	63.64%	36.36%	0.00%	
PEAK HR :		07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :		4	2	2	0	0	0	0	0	1	1	0	0	0	6	1	0	17
PEAK HR FACTOR :		0.333	0.500	0.500	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.500	0.250	0.000	0.850
		0.667								0.500				0.583				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0.5 NL	1 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU	TOTAL	
	4:00 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	4:15 PM	4	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	5
	4:30 PM	4	2	0	0	0	0	0	0	2	0	0	0	0	0	1	0	9
	4:45 PM	2	2	1	0	0	0	0	0	2	0	0	0	0	1	0	0	8
	5:00 PM	3	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	5
	5:15 PM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	5:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	5:45 PM	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	4
TOTAL VOLUMES :		NL 22	NT 4	NR 1	NU 0	SL 0	ST 0	SR 0	SU 0	EL 4	ET 3	ER 0	EU 0	WL 0	WT 2	WR 1	WU 0	TOTAL 37
APPROACH %'s :		81.48%	14.81%	3.70%	0.00%					57.14%	42.86%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	
PEAK HR :		04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :		9	2	1	0	0	0	0	0	2	1	0	0	0	2	0	0	17
PEAK HR FACTOR :		0.75	0.250	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.531
		0.600								0.375				0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: I-605 NB Ramps & Los Angeles St

City: Irwindale

Control: Signalized

Project ID: 19-05193-012

Date: 4/10/2019

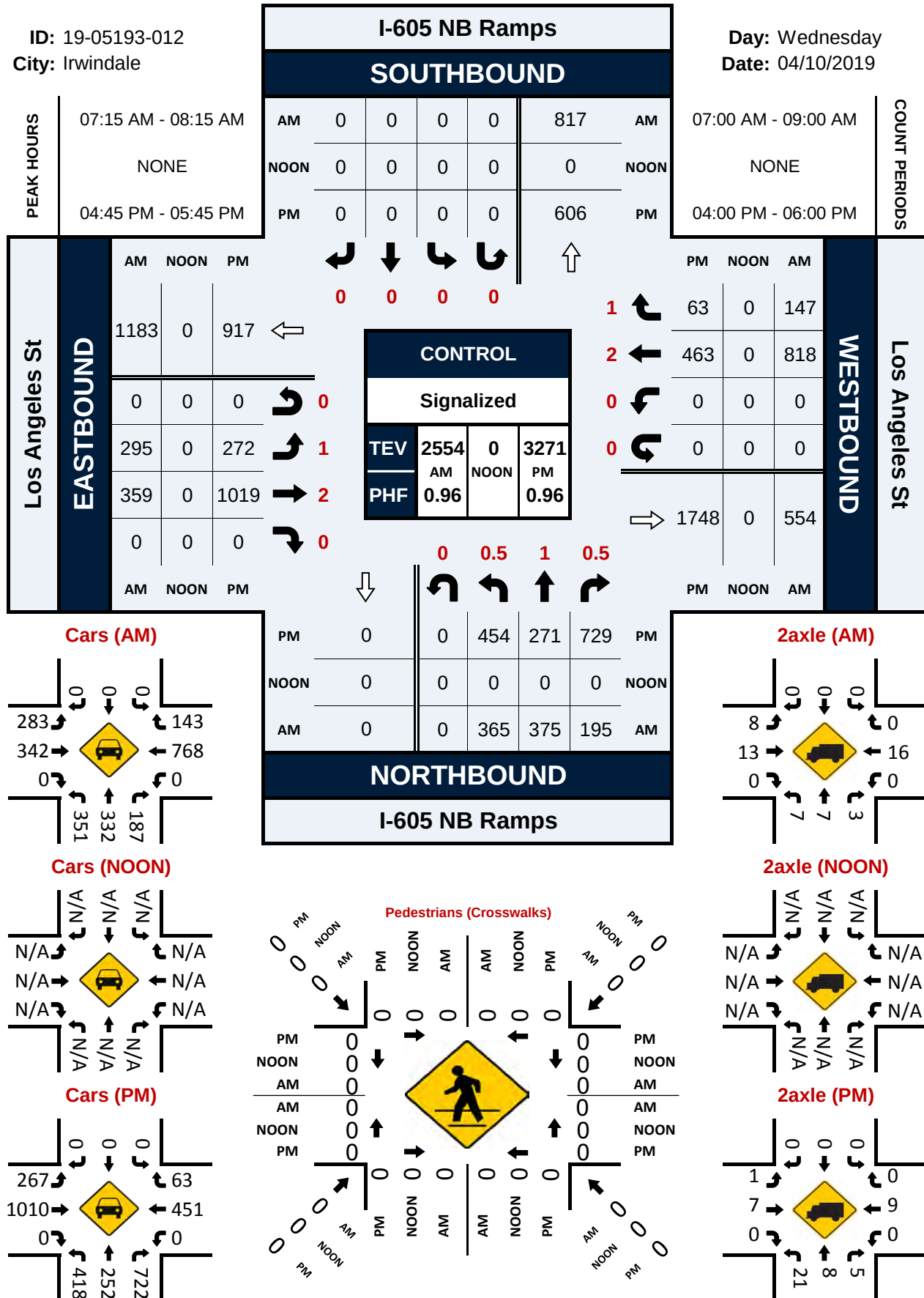
4axle																		
NS/EW Streets:	I-605 NB Ramps				I-605 NB Ramps				Los Angeles St				Los Angeles St					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	0.5 NL	1 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU		
7:00 AM	2	3	1	0	0	0	0	0	0	0	0	0	0	8	1	0	15	
7:15 AM	0	7	0	0	0	0	0	0	1	0	0	0	0	6	0	0	14	
7:30 AM	2	11	0	0	0	0	0	0	1	2	0	0	0	6	2	0	24	
7:45 AM	0	11	0	0	0	0	0	0	0	1	0	0	0	9	1	0	22	
8:00 AM	1	5	3	0	0	0	0	0	1	0	0	0	0	7	0	0	17	
8:15 AM	0	4	2	0	0	0	0	0	0	1	0	0	0	13	3	0	23	
8:30 AM	0	8	1	0	0	0	0	0	0	1	0	0	0	14	1	0	25	
8:45 AM	0	3	0	0	0	0	0	0	1	1	0	0	0	17	1	0	23	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
	5	52	7	0	0	0	0	0	4	6	0	0	0	80	9	0		
APPROACH %'s :	7.81%	81.25%	10.94%	0.00%					40.00%	60.00%	0.00%	0.00%	0.00%	89.89%	10.11%	0.00%		
PEAK HR :	07:15 AM - 08:15 AM																TOTAL	
PEAK HR VOL :	3	34	3	0	0	0	0	0	3	3	0	0	0	28	3	0		
PEAK HR FACTOR :	0.375	0.773	0.250	0.000	0.000	0.000	0.000	0.000	0.750	0.375	0.000	0.000	0.000	0.778	0.375	0.000	77	
	0.769								0.500				0.775				0.802	
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	0.5 NL	1 NT	0.5 NR	0 NU	0 SL	0 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	1 WR	0 WU		
4:00 PM	5	8	0	0	0	0	0	0	1	0	0	0	0	0	2	0	16	
4:15 PM	2	3	2	0	0	0	0	0	1	0	0	0	0	0	1	0	9	
4:30 PM	2	1	3	0	0	0	0	0	2	0	0	0	0	0	0	0	8	
4:45 PM	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	
5:00 PM	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
5:15 PM	2	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	4	
5:30 PM	1	3	0	0	0	0	0	0	2	0	0	0	0	1	0	0	7	
5:45 PM	2	2	1	0	0	0	0	0	0	0	0	0	0	1	0	0	6	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
	17	23	7	0	0	0	0	0	6	1	0	0	0	2	3	0		
APPROACH %'s :	36.17%	48.94%	14.89%	0.00%					85.71%	14.29%	0.00%	0.00%	0.00%	40.00%	60.00%	0.00%		
PEAK HR :	04:45 PM - 05:45 PM																TOTAL	
PEAK HR VOL :	6	9	1	0	0	0	0	0	2	1	0	0	0	1	0	0		
PEAK HR FACTOR :	0.75	0.563	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.000	0.000	714	
	0.667								0.375				0.250					

I-605 NB Ramps & Los Angeles St

Peak Hour Turning Movement Count

ID: 19-05193-012
City: Irwindale

Day: Wednesday
Date: 04/10/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: LittleJohn St & Los Angeles St
City: Irwindale
Control: Signalized

Project ID: 19-05193-013
Date: 4/10/2019

Total																		
NS/EW Streets:		LittleJohn St				LittleJohn St				Los Angeles St				Los Angeles St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0 NL	1 NT	0 NR	0 NU	1 SL	0 ST	1 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
7:00 AM		7	1	0	0	5	0	3	0	7	63	0	0	0	275	24	0	385
7:15 AM		9	2	0	0	5	0	2	0	12	99	0	0	0	284	42	0	455
7:30 AM		5	2	0	0	4	0	3	0	13	113	0	1	0	230	57	0	428
7:45 AM		10	2	0	0	7	0	3	0	13	154	0	0	0	192	48	0	429
8:00 AM		2	1	0	0	4	0	7	0	11	148	0	0	0	221	42	0	436
8:15 AM		10	0	0	0	11	0	1	0	17	129	0	0	0	203	30	0	401
8:30 AM		14	0	1	0	2	0	4	0	14	125	0	0	0	203	30	0	393
8:45 AM		16	0	0	0	6	0	4	0	16	118	0	0	0	171	25	0	356
TOTAL VOLUMES :		NL 73	NT 8	NR 1	NU 0	SL 44	ST 0	SR 27	SU 0	EL 103	ET 949	ER 0	EU 1	WL 0	WT 1779	WR 298	WU 0	TOTAL 3283
APPROACH %'s :		89.02%	9.76%	1.22%	0.00%	61.97%	0.00%	38.03%	0.00%	9.78%	90.12%	0.00%	0.09%	0.00%	85.65%	14.35%	0.00%	
PEAK HR :		07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :		26	7	0	0	20	0	15	0	49	514	0	1	0	927	189	0	1748
PEAK HR FACTOR :		0.650	0.875	0.000	0.000	0.714	0.000	0.536	0.000	0.942	0.834	0.000	0.250	0.000	0.816	0.829	0.000	0.960
		0.688				0.795				0.844				0.856				

PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0 NL	1 NT	0 NR	0 NU	1 SL	0 ST	1 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU	
4:00 PM		0	0	1	0	22	0	8	0	7	389	0	0	0	135	3	0	565
4:15 PM		1	0	0	0	18	0	8	0	3	388	0	0	0	119	5	0	542
4:30 PM		1	0	3	0	46	0	28	0	6	409	0	0	0	131	1	0	625
4:45 PM		0	0	0	0	20	0	6	0	7	431	0	0	0	101	5	0	570
5:00 PM		0	0	0	0	44	0	24	0	3	424	0	0	0	115	5	0	615
5:15 PM		0	0	0	0	29	0	12	0	4	444	0	0	0	118	3	0	610
5:30 PM		0	0	0	0	21	0	9	0	5	438	0	0	0	110	6	0	589
5:45 PM		0	0	0	0	15	0	8	0	0	402	0	0	0	125	3	0	553
TOTAL VOLUMES :		NL 2	NT 0	NR 4	NU 0	SL 215	ST 0	SR 103	SU 0	EL 35	ET 3325	ER 0	EU 0	WL 0	WT 954	WR 31	WU 0	TOTAL 4669
APPROACH %'s :		33.33%	0.00%	66.67%	0.00%	67.61%	0.00%	32.39%	0.00%	1.04%	98.96%	0.00%	0.00%	0.00%	96.85%	3.15%	0.00%	
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		1	0	3	0	139	0	70	0	20	1708	0	0	0	465	14	0	2420
PEAK HR FACTOR :		0.250	0.000	0.250	0.000	0.755	0.000	0.625	0.000	0.714	0.962	0.000	0.000	0.000	0.887	0.700	0.000	0.968
		0.250				0.706				0.964				0.907				

National Data & Surveying Services

Intersection Turning Movement Count

Location: LittleJohn St & Los Angeles St
City: Irwindale
Control: Signalized

Project ID: 19-05193-013
Date: 4/10/2019

NS/EW Streets:		LittleJohn St				LittleJohn St				Los Angeles St				Los Angeles St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0	1	0	0	1	0	1	0	1	2	0	0	0	2	0	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM 7:15 AM 7:30 AM 7:45 AM	7:00 AM	0	0	0	0	5	0	2	0	7	60	0	0	0	271	22	0	367
	7:15 AM	0	1	0	0	5	0	1	0	11	97	0	0	0	279	42	0	436
	7:30 AM	0	0	0	0	3	0	1	0	12	110	0	0	0	221	57	0	404
	7:45 AM	0	0	0	0	7	0	3	0	13	147	0	0	0	188	48	0	406
8:00 AM 8:15 AM 8:30 AM 8:45 AM	8:00 AM	0	0	0	0	3	0	5	0	11	138	0	0	0	217	40	0	414
	8:15 AM	1	0	0	0	11	0	0	0	14	123	0	0	0	195	30	0	374
	8:30 AM	0	0	0	0	1	0	3	0	14	116	0	0	0	199	29	0	362
	8:45 AM	0	0	0	0	5	0	3	0	14	113	0	0	0	165	25	0	325
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		1	1	0	0	40	0	18	0	96	904	0	0	0	1735	293	0	3088
		50.00%	50.00%	0.00%	0.00%	68.97%	0.00%	31.03%	0.00%	9.60%	90.40%	0.00%	0.00%	0.00%	85.55%	14.45%	0.00%	
PEAK HR :		07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :		0	1	0	0	18	0	10	0	47	492	0	0	0	905	187	0	1660
PEAK HR FACTOR :		0.00	0.250	0.000	0.000	0.643	0.000	0.500	0.000	0.904	0.837	0.000	0.000	0.000	0.811	0.820	0.000	0.952
		0.250				0.700				0.842				0.850				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0	1	0	0	1	0	1	0	1	2	0	0	0	2	0	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM 4:15 PM 4:30 PM 4:45 PM	4:00 PM	0	0	1	0	21	0	6	0	6	381	0	0	0	131	2	0	548
	4:15 PM	0	0	0	0	16	0	7	0	3	386	0	0	0	117	4	0	533
	4:30 PM	1	0	3	0	44	0	27	0	6	399	0	0	0	130	1	0	611
	4:45 PM	0	0	0	0	18	0	6	0	7	422	0	0	0	98	4	0	555
5:00 PM 5:15 PM 5:30 PM 5:45 PM	5:00 PM	0	0	0	0	43	0	24	0	2	421	0	0	0	111	5	0	606
	5:15 PM	0	0	0	0	28	0	11	0	4	441	0	0	0	115	3	0	602
	5:30 PM	0	0	0	0	21	0	9	0	5	437	0	0	0	110	5	0	587
	5:45 PM	0	0	0	0	15	0	8	0	0	399	0	0	0	120	3	0	545
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		1	0	4	0	206	0	98	0	33	3286	0	0	0	932	27	0	4587
		20.00%	0.00%	80.00%	0.00%	67.76%	0.00%	32.24%	0.00%	0.99%	99.01%	0.00%	0.00%	0.00%	97.18%	2.82%	0.00%	
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		1	0	3	0	133	0	68	0	19	1683	0	0	0	454	13	0	2374
PEAK HR FACTOR :		0.25	0.000	0.250	0.000	0.756	0.000	0.630	0.000	0.679	0.954	0.000	0.000	0.000	0.873	0.650	0.000	0.971
		0.250				0.708				0.956				0.891				

National Data & Surveying Services

Intersection Turning Movement Count

Location: LittleJohn St & Los Angeles St
City: Irwindale
Control: Signalized

Project ID: 19-05193-013
Date: 4/10/2019

NS/EW Streets:		LittleJohn St				LittleJohn St				Los Angeles St				Los Angeles St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	1 SL	0 ST	1 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU		
	7:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	4	2	0	8
	7:15 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	4
	7:30 AM	0	0	0	0	1	0	1	0	0	1	0	1	0	7	0	0	11
	7:45 AM	0	1	0	0	0	0	0	0	0	6	0	0	0	1	0	0	8
	8:00 AM	0	0	0	0	0	0	1	0	0	6	0	0	0	1	2	0	10
	8:15 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0	6
	8:30 AM	0	0	0	0	0	0	0	0	0	4	0	0	0	3	1	0	8
	8:45 AM	0	0	0	0	1	0	0	0	1	4	0	0	0	4	0	0	10
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	APPROACH %'s :	0	1	0	0	2	0	2	0	2	28	0	1	0	24	5	0	65
		0.00%	100.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	6.45%	90.32%	0.00%	3.23%	0.00%	82.76%	17.24%	0.00%	
PEAK HR :		07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :		0	1	0	0	1	0	2	0	1	14	0	1	0	11	2	0	33
PEAK HR FACTOR :		0.000	0.250	0.000	0.000	0.250	0.000	0.500	0.000	0.250	0.583	0.000	0.250	0.000	0.393	0.250	0.000	0.750
		0.250				0.375				0.667				0.464				

PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	1 NT	0 NR	0 NU	1 SL	0 ST	1 SR	0 SU	1 EL	2 ET	0 ER	0 EU	0 WL	2 WT	0 WR	0 WU		
	4:00 PM	0	0	0	0	0	0	0	0	7	0	0	0	3	1	0	11	
	4:15 PM	0	0	0	0	2	0	1	0	0	2	0	0	0	2	1	0	8
	4:30 PM	0	0	0	0	2	0	0	0	0	5	0	0	0	1	0	0	8
	4:45 PM	0	0	0	0	1	0	0	0	0	8	0	0	0	2	1	0	12
	5:00 PM	0	0	0	0	1	0	0	0	0	3	0	0	0	3	0	0	7
	5:15 PM	0	0	0	0	1	0	0	0	0	3	0	0	0	3	0	0	7
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	5:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	5
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	APPROACH %'s :	0	0	0	0	7	0	1	0	0	30	0	0	0	17	4	0	59
						87.50%	0.00%	12.50%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	80.95%	19.05%	0.00%	
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		0	0	0	0	5	0	0	0	0	19	0	0	0	9	1	0	34
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.625	0.000	0.000	0.000	0.000	0.594	0.000	0.000	0.000	0.750	0.250	0.000	0.708
						0.625				0.594				0.833				

National Data & Surveying Services

Intersection Turning Movement Count

Location: LittleJohn St & Los Angeles St
City: Irwindale
Control: Signalized

Project ID: 19-05193-013
Date: 4/10/2019

3axle																		
NS/EW Streets:		LittleJohn St				LittleJohn St				Los Angeles St				Los Angeles St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	1	0	1	0	1	2	0	0	0	0	2	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
	7:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
	7:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	4
	7:30 AM	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	3
	7:45 AM	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
	8:00 AM	0	0	0	0	1	0	0	0	0	2	0	0	1	0	0	0	4
	8:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	8:30 AM	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	4
	8:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		3	0	0	0	1	0	2	0	1	8	0	0	0	5	0	0	20
PEAK HR :		07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :		1	0	0	0	1	0	1	0	1	4	0	0	0	5	0	0	13
PEAK HR FACTOR :		0.250	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.250	0.500	0.000	0.000	0.000	0.417	0.000	0.000	0.813
		0.250				0.500				0.625				0.417				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	1	0	1	0	1	2	0	0	0	0	2	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
	4:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	3
	4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	0	0	0	1	0	2	0	0	3	0	0	0	2	0	0	8
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		0	0	0	0	1	0	1	0	0	2	0	0	0	2	0	0	6
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.500	0.000	0.000	0.500
						0.500				0.250				0.500				

National Data & Surveying Services

Intersection Turning Movement Count

Location: LittleJohn St & Los Angeles St

City: Irwindale

Control: Signalized

Project ID: 19-05193-013

Date: 4/10/2019

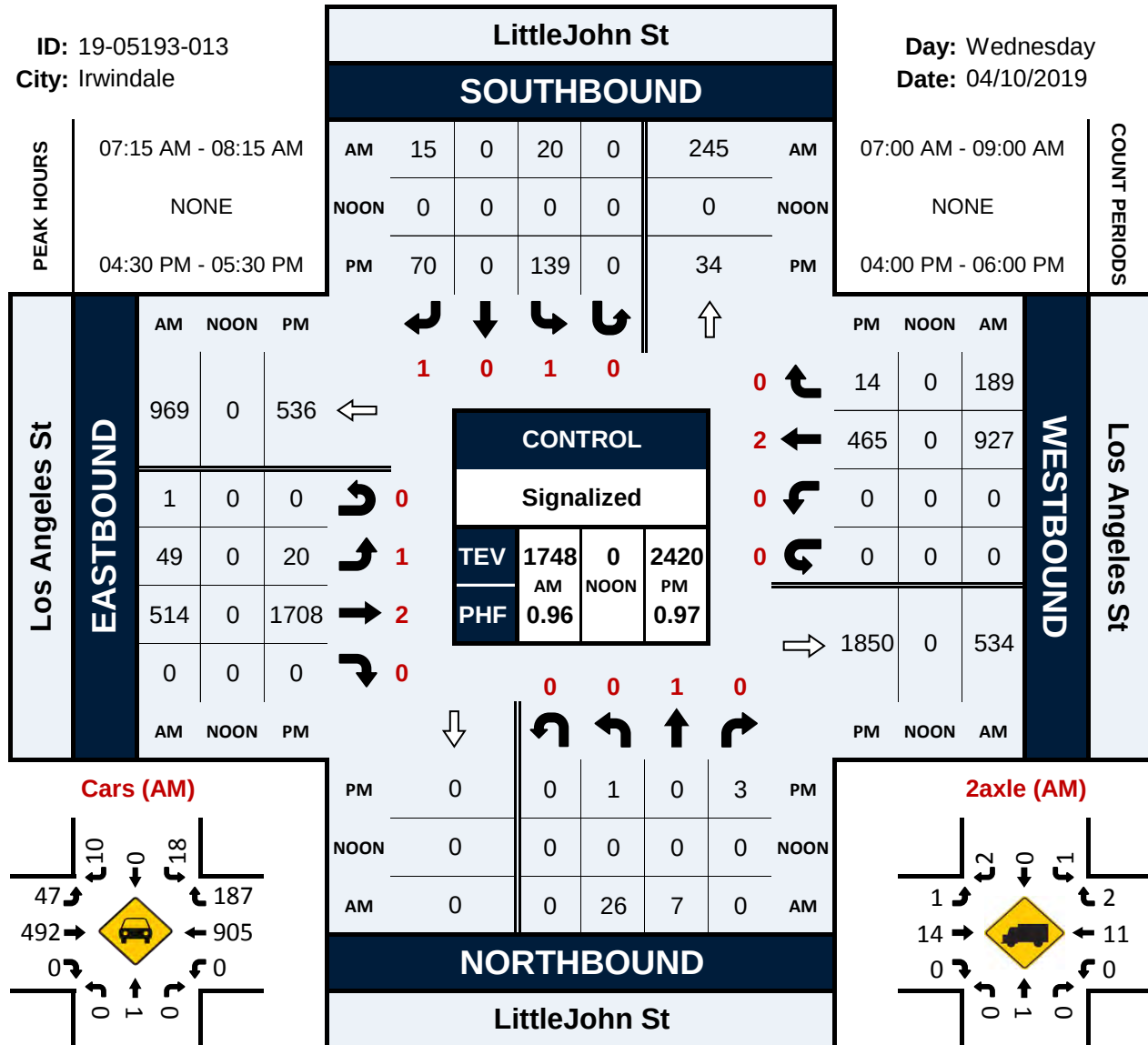
4axle																		
NS/EW Streets:		LittleJohn St				LittleJohn St				Los Angeles St				Los Angeles St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	1	0	1	0	1	2	0	0	0	0	2	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
7:00 AM	7	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	9
7:15 AM	9	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	11
7:30 AM	5	2	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	10
7:45 AM	9	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	13
8:00 AM	2	1	0	0	0	0	1	0	0	2	0	0	0	2	0	0	0	8
8:15 AM	9	0	0	0	0	0	1	0	3	1	0	0	0	6	0	0	0	20
8:30 AM	13	0	1	0	1	0	1	0	0	2	0	0	0	1	0	0	0	19
8:45 AM	15	0	0	0	0	0	1	0	1	1	0	0	0	2	0	0	0	20
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		69	6	1	0	1	0	5	0	4	9	0	0	0	15	0	0	110
		90.79%	7.89%	1.32%	0.00%	16.67%	0.00%	83.33%	0.00%	30.77%	69.23%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :		07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :		25	5	0	0	0	0	2	0	0	4	0	0	0	6	0	0	42
PEAK HR FACTOR :		0.694	0.625	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.000	0.808
		0.750				0.500				0.500				0.500				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	1	0	1	0	1	2	0	0	0	0	2	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
4:00 PM	0	0	0	0	1	0	1	0	1	1	0	0	0	1	0	0	0	5
4:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	3
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	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	1	0	0	0	0	2	0	0	3
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		1	0	0	0	1	0	2	0	2	6	0	0	0	3	0	0	15
		100.00%	0.00%	0.00%	0.00%	33.33%	0.00%	66.67%	0.00%	25.00%	75.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		0	0	0	0	0	0	1	0	1	4	0	0	0	0	0	0	6
PEAK HR FACTOR :		0.00	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.500
						0.250				0.417								

LittleJohn St & Los Angeles St

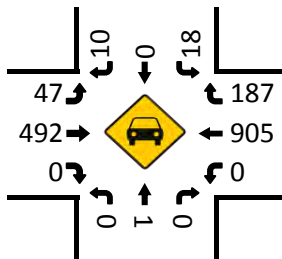
Peak Hour Turning Movement Count

ID: 19-05193-013
City: Irwindale

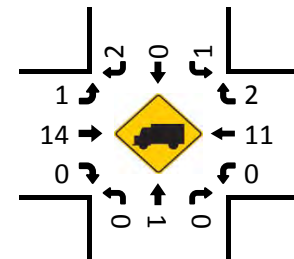
Day: Wednesday
Date: 04/10/2019



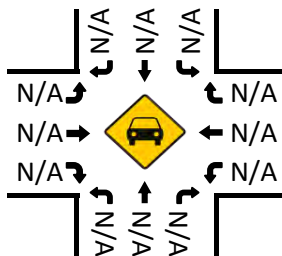
Cars (AM)



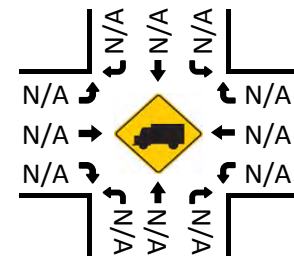
2axle (AM)



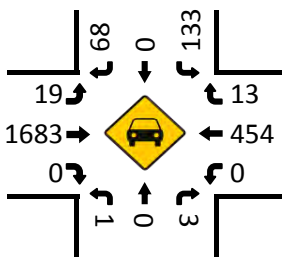
Cars (NOON)



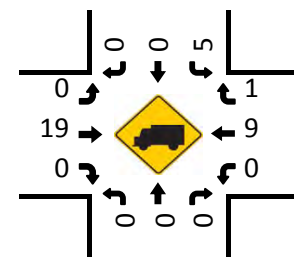
2axle (NOON)



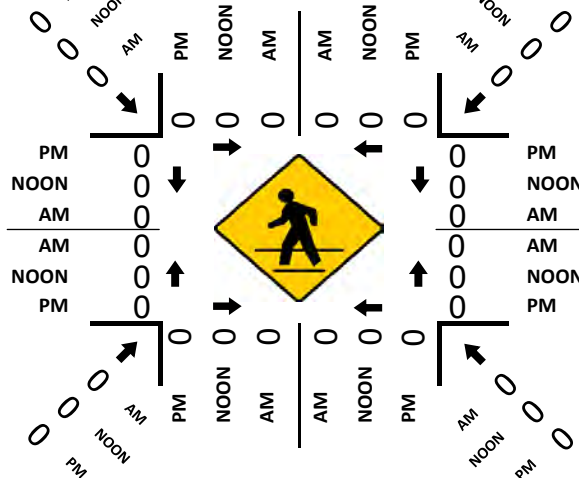
Cars (PM)



2axle (PM)



Pedestrians (Crosswalks)



APPENDIX C
Existing LOS Worksheets

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 5 Existing AM

Report File: J:\...\Ex AM.pdf

1/22/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Arrow Highway and I-605 SB off-ramps	Signalized	ICU 1	SB Right	1.134	-	F
2	Arrow Highway and I-605 NB On-ramp	Two-way stop	HCM 6th Edition	WB Thru	0.017	0.0	A
3	Rivergrade Rd and Arrow Hwy	Signalized	ICU 1	NB Thru	0.723	-	C
4	Rivergrade Rd and Stewart Avenue	Signalized	ICU 1	WB Right	0.337	-	A
5	Live Oak Avenue and I-605 SB On-ramp	Signalized	ICU 1	WB Thru	0.849	-	D
6	Live Oak Ave and I-605 NB Off-ramp	Two-way stop	HCM 6th Edition	SB Right	1.579	1,081.6	F
7	Live Oak Avenue and Graham Access Road	Signalized	ICU 1	WB Thru	0.655	-	B
8	Rivergrade Rd and Live Oak Ave	Signalized	ICU 1	WB Thru	0.649	-	B
9	Rivergrade Road and Commerce Drive	Two-way stop	HCM 6th Edition	WB Left	0.311	24.1	C
10	Rivergrade Road and Brooks Drive	Signalized	ICU 1	NB Thru	0.475	-	A
11	I-605 SB Ramps/Los Angeles Street	Signalized	ICU 1	WB Thru	0.788	-	C
12	I-605 NB ramps/Los Angeles St	Signalized	ICU 1	NB Thru	0.913	-	E
13	Littlejohn St and Los Angeles St	Signalized	ICU 1	WB Thru	0.578	-	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Arrow Highway and I-605 SB off-ramps

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.134

Intersection Setup

Name	Southbound		Arrow Hwy		Arrow Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	11.80	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Southbound		Arrow Hwy		Arrow Hwy	
Base Volume Input [veh/h]	499	844	0	695	1586	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	499	844	0	695	1586	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	125	211	0	174	397	0
Total Analysis Volume [veh/h]	499	844	0	695	1586	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	7	0	0	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.31	0.53	0.00	0.14	0.50	0.00
Intersection LOS	F					
Intersection V/C	1.134					

Intersection Level Of Service Report
Intersection 2: Arrow Highway and I-605 NB On-ramp

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.017

Intersection Setup

Name							Arrow Hwy			Arrow Hwy		
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	11.00	13.70	12.00	11.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Arrow Hwy			Arrow Hwy		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	735	334	0	1691	399
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	0	0	0	0	0	0	0	735	334	0	1691	399
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	184	84	0	423	100
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	735	334	0	1691	399
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS								A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 3: Rivergrade Rd and Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.723

Intersection Setup

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	9.50	15.00	10.00	12.00	12.00	13.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	119.50	100.00	100.00	190.00	100.00	100.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Base Volume Input [veh/h]	140	1624	501	334	333	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	1624	501	334	333	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	406	125	84	83	3
Total Analysis Volume [veh/h]	140	1624	501	334	333	12
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	8	4	0	1	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.51	0.16	0.21	0.10	0.01
Intersection LOS	C					
Intersection V/C	0.723					

Intersection Level Of Service Report

Intersection 4: Rivergrade Rd and Stewart Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.337

Intersection Setup

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.50	11.50	11.50	13.00	13.00	13.00	12.00	13.00	15.00	12.00	13.00	14.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	171.00	100.00	100.00	64.00	100.00	100.00
Speed [mph]	30.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Base Volume Input [veh/h]	2	8	112	14	9	15	33	227	17	106	365	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 [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	8	112	14	9	15	33	227	17	106	365	15
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	2	28	4	2	4	8	57	4	27	91	4
Total Analysis Volume [veh/h]	2	8	112	14	9	15	33	227	17	106	365	15
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.08	0.08	0.01	0.01	0.01	0.02	0.08	0.08	0.07	0.12	0.12
Intersection LOS	A											
Intersection V/C	0.337											

Intersection Level Of Service Report
Intersection 5: Live Oak Avenue and I-605 SB On-ramp

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.849

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	11.00	15.00	11.50	13.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	375.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	0	0	321	541	639	1430
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	321	541	639	1430
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	80	135	160	358
Total Analysis Volume [veh/h]	0	0	321	541	639	1430
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	0	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.10	0.34	0.40	0.45
Intersection LOS	D					
Intersection V/C	0.849					

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	1,081.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.579

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	655	0	0	613	0	374	0	0	1378	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	0	0	655	0	0	613	0	374	0	0	1378	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	164	0	0	153	0	94	0	0	345	0
Total Analysis Volume [veh/h]	0	0	655	0	0	613	0	374	0	0	1378	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	0.80	0.00	0.00	1.58	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	25.68	0.00	0.00	1081.60	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			D			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	10.40	0.00	0.00	120.08	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	259.91	0.00	0.00	3001.91	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	25.68			1081.60			0.00			0.00		
Approach LOS	D			F			A			A		
d_I, Intersection Delay [s/veh]	225.11											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 7: Live Oak Avenue and Graham Access Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.655

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	13.00	10.00	12.00	13.50
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	101	75	796	123	19	1390
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	101	75	796	123	19	1390
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	19	199	31	5	348
Total Analysis Volume [veh/h]	101	75	796	123	19	1390
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	8	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.11	0.29	0.29	0.01	0.43
Intersection LOS	B					
Intersection V/C	0.655					

Intersection Level Of Service Report

Intersection 8: Rivergrade Rd and Live Oak Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak 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]	11.00	12.00	12.00	12.50	12.00	13.50	10.50	13.50	19.00	11.00	11.00	10.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	319.00	100.00	100.00	156.00	100.00	160.00	214.00	100.00	100.00	155.00	100.00	112.00
Speed [mph]	50.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	61	146	183	19	300	52	86	663	118	313	1128	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	61	146	183	19	300	52	86	663	118	313	1128	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	15	37	46	5	75	13	22	166	30	78	282	5
Total Analysis Volume [veh/h]	61	146	183	19	300	52	86	663	118	313	1128	19
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	5	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups			5,8									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.09	0.00	0.01	0.09	0.03	0.05	0.21	0.07	0.20	0.35	0.01
Intersection LOS	B											
Intersection V/C	0.649											

Intersection Level Of Service Report
Intersection 9: Rivergrade Road and Commerce Drive

Control Type:	Two-way stop	Delay (sec / veh):	24.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.311

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.50	13.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	185.00	100.00	100.00	250.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Base Volume Input [veh/h]	454	103	20	705	85	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	454	103	20	705	85	9
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	26	5	176	21	2
Total Analysis Volume [veh/h]	454	103	20	705	85	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.01	0.31	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.64	0.00	24.07	10.07
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.06	0.00	1.33	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.52	0.00	33.36	0.95
d_A, Approach Delay [s/veh]	0.00		0.24		22.73	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.68					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 10: Rivergrade Road and Brooks Drive

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.475

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.00	13.00	11.50	12.00
No. of Lanes in Pocket	0	0	1	0	1	0
Pocket Length [ft]	100.00	100.00	180.00	100.00	64.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Base Volume Input [veh/h]	561	77	126	474	57	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	561	77	126	474	57	138
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	140	19	32	119	14	35
Total Analysis Volume [veh/h]	561	77	126	474	57	138
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	8	0	5	4	2	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.20	0.08	0.15	0.04	0.09
Intersection LOS	A					
Intersection V/C	0.475					

Intersection Level Of Service Report

Intersection 11: I-605 SB Ramps/Los Angeles Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.788

Intersection Setup

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
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	13.00	20.00	11.00	13.00	13.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	164.00	100.00	100.00	100.00	230.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	0	0	0	89	314	511	0	498	357	422	913	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	0	0	0	89	314	511	0	498	357	422	913	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	22	79	128	0	125	89	106	228	0
Total Analysis Volume [veh/h]	0	0	0	89	314	511	0	498	357	422	913	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.06	0.19	0.19	0.00	0.16	0.22	0.26	0.29	0.00
Intersection LOS	C											
Intersection V/C	0.788											

Intersection Level Of Service Report

Intersection 12: I-605 NB ramps/Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.913

Intersection Setup

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
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	11.00	12.00	12.00	12.00	10.50	13.00	13.00	12.00	12.00	25.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	384	453	207	0	0	0	311	380	0	0	899	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	384	453	207	0	0	0	311	380	0	0	899	155
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	96	113	52	0	0	0	78	95	0	0	225	39
Total Analysis Volume [veh/h]	384	453	207	0	0	0	311	380	0	0	899	155
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.24	0.33	0.33	0.00	0.00	0.00	0.19	0.12	0.00	0.00	0.28	0.10
Intersection LOS	E											
Intersection V/C	0.913											

Intersection Level Of Service Report

Intersection 13: Littlejohn St and Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.578

Intersection Setup

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	12.00	12.00	12.00	13.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			40.00			45.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Base Volume Input [veh/h]	78	18	0	23	0	23	54	542	0	0	958	191
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	78	18	0	23	0	23	54	542	0	0	958	191
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	20	5	0	6	0	6	14	136	0	0	240	48
Total Analysis Volume [veh/h]	78	18	0	23	0	23	54	542	0	0	958	191
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	7	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.00	0.01	0.00	0.01	0.03	0.17	0.00	0.00	0.36	0.36
Intersection LOS	A											
Intersection V/C	0.578											

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 6 Existing PM

Report File: J:\...\Ex PM.pdf

1/22/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Arrow Highway and I-605 SB off-ramps	Signalized	ICU 1	EB Thru	0.620	-	B
2	Arrow Highway and I-605 NB On-ramp	Two-way stop	HCM 6th Edition	EB Thru	0.014	0.0	A
3	Rivergrade Rd and Arrow Hwy	Signalized	ICU 1	SB Thru	0.625	-	B
4	Rivergrade Rd and Stewart Avenue	Signalized	ICU 1	WB Left	0.356	-	A
5	Live Oak Avenue and I-605 SB On-ramp	Signalized	ICU 1	EB Right	1.248	-	F
6	Live Oak Ave and I-605 NB Off-ramp	Two-way stop	HCM 6th Edition	NB Right	1.315	606.9	F
7	Live Oak Avenue and Graham Access Road	Signalized	ICU 1	EB Thru	0.670	-	B
8	Rivergrade Rd and Live Oak Ave	Signalized	ICU 1	EB Thru	0.961	-	E
9	Rivergrade Road and Commerce Drive	Two-way stop	HCM 6th Edition	WB Left	0.404	25.1	D
10	Rivergrade Road and Brooks Drive	Signalized	ICU 1	NB Thru	0.370	-	A
11	I-605 SB Ramps/Los Angeles Street	Signalized	ICU 1	EB Thru	0.796	-	C
12	I-605 NB ramps/Los Angeles St	Signalized	ICU 1	NB Thru	0.916	-	E
13	Littlejohn St and Los Angeles St	Signalized	ICU 1	EB Thru	0.748	-	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Arrow Highway and I-605 SB off-ramps

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.620

Intersection Setup

Name	Southbound		Arrow Hwy		Arrow Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	11.80	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Southbound		Arrow Hwy		Arrow Hwy	
Base Volume Input [veh/h]	269	347	0	1400	477	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	269	347	0	1400	477	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	87	0	350	119	0
Total Analysis Volume [veh/h]	269	347	0	1400	477	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	7	0	0	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.22	0.00	0.29	0.15	0.00
Intersection LOS	B					
Intersection V/C	0.620					

Intersection Level Of Service Report
Intersection 2: Arrow Highway and I-605 NB On-ramp

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.014

Intersection Setup

Name							Arrow Hwy			Arrow Hwy		
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	11.00	13.70	12.00	11.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Arrow Hwy			Arrow Hwy		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	1382	140	0	441	256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	0	0	0	0	0	0	0	1382	140	0	441	256
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	346	35	0	110	64
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	1382	140	0	441	256
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS								A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 3: Rivergrade Rd and Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.625

Intersection Setup

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	9.50	15.00	10.00	12.00	12.00	13.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	119.50	100.00	100.00	190.00	100.00	100.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Base Volume Input [veh/h]	46	491	1326	225	225	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	46	491	1326	225	225	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	123	332	56	56	7
Total Analysis Volume [veh/h]	46	491	1326	225	225	27
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	8	4	0	1	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.15	0.41	0.14	0.07	0.02
Intersection LOS	B					
Intersection V/C	0.625					

Intersection Level Of Service Report
Intersection 4: Rivergrade Rd and Stewart Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.356

Intersection Setup

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.50	11.50	11.50	13.00	13.00	13.00	12.00	13.00	15.00	12.00	13.00	14.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	171.00	100.00	100.00	64.00	100.00	100.00
Speed [mph]	30.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Base Volume Input [veh/h]	5	4	71	21	14	25	21	164	45	192	64	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	5	4	71	21	14	25	21	164	45	192	64	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	1	18	5	4	6	5	41	11	48	16	4
Total Analysis Volume [veh/h]	5	4	71	21	14	25	21	164	45	192	64	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.05	0.05	0.01	0.02	0.02	0.01	0.07	0.07	0.12	0.03	0.03
Intersection LOS	A											
Intersection V/C	0.356											

Intersection Level Of Service Report
Intersection 5: Live Oak Avenue and I-605 SB On-ramp

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.248

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	11.00	15.00	11.50	13.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	375.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	0	0	1038	1274	545	996
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	1038	1274	545	996
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	260	319	136	249
Total Analysis Volume [veh/h]	0	0	1038	1274	545	996
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	0	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.32	0.80	0.34	0.31
Intersection LOS	F					
Intersection V/C	1.248					

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	606.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.315

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	660	0	0	596	0	1037	0	0	959	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	0	0	660	0	0	596	0	1037	0	0	959	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	165	0	0	149	0	259	0	0	240	0
Total Analysis Volume [veh/h]	0	0	660	0	0	596	0	1037	0	0	959	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	1.31	0.00	0.00	1.12	0.00	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	606.88	0.00	0.00	278.10	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	89.97	0.00	0.00	49.78	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2249.17	0.00	0.00	1244.47	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	606.88			278.10			0.00			0.00		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	174.14											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 7: Live Oak Avenue and Graham Access Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.670

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	13.00	10.00	12.00	13.50
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	22	14	1675	22	9	937
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	14	1675	22	9	937
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	4	419	6	2	234
Total Analysis Volume [veh/h]	22	14	1675	22	9	937
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	8	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.53	0.53	0.01	0.29
Intersection LOS	B					
Intersection V/C	0.670					

Intersection Level Of Service Report

Intersection 8: Rivergrade Rd and Live Oak Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.961

Intersection Setup

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak 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]	11.00	12.00	12.00	12.50	12.00	13.50	10.50	13.50	19.00	11.00	11.00	10.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	319.00	100.00	100.00	156.00	100.00	160.00	214.00	100.00	100.00	155.00	100.00	112.00
Speed [mph]	50.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	164	156	552	24	29	78	42	1568	28	109	663	29
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	164	156	552	24	29	78	42	1568	28	109	663	29
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	41	39	138	6	7	20	11	392	7	27	166	7
Total Analysis Volume [veh/h]	164	156	552	24	29	78	42	1568	28	109	663	29
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	5	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups			5,8									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.10	0.28	0.02	0.01	0.05	0.03	0.49	0.02	0.07	0.21	0.02
Intersection LOS	E											
Intersection V/C	0.961											

Intersection Level Of Service Report
Intersection 9: Rivergrade Road and Commerce Drive

Control Type:	Two-way stop	Delay (sec / veh):	25.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.404

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.50	13.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	185.00	100.00	100.00	250.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Base Volume Input [veh/h]	715	27	5	214	121	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	715	27	5	214	121	53
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	179	7	1	54	30	13
Total Analysis Volume [veh/h]	715	27	5	214	121	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.40	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	9.21	0.00	25.08	11.28
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.02	0.00	1.99	0.28
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.44	0.00	49.66	6.93
d_A, Approach Delay [s/veh]	0.00		0.21		20.87	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.24					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 10: Rivergrade Road and Brooks Drive

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.370

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.00	13.00	11.50	12.00
No. of Lanes in Pocket	0	0	1	0	1	0
Pocket Length [ft]	100.00	100.00	180.00	100.00	64.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Base Volume Input [veh/h]	459	12	81	386	78	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	459	12	81	386	78	98
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	115	3	20	97	20	25
Total Analysis Volume [veh/h]	459	12	81	386	78	98
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	8	0	5	4	2	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.15	0.05	0.12	0.05	0.06
Intersection LOS	A					
Intersection V/C	0.370					

Intersection Level Of Service Report

Intersection 11: I-605 SB Ramps/Los Angeles Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.796

Intersection Setup

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
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	13.00	20.00	11.00	13.00	13.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	164.00	100.00	100.00	100.00	230.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	0	0	0	135	324	286	0	1185	501	255	716	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	0	0	0	135	324	286	0	1185	501	255	716	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	34	81	72	0	296	125	64	179	0
Total Analysis Volume [veh/h]	0	0	0	135	324	286	0	1185	501	255	716	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.08	0.16	0.16	0.00	0.37	0.31	0.16	0.22	0.00
Intersection LOS	C											
Intersection V/C	0.796											

Intersection Level Of Service Report

Intersection 12: I-605 NB ramps/Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.916

Intersection Setup

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
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	11.00	12.00	12.00	12.00	10.50	13.00	13.00	12.00	12.00	25.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	501	300	738	0	0	0	280	1030	0	0	477	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	501	300	738	0	0	0	280	1030	0	0	477	63
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	125	75	185	0	0	0	70	258	0	0	119	16
Total Analysis Volume [veh/h]	501	300	738	0	0	0	280	1030	0	0	477	63
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.31	0.48	0.48	0.00	0.00	0.00	0.18	0.32	0.00	0.00	0.15	0.04
Intersection LOS	E											
Intersection V/C	0.916											

Intersection Level Of Service Report

Intersection 13: Littlejohn St and Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.748

Intersection Setup

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	12.00	12.00	12.00	13.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			40.00			45.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Base Volume Input [veh/h]	1	0	3	146	0	74	22	1738	0	0	477	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 [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	1	0	3	146	0	74	22	1738	0	0	477	15
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	37	0	19	6	435	0	0	119	4
Total Analysis Volume [veh/h]	1	0	3	146	0	74	22	1738	0	0	477	15
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	7	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.09	0.00	0.05	0.01	0.54	0.00	0.00	0.15	0.15
Intersection LOS	C											
Intersection V/C	0.748											

APPENDIX D
Existing With-Project LOS Worksheets

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 3 Existing+Project AM

Report File: J:\...\Ex+P AM.pdf

1/22/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Arrow Highway and I-605 SB off-ramps	Signalized	ICU 1	SB Right	1.134	-	F
2	Arrow Highway and I-605 NB On-ramp	Two-way stop	HCM 6th Edition	WB Thru	0.017	0.0	A
3	Rivergrade Rd and Arrow Hwy	Signalized	ICU 1	NB Thru	0.730	-	C
4	Rivergrade Rd and Stewart Avenue	Signalized	ICU 1	WB Thru	0.350	-	A
5	Live Oak Avenue and I-605 SB On-ramp	Signalized	ICU 1	WB Thru	0.862	-	D
6	Live Oak Ave and I-605 NB Off-ramp	Two-way stop	HCM 6th Edition	SB Right	1.606	1,129.3	F
7	Live Oak Avenue and Graham Access Road	Signalized	ICU 1	WB Thru	0.662	-	B
8	Rivergrade Rd and Live Oak Ave	Signalized	ICU 1	WB Thru	0.679	-	B
9	Rivergrade Road and Commerce Drive	Two-way stop	HCM 6th Edition	WB Left	0.346	27.4	D
10	Rivergrade Road and Brooks Drive	Signalized	ICU 1	NB Thru	0.490	-	A
11	I-605 SB Ramps/Los Angeles Street	Signalized	ICU 1	WB Left	0.849	-	D
12	I-605 NB ramps/Los Angeles St	Signalized	ICU 1	NB Thru	1.002	-	F
13	Littlejohn St and Los Angeles St	Signalized	ICU 1	WB Thru	0.581	-	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Arrow Highway and I-605 SB off-ramps

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.134

Intersection Setup

Name	Southbound		Arrow Hwy Eastbound		Arrow Hwy Westbound	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	11.80	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Southbound		Arrow Hwy Eastbound		Arrow Hwy Westbound	
Base Volume Input [veh/h]	499	844	0	695	1586	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	45	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	544	844	0	695	1586	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	136	211	0	174	397	0
Total Analysis Volume [veh/h]	544	844	0	695	1586	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	7	0	0	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.34	0.53	0.00	0.14	0.50	0.00
Intersection LOS	F					
Intersection V/C	1.134					

Intersection Level Of Service Report
Intersection 2: Arrow Highway and I-605 NB On-ramp

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.017

Intersection Setup

Name							Arrow Hwy			Arrow Hwy		
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	11.00	13.70	12.00	11.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Arrow Hwy			Arrow Hwy		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	735	334	0	1691	399
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	45	0	0	0	22
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]	0	0	0	0	0	0	0	780	334	0	1691	421
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	195	84	0	423	105
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	780	334	0	1691	421
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS								A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 3: Rivergrade Rd and Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	9.50	15.00	10.00	12.00	12.00	13.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	119.50	100.00	100.00	190.00	100.00	100.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Base Volume Input [veh/h]	140	1624	501	334	333	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	0	45	22	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	1624	501	379	355	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	406	125	95	89	3
Total Analysis Volume [veh/h]	146	1624	501	379	355	12
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	8	4	0	1	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.51	0.16	0.24	0.11	0.01
Intersection LOS	C					
Intersection V/C	0.730					

Intersection Level Of Service Report
Intersection 4: Rivergrade Rd and Stewart Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.350

Intersection Setup

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.50	11.50	11.50	13.00	13.00	13.00	12.00	13.00	15.00	12.00	13.00	14.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	171.00	100.00	100.00	64.00	100.00	100.00
Speed [mph]	30.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Base Volume Input [veh/h]	2	8	112	14	9	15	33	227	17	106	365	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 [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	22	0	0	51	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	8	112	14	9	15	33	249	17	106	416	15
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	2	28	4	2	4	8	62	4	27	104	4
Total Analysis Volume [veh/h]	2	8	112	14	9	15	33	249	17	106	416	15
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.08	0.08	0.01	0.01	0.01	0.02	0.08	0.08	0.07	0.13	0.13
Intersection LOS	A											
Intersection V/C	0.350											

Intersection Level Of Service Report
Intersection 5: Live Oak Avenue and I-605 SB On-ramp

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.862

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	11.00	15.00	11.50	13.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	375.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	0	0	321	541	639	1430
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	22	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	321	541	661	1430
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	80	135	165	358
Total Analysis Volume [veh/h]	0	0	321	541	661	1430
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	0	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.10	0.34	0.41	0.45
Intersection LOS	D					
Intersection V/C	0.862					

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	1,129.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.606

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	655	0	0	613	0	374	0	0	1378	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	22	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]	0	0	655	0	0	613	0	374	0	0	1400	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	164	0	0	153	0	94	0	0	350	0
Total Analysis Volume [veh/h]	0	0	655	0	0	613	0	374	0	0	1400	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	0.80	0.00	0.00	1.61	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	25.68	0.00	0.00	1129.29	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			D			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	10.40	0.00	0.00	123.10	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	259.91	0.00	0.00	3077.43	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	25.68			1129.29			0.00			0.00		
Approach LOS	D			F			A			A		
d_I, Intersection Delay [s/veh]	233.09											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 7: Live Oak Avenue and Graham Access Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.662

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	13.00	10.00	12.00	13.50
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	101	75	796	123	19	1390
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	22
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	101	75	796	123	19	1412
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	19	199	31	5	353
Total Analysis Volume [veh/h]	101	75	796	123	19	1412
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	8	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.11	0.29	0.29	0.01	0.44
Intersection LOS	B					
Intersection V/C	0.662					

Intersection Level Of Service Report
Intersection 8: Rivergrade Rd and Live Oak Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.679

Intersection Setup

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak 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]	11.00	12.00	12.00	12.50	12.00	13.50	10.50	13.50	19.00	11.00	11.00	10.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	319.00	100.00	100.00	156.00	100.00	160.00	214.00	100.00	100.00	155.00	100.00	112.00
Speed [mph]	50.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	61	146	183	19	300	52	86	663	118	313	1128	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	22	3	0	51	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]	83	168	186	19	351	52	86	663	118	313	1128	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	21	42	47	5	88	13	22	166	30	78	282	5
Total Analysis Volume [veh/h]	83	168	186	19	351	52	86	663	118	313	1128	19
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	5	7	4	0	1	6	7	5	2	0
Auxiliary Signal Groups			5,8									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.11	0.00	0.01	0.11	0.03	0.05	0.21	0.07	0.20	0.35	0.01
Intersection LOS	B											
Intersection V/C	0.679											

Intersection Level Of Service Report
Intersection 9: Rivergrade Road and Commerce Drive

Control Type:	Two-way stop	Delay (sec / veh):	27.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.346

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.50	13.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	185.00	100.00	100.00	250.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Base Volume Input [veh/h]	454	103	20	705	85	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	47	0	0	51	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	501	103	20	756	85	9
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	125	26	5	189	21	2
Total Analysis Volume [veh/h]	501	103	20	756	85	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.01	0.35	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.79	0.00	27.40	10.25
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.06	0.00	1.56	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.58	0.00	39.00	0.99
d_A, Approach Delay [s/veh]	0.00		0.23		25.76	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	1.76					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 10: Rivergrade Road and Brooks Drive

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.490

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.00	13.00	11.50	12.00
No. of Lanes in Pocket	0	0	1	0	1	0
Pocket Length [ft]	100.00	100.00	180.00	100.00	64.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Base Volume Input [veh/h]	561	77	126	474	57	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	47	0	0	51	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	608	77	126	525	57	138
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	152	19	32	131	14	35
Total Analysis Volume [veh/h]	608	77	126	525	57	138
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	8	0	5	4	2	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.21	0.08	0.16	0.04	0.09
Intersection LOS	A					
Intersection V/C	0.490					

Intersection Level Of Service Report
Intersection 11: I-605 SB Ramps/Los Angeles Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.849

Intersection Setup

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
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	13.00	20.00	11.00	13.00	13.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	164.00	100.00	100.00	100.00	230.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	0	0	0	89	314	511	0	498	357	422	913	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	141	0	0	0	6	0	50	3	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]	0	0	0	230	314	511	0	504	357	472	916	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	58	79	128	0	126	89	118	229	0
Total Analysis Volume [veh/h]	0	0	0	230	314	511	0	504	357	472	916	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.14	0.22	0.22	0.00	0.16	0.22	0.30	0.29	0.00
Intersection LOS	D											
Intersection V/C	0.849											

Intersection Level Of Service Report

Intersection 12: I-605 NB ramps/Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.002

Intersection Setup

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
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	11.00	12.00	12.00	12.00	10.50	13.00	13.00	12.00	12.00	25.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	384	453	207	0	0	0	311	380	0	0	899	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	72	72	0	0	0	45	102	0	0	53	45
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]	384	525	279	0	0	0	356	482	0	0	952	200
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	96	131	70	0	0	0	89	121	0	0	238	50
Total Analysis Volume [veh/h]	384	525	279	0	0	0	356	482	0	0	952	200
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.24	0.37	0.37	0.00	0.00	0.00	0.22	0.15	0.00	0.00	0.30	0.13
Intersection LOS	F											
Intersection V/C	1.002											

Intersection Level Of Service Report
Intersection 13: Littlejohn St and Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.581

Intersection Setup

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	12.00	12.00	12.00	13.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			40.00			45.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Base Volume Input [veh/h]	78	18	0	23	0	23	54	542	0	0	958	191
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	4	0	0	9	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]	78	18	0	23	0	23	54	546	0	0	967	191
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	20	5	0	6	0	6	14	137	0	0	242	48
Total Analysis Volume [veh/h]	78	18	0	23	0	23	54	546	0	0	967	191
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	7	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.00	0.01	0.00	0.01	0.03	0.17	0.00	0.00	0.36	0.36
Intersection LOS	A											
Intersection V/C	0.581											

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 3 Existing+Project AM

Report File: J:\...\Ex+P AM.pdf

1/22/2020

Trip Generation summary**Added Trips**

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: Zone				1.000	0.000	50.00	50.00	301	149	450	100.00
Added Trips Total								301	149	450	100.00

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 4 Existing+Project PM

Report File: J:\...\Ex+P PM.pdf

1/22/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Arrow Highway and I-605 SB off-ramps	Signalized	ICU 1	EB Thru	0.620	-	B
2	Arrow Highway and I-605 NB On-ramp	Two-way stop	HCM 6th Edition	EB Thru	0.014	0.0	A
3	Rivergrade Rd and Arrow Hwy	Signalized	ICU 1	SB Thru	0.639	-	B
4	Rivergrade Rd and Stewart Avenue	Signalized	ICU 1	WB Left	0.369	-	A
5	Live Oak Avenue and I-605 SB On-ramp	Signalized	ICU 1	EB Right	1.273	-	F
6	Live Oak Ave and I-605 NB Off-ramp	Two-way stop	HCM 6th Edition	NB Right	1.315	606.9	F
7	Live Oak Avenue and Graham Access Road	Signalized	ICU 1	EB Thru	0.670	-	B
8	Rivergrade Rd and Live Oak Ave	Signalized	ICU 1	EB Thru	0.964	-	E
9	Rivergrade Road and Commerce Drive	Two-way stop	HCM 6th Edition	WB Left	0.466	30.8	D
10	Rivergrade Road and Brooks Drive	Signalized	ICU 1	NB Right	0.397	-	A
11	I-605 SB Ramps/Los Angeles Street	Signalized	ICU 1	EB Thru	0.866	-	D
12	I-605 NB ramps/Los Angeles St	Signalized	ICU 1	NB Thru	0.980	-	E
13	Littlejohn St and Los Angeles St	Signalized	ICU 1	EB Thru	0.750	-	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Arrow Highway and I-605 SB off-ramps

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.620

Intersection Setup

Name	Southbound		Arrow Hwy		Arrow Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	11.80	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Southbound		Arrow Hwy		Arrow Hwy	
Base Volume Input [veh/h]	269	347	0	1400	477	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	21	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	290	347	0	1400	477	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	87	0	350	119	0
Total Analysis Volume [veh/h]	290	347	0	1400	477	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	7	0	0	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.22	0.00	0.29	0.15	0.00
Intersection LOS	B					
Intersection V/C	0.620					

Intersection Level Of Service Report
Intersection 2: Arrow Highway and I-605 NB On-ramp

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.014

Intersection Setup

Name							Arrow Hwy			Arrow Hwy		
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	11.00	13.70	12.00	11.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Arrow Hwy			Arrow Hwy		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	1382	140	0	441	256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	21	0	0	0	40
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]	0	0	0	0	0	0	0	1403	140	0	441	296
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	351	35	0	110	74
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	1403	140	0	441	296
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS								A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 3: Rivergrade Rd and Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.639

Intersection Setup

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	9.50	15.00	10.00	12.00	12.00	13.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	119.50	100.00	100.00	190.00	100.00	100.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Base Volume Input [veh/h]	46	491	1326	225	225	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	0	0	21	40	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	491	1326	246	265	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	123	332	62	66	7
Total Analysis Volume [veh/h]	49	491	1326	246	265	27
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	8	4	0	1	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.15	0.41	0.15	0.08	0.02
Intersection LOS	B					
Intersection V/C	0.639					

Intersection Level Of Service Report
Intersection 4: Rivergrade Rd and Stewart Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.369

Intersection Setup

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.50	11.50	11.50	13.00	13.00	13.00	12.00	13.00	15.00	12.00	13.00	14.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	171.00	100.00	100.00	64.00	100.00	100.00
Speed [mph]	30.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Base Volume Input [veh/h]	5	4	71	21	14	25	21	164	45	192	64	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	40	0	0	24	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]	5	4	71	21	14	25	21	204	45	192	88	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	1	18	5	4	6	5	51	11	48	22	4
Total Analysis Volume [veh/h]	5	4	71	21	14	25	21	204	45	192	88	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.05	0.05	0.01	0.02	0.02	0.01	0.08	0.08	0.12	0.03	0.03
Intersection LOS	A											
Intersection V/C	0.369											

Intersection Level Of Service Report
Intersection 5: Live Oak Avenue and I-605 SB On-ramp

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.273

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	11.00	15.00	11.50	13.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	375.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	0	0	1038	1274	545	996
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	40	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	1038	1274	585	996
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	260	319	146	249
Total Analysis Volume [veh/h]	0	0	1038	1274	585	996
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	0	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.32	0.80	0.37	0.31
Intersection LOS	F					
Intersection V/C	1.273					

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	606.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.315

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	660	0	0	596	0	1037	0	0	959	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	40	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]	0	0	660	0	0	596	0	1037	0	0	999	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	165	0	0	149	0	259	0	0	250	0
Total Analysis Volume [veh/h]	0	0	660	0	0	596	0	1037	0	0	999	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	1.31	0.00	0.00	1.15	0.00	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	606.88	0.00	0.00	333.56	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	89.97	0.00	0.00	55.73	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2249.17	0.00	0.00	1393.33	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	606.88			333.56			0.00			0.00		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	182.06											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 7: Live Oak Avenue and Graham Access Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.670

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	13.00	10.00	12.00	13.50
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	22	14	1675	22	9	937
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	40
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	14	1675	22	9	977
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	4	419	6	2	244
Total Analysis Volume [veh/h]	22	14	1675	22	9	977
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	8	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.53	0.53	0.01	0.31
Intersection LOS	B					
Intersection V/C	0.670					

Intersection Level Of Service Report

Intersection 8: Rivergrade Rd and Live Oak Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.964

Intersection Setup

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak 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]	11.00	12.00	12.00	12.50	12.00	13.50	10.50	13.50	19.00	11.00	11.00	10.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	319.00	100.00	100.00	156.00	100.00	160.00	214.00	100.00	100.00	155.00	100.00	112.00
Speed [mph]	50.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	164	156	552	24	29	78	42	1568	28	109	663	29
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	40	40	5	0	24	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]	204	196	557	24	53	78	42	1568	28	109	663	29
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	51	49	139	6	13	20	11	392	7	27	166	7
Total Analysis Volume [veh/h]	204	196	557	24	53	78	42	1568	28	109	663	29
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	5	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups			5,8									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.12	0.28	0.02	0.02	0.05	0.03	0.49	0.02	0.07	0.21	0.02
Intersection LOS	E											
Intersection V/C	0.964											

Intersection Level Of Service Report
Intersection 9: Rivergrade Road and Commerce Drive

Control Type:	Two-way stop	Delay (sec / veh):	30.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.466

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.50	13.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	185.00	100.00	100.00	250.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Base Volume Input [veh/h]	715	27	5	214	121	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	85	0	0	24	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	800	27	5	238	121	53
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	200	7	1	60	30	13
Total Analysis Volume [veh/h]	800	27	5	238	121	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.47	0.09
d_M, Delay for Movement [s/veh]	0.00	0.00	9.53	0.00	30.84	11.73
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.02	0.00	2.53	0.30
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.47	0.00	63.21	7.43
d_A, Approach Delay [s/veh]	0.00		0.20		25.02	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	3.54					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 10: Rivergrade Road and Brooks Drive

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.397

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.00	13.00	11.50	12.00
No. of Lanes in Pocket	0	0	1	0	1	0
Pocket Length [ft]	100.00	100.00	180.00	100.00	64.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Base Volume Input [veh/h]	459	12	81	386	78	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	85	0	0	24	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	544	12	81	410	78	98
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	136	3	20	103	20	25
Total Analysis Volume [veh/h]	544	12	81	410	78	98
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	8	0	5	4	2	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.17	0.05	0.13	0.05	0.06
Intersection LOS	A					
Intersection V/C	0.397					

Intersection Level Of Service Report
Intersection 11: I-605 SB Ramps/Los Angeles Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.866

Intersection Setup

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
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	13.00	20.00	11.00	13.00	13.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	164.00	100.00	100.00	100.00	230.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	0	0	0	135	324	286	0	1185	501	255	716	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	66	0	0	0	3	0	88	5	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]	0	0	0	201	324	286	0	1188	501	343	721	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	50	81	72	0	297	125	86	180	0
Total Analysis Volume [veh/h]	0	0	0	201	324	286	0	1188	501	343	721	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.13	0.17	0.17	0.00	0.37	0.31	0.21	0.23	0.00
Intersection LOS	D											
Intersection V/C	0.866											

Intersection Level Of Service Report

Intersection 12: I-605 NB ramps/Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.980

Intersection Setup

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
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	11.00	12.00	12.00	12.00	10.50	13.00	13.00	12.00	12.00	25.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	501	300	738	0	0	0	280	1030	0	0	477	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	34	34	0	0	0	21	48	0	0	93	80
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	501	334	772	0	0	0	301	1078	0	0	570	143
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	125	84	193	0	0	0	75	270	0	0	143	36
Total Analysis Volume [veh/h]	501	334	772	0	0	0	301	1078	0	0	570	143
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.31	0.50	0.50	0.00	0.00	0.00	0.19	0.34	0.00	0.00	0.18	0.09
Intersection LOS	E											
Intersection V/C	0.980											

Intersection Level Of Service Report

Intersection 13: Littlejohn St and Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.750

Intersection Setup

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	12.00	12.00	12.00	13.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			40.00			45.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Base Volume Input [veh/h]	1	0	3	146	0	74	22	1738	0	0	477	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 [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	8	0	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	3	146	0	74	22	1746	0	0	481	15
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	37	0	19	6	437	0	0	120	4
Total Analysis Volume [veh/h]	1	0	3	146	0	74	22	1746	0	0	481	15
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	7	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.09	0.00	0.05	0.01	0.55	0.00	0.00	0.16	0.16
Intersection LOS	C											
Intersection V/C	0.750											

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 4 Existing+Project PM

Report File: J:\...\Ex+P PM.pdf

1/22/2020

Trip Generation summary**Added Trips**

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: Zone				1.000	0.000	50.00	50.00	140	266	406	100.00
Added Trips Total								140	266	406	100.00

APPENDIX E
Future Without-Project LOS Worksheets

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 7 Future no Project AM

Report File: J:\...\FNP AM.pdf

1/22/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Arrow Highway and I-605 SB off-ramps	Signalized	ICU 1	SB Right	1.365	-	F
2	Arrow Highway and I-605 NB On-ramp	Two-way stop	HCM 6th Edition	WB Thru	0.018	0.0	A
3	Rivergrade Rd and Arrow Hwy	Signalized	ICU 1	NB Thru	0.748	-	C
4	Rivergrade Rd and Stewart Avenue	Signalized	ICU 1	WB Thru	0.346	-	A
5	Live Oak Avenue and I-605 SB On-ramp	Signalized	ICU 1	WB Thru	0.935	-	E
6	Live Oak Ave and I-605 NB Off-ramp	Two-way stop	HCM 6th Edition	SB Right	2.878	3,409.4	F
7	Live Oak Avenue and Graham Access Road	Signalized	ICU 1	WB Thru	0.685	-	B
8	Rivergrade Rd and Live Oak Ave	Signalized	ICU 1	WB Thru	0.700	-	C
9	Rivergrade Road and Commerce Drive	Two-way stop	HCM 6th Edition	WB Left	0.340	26.0	D
10	Rivergrade Road and Brooks Drive	Signalized	ICU 1	NB Thru	0.490	-	A
11	I-605 SB Ramps/Los Angeles Street	Signalized	ICU 1	WB Thru	0.827	-	D
12	I-605 NB ramps/Los Angeles St	Signalized	ICU 1	NB Thru	0.965	-	E
13	Littlejohn St and Los Angeles St	Signalized	ICU 1	WB Thru	0.586	-	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Arrow Highway and I-605 SB off-ramps

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.365

Intersection Setup

Name	Southbound		Arrow Hwy Eastbound		Arrow Hwy Westbound	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	11.80	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Southbound		Arrow Hwy Eastbound		Arrow Hwy Westbound	
Base Volume Input [veh/h]	499	844	0	695	1586	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0000	1.0400	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	302	0	65	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	519	1180	0	788	1653	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	130	295	0	197	413	0
Total Analysis Volume [veh/h]	519	1180	0	788	1653	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	7	0	0	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.32	0.74	0.00	0.16	0.52	0.00
Intersection LOS	F					
Intersection V/C	1.365					

Intersection Level Of Service Report
Intersection 2: Arrow Highway and I-605 NB On-ramp

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.018

Intersection Setup

Name							Arrow Hwy			Arrow Hwy		
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	11.00	13.70	12.00	11.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Arrow Hwy			Arrow Hwy		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	735	334	0	1691	399
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0400	1.0400	1.0000	1.0400	1.0400
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	15	50	0	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	779	397	0	1763	415
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	195	99	0	441	104
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	779	397	0	1763	415
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS								A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 3: Rivergrade Rd and Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.748

Intersection Setup

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	9.50	15.00	10.00	12.00	12.00	13.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	119.50	100.00	100.00	190.00	100.00	100.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Base Volume Input [veh/h]	140	1624	501	334	333	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	15	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	1693	536	347	346	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	423	134	87	87	3
Total Analysis Volume [veh/h]	146	1693	536	347	346	12
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	8	4	0	1	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.53	0.17	0.22	0.11	0.01
Intersection LOS	C					
Intersection V/C	0.748					

Intersection Level Of Service Report

Intersection 4: Rivergrade Rd and Stewart Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.346

Intersection Setup

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.50	11.50	11.50	13.00	13.00	13.00	12.00	13.00	15.00	12.00	13.00	14.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	171.00	100.00	100.00	64.00	100.00	100.00
Speed [mph]	30.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Base Volume Input [veh/h]	2	8	112	14	9	15	33	227	17	106	365	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 [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
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	8	116	15	9	16	34	236	18	110	380	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	2	29	4	2	4	9	59	5	28	95	4
Total Analysis Volume [veh/h]	2	8	116	15	9	16	34	236	18	110	380	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.08	0.08	0.01	0.01	0.01	0.02	0.08	0.08	0.07	0.12	0.12
Intersection LOS	A											
Intersection V/C	0.346											

Intersection Level Of Service Report
Intersection 5: Live Oak Avenue and I-605 SB On-ramp

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.935

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	11.00	15.00	11.50	13.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	375.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	0	0	321	541	639	1430
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	15	70	20	418
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	349	633	685	1905
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	87	158	171	476
Total Analysis Volume [veh/h]	0	0	349	633	685	1905
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	0	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.11	0.40	0.43	0.60
Intersection LOS	E					
Intersection V/C	0.935					

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	3,409.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	2.878

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	655	0	0	613	0	374	0	0	1378	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	91	0	0	414	0	15	0	0	24	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]	0	0	772	0	0	1052	0	404	0	0	1457	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	193	0	0	263	0	101	0	0	364	0
Total Analysis Volume [veh/h]	0	0	772	0	0	1052	0	404	0	0	1457	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	0.96	0.00	0.00	2.88	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	67.77	0.00	0.00	3409.40	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	26.74	0.00	0.00	347.74	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	668.48	0.00	0.00	8693.53	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	67.77			3409.40			0.00			0.00		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	987.52											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 7: Live Oak Avenue and Graham Access Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.685

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	13.00	10.00	12.00	13.50
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	101	75	796	123	19	1390
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	106	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	78	934	128	20	1470
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	20	234	32	5	368
Total Analysis Volume [veh/h]	105	78	934	128	20	1470
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	8	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.11	0.33	0.33	0.01	0.46
Intersection LOS	B					
Intersection V/C	0.685					

Intersection Level Of Service Report

Intersection 8: Rivergrade Rd and Live Oak Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.700

Intersection Setup

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak 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]	11.00	12.00	12.00	12.50	12.00	13.50	10.50	13.50	19.00	11.00	11.00	10.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	319.00	100.00	100.00	156.00	100.00	160.00	214.00	100.00	100.00	155.00	100.00	112.00
Speed [mph]	50.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	61	146	183	19	300	52	86	663	118	313	1128	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
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	106	0	0	24	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]	63	152	190	20	312	54	89	796	123	326	1197	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	16	38	48	5	78	14	22	199	31	82	299	5
Total Analysis Volume [veh/h]	63	152	190	20	312	54	89	796	123	326	1197	20
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	5	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups			5,8									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.10	0.00	0.01	0.10	0.03	0.06	0.25	0.08	0.20	0.37	0.01
Intersection LOS	C											
Intersection V/C	0.700											

Intersection Level Of Service Report
Intersection 9: Rivergrade Road and Commerce Drive

Control Type:	Two-way stop	Delay (sec / veh):	26.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.340

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.50	13.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	185.00	100.00	100.00	250.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Base Volume Input [veh/h]	454	103	20	705	85	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	472	107	21	733	88	9
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	118	27	5	183	22	2
Total Analysis Volume [veh/h]	472	107	21	733	88	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.01	0.34	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.71	0.00	26.03	10.16
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.06	0.00	1.52	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.62	0.00	37.95	0.97
d_A, Approach Delay [s/veh]	0.00		0.24		24.55	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.79					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 10: Rivergrade Road and Brooks Drive

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.490

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.00	13.00	11.50	12.00
No. of Lanes in Pocket	0	0	1	0	1	0
Pocket Length [ft]	100.00	100.00	180.00	100.00	64.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Base Volume Input [veh/h]	561	77	126	474	57	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	583	80	131	493	59	144
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	146	20	33	123	15	36
Total Analysis Volume [veh/h]	583	80	131	493	59	144
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	8	0	5	4	2	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.21	0.08	0.15	0.04	0.09
Intersection LOS	A					
Intersection V/C	0.490					

Intersection Level Of Service Report
Intersection 11: I-605 SB Ramps/Los Angeles Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.827

Intersection Setup

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
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	13.00	20.00	11.00	13.00	13.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	164.00	100.00	100.00	100.00	230.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	0	0	0	89	314	511	0	498	357	422	913	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0400	1.0400	1.0400	1.0000	1.0400	1.0400	1.0400	1.0400	1.0000
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	2	0	6	5	12	2	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]	0	0	0	93	327	533	0	524	376	451	952	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	23	82	133	0	131	94	113	238	0
Total Analysis Volume [veh/h]	0	0	0	93	327	533	0	524	376	451	952	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.06	0.20	0.20	0.00	0.16	0.24	0.28	0.30	0.00
Intersection LOS	D											
Intersection V/C	0.827											

Intersection Level Of Service Report

Intersection 12: I-605 NB ramps/Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.965

Intersection Setup

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
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	11.00	12.00	12.00	12.00	10.50	13.00	13.00	12.00	12.00	25.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	384	453	207	0	0	0	311	380	0	0	899	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	1.0400	1.0400	1.0400	1.0000	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	0	43	0	0	0	5	1	0	0	12	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]	401	471	258	0	0	0	328	396	0	0	947	161
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	118	65	0	0	0	82	99	0	0	237	40
Total Analysis Volume [veh/h]	401	471	258	0	0	0	328	396	0	0	947	161
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.25	0.35	0.35	0.00	0.00	0.00	0.21	0.12	0.00	0.00	0.30	0.10
Intersection LOS	E											
Intersection V/C	0.965											

Intersection Level Of Service Report

Intersection 13: Littlejohn St and Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.586

Intersection Setup

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	12.00	12.00	12.00	13.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			40.00			45.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Base Volume Input [veh/h]	78	18	0	23	0	23	54	542	0	0	958	191
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0000	1.0000	1.0000	1.0400	1.0400	1.0000	1.0000	1.0000	1.0000	1.0000
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	44	0	0	12	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]	81	19	0	23	0	24	56	586	0	0	970	191
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	20	5	0	6	0	6	14	147	0	0	243	48
Total Analysis Volume [veh/h]	81	19	0	23	0	24	56	586	0	0	970	191
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	7	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.00	0.01	0.00	0.02	0.04	0.18	0.00	0.00	0.36	0.36
Intersection LOS	A											
Intersection V/C	0.586											

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 7 Future no Project AM

Report File: J:\...\FNP AM.pdf

1/22/2020

Trip Generation summary**Added Trips**

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
9: Zone 1				1.000	0.000	50.00	50.00	236	66	302	13.39
10: Zone 2				1.000	0.000	50.00	50.00	606	136	742	32.89
11: Zone 5				1.000	0.000	50.00	50.00	1006	168	1174	52.04
12: Zone 4: El Monte Projects				1.000	0.000	50.00	50.00	8	20	28	1.24
14: Zone 3: Baldwin Park				1.000	0.000	50.00	50.00	2	8	10	0.44
Added Trips Total								1858	398	2256	100.00

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 8 Future no Project Pm

Report File: J:\...\FNP PM.pdf

1/22/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Arrow Highway and I-605 SB off-ramps	Signalized	ICU 1	EB Thru	0.764	-	C
2	Arrow Highway and I-605 NB On-ramp	Two-way stop	HCM 6th Edition	EB Thru	0.014	0.0	A
3	Rivergrade Rd and Arrow Hwy	Signalized	ICU 1	SB Thru	0.646	-	B
4	Rivergrade Rd and Stewart Avenue	Signalized	ICU 1	WB Left	0.367	-	A
5	Live Oak Avenue and I-605 SB On-ramp	Signalized	ICU 1	EB Right	1.614	-	F
6	Live Oak Ave and I-605 NB Off-ramp	Two-way stop	HCM 6th Edition	SB Right	1.556	1,033.8	F
7	Live Oak Avenue and Graham Access Road	Signalized	ICU 1	EB Thru	0.700	-	B
8	Rivergrade Rd and Live Oak Ave	Signalized	ICU 1	EB Thru	1.003	-	F
9	Rivergrade Road and Commerce Drive	Two-way stop	HCM 6th Edition	WB Left	0.442	27.5	D
10	Rivergrade Road and Brooks Drive	Signalized	ICU 1	NB Thru	0.380	-	A
11	I-605 SB Ramps/Los Angeles Street	Signalized	ICU 1	EB Thru	0.850	-	D
12	I-605 NB ramps/Los Angeles St	Signalized	ICU 1	NB Right	0.969	-	E
13	Littlejohn St and Los Angeles St	Signalized	ICU 1	EB Thru	0.752	-	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Arrow Highway and I-605 SB off-ramps

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.764

Intersection Setup

Name	Southbound		Arrow Hwy		Arrow Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	11.80	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Southbound		Arrow Hwy		Arrow Hwy	
Base Volume Input [veh/h]	269	347	0	1400	477	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0000	1.0400	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	93	0	316	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	280	454	0	1772	510	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	114	0	443	128	0
Total Analysis Volume [veh/h]	280	454	0	1772	510	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	7	0	0	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.28	0.00	0.37	0.16	0.00
Intersection LOS	C					
Intersection V/C	0.764					

Intersection Level Of Service Report
Intersection 2: Arrow Highway and I-605 NB On-ramp

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.014

Intersection Setup

Name							Arrow Hwy			Arrow Hwy		
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	11.00	13.70	12.00	11.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Arrow Hwy			Arrow Hwy		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	1382	140	0	441	256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0400	1.0400	1.0000	1.0400	1.0400
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	4	312	0	14	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]	0	0	0	0	0	0	0	1441	458	0	473	266
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	360	115	0	118	67
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	1441	458	0	473	266
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS								A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 3: Rivergrade Rd and Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	9.50	15.00	10.00	12.00	12.00	13.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	119.50	100.00	100.00	190.00	100.00	100.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Base Volume Input [veh/h]	46	491	1326	225	225	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	14	4	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	525	1383	234	234	28
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	131	346	59	59	7
Total Analysis Volume [veh/h]	48	525	1383	234	234	28
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	8	4	0	1	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.16	0.43	0.15	0.07	0.02
Intersection LOS	B					
Intersection V/C	0.646					

Intersection Level Of Service Report

Intersection 4: Rivergrade Rd and Stewart Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.367

Intersection Setup

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.50	11.50	11.50	13.00	13.00	13.00	12.00	13.00	15.00	12.00	13.00	14.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	171.00	100.00	100.00	64.00	100.00	100.00
Speed [mph]	30.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Base Volume Input [veh/h]	5	4	71	21	14	25	21	164	45	192	64	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
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]	5	4	74	22	15	26	22	171	47	200	67	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	1	19	6	4	7	6	43	12	50	17	4
Total Analysis Volume [veh/h]	5	4	74	22	15	26	22	171	47	200	67	17
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.05	0.05	0.01	0.02	0.02	0.01	0.07	0.07	0.13	0.03	0.03
Intersection LOS	A											
Intersection V/C	0.367											

Intersection Level Of Service Report
Intersection 5: Live Oak Avenue and I-605 SB On-ramp

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.614

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	11.00	15.00	11.50	13.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	375.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	0	0	1038	1274	545	996
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	430	82	143
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	1084	1755	649	1179
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	271	439	162	295
Total Analysis Volume [veh/h]	0	0	1084	1755	649	1179
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	0	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.34	1.10	0.41	0.37
Intersection LOS	F					
Intersection V/C	1.614					

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	1,033.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.556

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	660	0	0	596	0	1037	0	0	959	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	20	0	0	129	0	4	0	0	96	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]	0	0	706	0	0	749	0	1082	0	0	1093	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	177	0	0	187	0	271	0	0	273	0
Total Analysis Volume [veh/h]	0	0	706	0	0	749	0	1082	0	0	1093	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	1.45	0.00	0.00	1.56	0.00	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	853.72	0.00	0.00	1033.76	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	119.20	0.00	0.00	141.74	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2980.01	0.00	0.00	3543.57	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	853.72			1033.76			0.00			0.00		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	379.34											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 7: Live Oak Avenue and Graham Access Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.700

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	13.00	10.00	12.00	13.50
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	22	14	1675	22	9	937
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	24	0	0	96
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	15	1766	23	9	1070
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	4	442	6	2	268
Total Analysis Volume [veh/h]	23	15	1766	23	9	1070
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	8	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.56	0.56	0.01	0.33
Intersection LOS	B					
Intersection V/C	0.700					

Intersection Level Of Service Report

Intersection 8: Rivergrade Rd and Live Oak Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.003

Intersection Setup

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak 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]	11.00	12.00	12.00	12.50	12.00	13.50	10.50	13.50	19.00	11.00	11.00	10.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	319.00	100.00	100.00	156.00	100.00	160.00	214.00	100.00	100.00	155.00	100.00	112.00
Speed [mph]	50.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	164	156	552	24	29	78	42	1568	28	109	663	29
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
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	24	0	0	96	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]	171	162	574	25	30	81	44	1655	29	113	786	30
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	43	41	144	6	8	20	11	414	7	28	197	8
Total Analysis Volume [veh/h]	171	162	574	25	30	81	44	1655	29	113	786	30
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	5	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups			5,8									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.10	0.29	0.02	0.01	0.05	0.03	0.52	0.02	0.07	0.25	0.02
Intersection LOS	F											
Intersection V/C	1.003											

Intersection Level Of Service Report
Intersection 9: Rivergrade Road and Commerce Drive

Control Type:	Two-way stop	Delay (sec / veh):	27.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.442

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.50	13.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	185.00	100.00	100.00	250.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Base Volume Input [veh/h]	715	27	5	214	121	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	744	28	5	223	126	55
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	186	7	1	56	32	14
Total Analysis Volume [veh/h]	744	28	5	223	126	55
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.44	0.09
d_M, Delay for Movement [s/veh]	0.00	0.00	9.32	0.00	27.54	11.46
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.02	0.00	2.31	0.30
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.45	0.00	57.75	7.39
d_A, Approach Delay [s/veh]	0.00		0.20		22.65	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.51					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 10: Rivergrade Road and Brooks Drive

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.380

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.00	13.00	11.50	12.00
No. of Lanes in Pocket	0	0	1	0	1	0
Pocket Length [ft]	100.00	100.00	180.00	100.00	64.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Base Volume Input [veh/h]	459	12	81	386	78	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	477	12	84	401	81	102
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	119	3	21	100	20	26
Total Analysis Volume [veh/h]	477	12	84	401	81	102
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	8	0	5	4	2	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.15	0.05	0.13	0.05	0.06
Intersection LOS	A					
Intersection V/C	0.380					

Intersection Level Of Service Report
Intersection 11: I-605 SB Ramps/Los Angeles Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
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	13.00	20.00	11.00	13.00	13.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	164.00	100.00	100.00	100.00	230.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	0	0	0	135	324	286	0	1185	501	255	716	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0400	1.0400	1.0400	1.0000	1.0400	1.0400	1.0400	1.0400	1.0000
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	6	0	5	4	39	7	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]	0	0	0	140	337	303	0	1237	525	304	752	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	35	84	76	0	309	131	76	188	0
Total Analysis Volume [veh/h]	0	0	0	140	337	303	0	1237	525	304	752	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.09	0.16	0.16	0.00	0.39	0.33	0.19	0.24	0.00
Intersection LOS	D											
Intersection V/C	0.850											

Intersection Level Of Service Report

Intersection 12: I-605 NB ramps/Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.969

Intersection Setup

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
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	11.00	12.00	12.00	12.00	10.50	13.00	13.00	12.00	12.00	25.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	501	300	738	0	0	0	280	1030	0	0	477	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	1.0400	1.0400	1.0400	1.0000	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	0	12	0	0	0	4	1	0	0	40	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]	527	312	780	0	0	0	295	1072	0	0	536	66
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	132	78	195	0	0	0	74	268	0	0	134	17
Total Analysis Volume [veh/h]	527	312	780	0	0	0	295	1072	0	0	536	66
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.33	0.51	0.51	0.00	0.00	0.00	0.18	0.34	0.00	0.00	0.17	0.04
Intersection LOS	E											
Intersection V/C	0.969											

Intersection Level Of Service Report

Intersection 13: Littlejohn St and Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.752

Intersection Setup

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	12.00	12.00	12.00	13.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			40.00			45.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Base Volume Input [veh/h]	1	0	3	146	0	74	22	1738	0	0	477	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 [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0000	1.0000	1.0000	1.0400	1.0400	1.0000	1.0000	1.0000	1.0000	1.0000
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	13	0	0	40	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]	1	0	3	146	0	77	23	1751	0	0	517	15
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	37	0	19	6	438	0	0	129	4
Total Analysis Volume [veh/h]	1	0	3	146	0	77	23	1751	0	0	517	15
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	7	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.09	0.00	0.05	0.01	0.55	0.00	0.00	0.17	0.17
Intersection LOS	C											
Intersection V/C	0.752											

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 8 Future no Project Pm

Report File: J:\...\FNP PM.pdf

1/22/2020

Trip Generation summary**Added Trips**

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
9: Zone 1				1.000	0.000	50.00	50.00	105	271	376	15.30
10: Zone 2				1.000	0.000	50.00	50.00	136	544	680	27.66
11: Zone 5				1.000	0.000	50.00	50.00	310	1041	1351	54.96
12: Zone 4: El Monte Projects				1.000	0.000	50.00	50.00	24	14	38	1.55
14: Zone 3: Baldwin Park				1.000	0.000	50.00	50.00	8	5	13	0.53
Added Trips Total								583	1875	2458	100.00

APPENDIX F
Future With-Project LOS Worksheets

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 9 Future with Project AM

Report File: J:\...\F+P AM.pdf

1/22/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Arrow Highway and I-605 SB off-ramps	Signalized	ICU 1	SB Right	1.365	-	F
2	Arrow Highway and I-605 NB On-ramp	Two-way stop	HCM 6th Edition	WB Thru	0.018	0.0	A
3	Rivergrade Rd and Arrow Hwy	Signalized	ICU 1	NB Thru	0.755	-	C
4	Rivergrade Rd and Stewart Avenue	Signalized	ICU 1	WB Thru	0.359	-	A
5	Live Oak Avenue and I-605 SB On-ramp	Signalized	ICU 1	WB Thru	0.949	-	E
6	Live Oak Ave and I-605 NB Off-ramp	Two-way stop	HCM 6th Edition	SB Right	2.926	3,496.9	F
7	Live Oak Avenue and Graham Access Road	Signalized	ICU 1	WB Thru	0.692	-	B
8	Rivergrade Rd and Live Oak Ave	Signalized	ICU 1	WB Thru	0.730	-	C
9	Rivergrade Road and Commerce Drive	Two-way stop	HCM 6th Edition	WB Left	0.379	29.9	D
10	Rivergrade Road and Brooks Drive	Signalized	ICU 1	NB Thru	0.505	-	A
11	I-605 SB Ramps/Los Angeles Street	Signalized	ICU 1	WB Left	0.887	-	D
12	I-605 NB ramps/Los Angeles St	Signalized	ICU 1	NB Thru	1.055	-	F
13	Littlejohn St and Los Angeles St	Signalized	ICU 1	WB Right	0.589	-	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Arrow Highway and I-605 SB off-ramps

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.365

Intersection Setup

Name	Southbound		Arrow Hwy Eastbound		Arrow Hwy Westbound	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	11.80	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Southbound		Arrow Hwy Eastbound		Arrow Hwy Westbound	
Base Volume Input [veh/h]	499	844	0	695	1586	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0000	1.0400	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	45	302	0	65	4	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	564	1180	0	788	1653	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	141	295	0	197	413	0
Total Analysis Volume [veh/h]	564	1180	0	788	1653	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	7	0	0	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.35	0.74	0.00	0.16	0.52	0.00
Intersection LOS	F					
Intersection V/C	1.365					

Intersection Level Of Service Report

Intersection 2: Arrow Highway and I-605 NB On-ramp

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.018

Intersection Setup

Name							Arrow Hwy			Arrow Hwy		
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	11.00	13.70	12.00	11.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Arrow Hwy			Arrow Hwy		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	735	334	0	1691	399
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0400	1.0400	1.0000	1.0400	1.0400
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	60	50	0	4	22
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]	0	0	0	0	0	0	0	824	397	0	1763	437
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	206	99	0	441	109
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	824	397	0	1763	437
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS								A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report

Intersection 3: Rivergrade Rd and Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	9.50	15.00	10.00	12.00	12.00	13.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	119.50	100.00	100.00	190.00	100.00	100.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Base Volume Input [veh/h]	140	1624	501	334	333	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	4	15	45	22	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	152	1693	536	392	368	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	423	134	98	92	3
Total Analysis Volume [veh/h]	152	1693	536	392	368	12
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	8	4	0	1	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.53	0.17	0.25	0.12	0.01
Intersection LOS	C					
Intersection V/C	0.755					

Intersection Level Of Service Report

Intersection 4: Rivergrade Rd and Stewart Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.359

Intersection Setup

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.50	11.50	11.50	13.00	13.00	13.00	12.00	13.00	15.00	12.00	13.00	14.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	171.00	100.00	100.00	64.00	100.00	100.00
Speed [mph]	30.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Base Volume Input [veh/h]	2	8	112	14	9	15	33	227	17	106	365	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 [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
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	22	0	0	51	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	8	116	15	9	16	34	258	18	110	431	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	2	29	4	2	4	9	65	5	28	108	4
Total Analysis Volume [veh/h]	2	8	116	15	9	16	34	258	18	110	431	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.08	0.08	0.01	0.01	0.01	0.02	0.09	0.09	0.07	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.359											

Intersection Level Of Service Report
Intersection 5: Live Oak Avenue and I-605 SB On-ramp

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.949

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	11.00	15.00	11.50	13.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	375.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	0	0	321	541	639	1430
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	15	70	42	418
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	349	633	707	1905
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	87	158	177	476
Total Analysis Volume [veh/h]	0	0	349	633	707	1905
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	0	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.11	0.40	0.44	0.60
Intersection LOS	E					
Intersection V/C	0.949					

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	3,496.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	2.926

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	655	0	0	613	0	374	0	0	1378	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	91	0	0	414	0	15	0	0	46	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]	0	0	772	0	0	1052	0	404	0	0	1479	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	193	0	0	263	0	101	0	0	370	0
Total Analysis Volume [veh/h]	0	0	772	0	0	1052	0	404	0	0	1479	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	0.96	0.00	0.00	2.93	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	67.77	0.00	0.00	3496.92	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	26.74	0.00	0.00	350.73	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	668.48	0.00	0.00	8768.26	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	67.77			3496.92			0.00			0.00		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	1006.49											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 7: Live Oak Avenue and Graham Access Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.692

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	13.00	10.00	12.00	13.50
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	101	75	796	123	19	1390
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	106	0	0	46
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	105	78	934	128	20	1492
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	20	234	32	5	373
Total Analysis Volume [veh/h]	105	78	934	128	20	1492
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	8	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.11	0.33	0.33	0.01	0.47
Intersection LOS	B					
Intersection V/C	0.692					

Intersection Level Of Service Report

Intersection 8: Rivergrade Rd and Live Oak Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak 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]	11.00	12.00	12.00	12.50	12.00	13.50	10.50	13.50	19.00	11.00	11.00	10.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	319.00	100.00	100.00	156.00	100.00	160.00	214.00	100.00	100.00	155.00	100.00	112.00
Speed [mph]	50.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	61	146	183	19	300	52	86	663	118	313	1128	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	22	22	3	0	51	0	0	106	0	0	24	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]	85	174	193	20	363	54	89	796	123	326	1197	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	21	44	48	5	91	14	22	199	31	82	299	5
Total Analysis Volume [veh/h]	85	174	193	20	363	54	89	796	123	326	1197	20
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	5	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups			5,8									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.11	0.00	0.01	0.11	0.03	0.06	0.25	0.08	0.20	0.37	0.01
Intersection LOS	C											
Intersection V/C	0.730											

Intersection Level Of Service Report
Intersection 9: Rivergrade Road and Commerce Drive

Control Type:	Two-way stop	Delay (sec / veh):	29.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.379

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.50	13.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	185.00	100.00	100.00	250.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Base Volume Input [veh/h]	454	103	20	705	85	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	47	0	0	51	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	519	107	21	784	88	9
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	130	27	5	196	22	2
Total Analysis Volume [veh/h]	519	107	21	784	88	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.01	0.38	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	8.87	0.00	29.89	10.34
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.07	0.00	1.79	0.04
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.69	0.00	44.66	1.00
d_A, Approach Delay [s/veh]	0.00		0.23		28.07	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	1.90					
Intersection LOS	D					

Intersection Level Of Service Report

Intersection 10: Rivergrade Road and Brooks Drive

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.505

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.00	13.00	11.50	12.00
No. of Lanes in Pocket	0	0	1	0	1	0
Pocket Length [ft]	100.00	100.00	180.00	100.00	64.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Base Volume Input [veh/h]	561	77	126	474	57	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	47	0	0	51	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	630	80	131	544	59	144
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	158	20	33	136	15	36
Total Analysis Volume [veh/h]	630	80	131	544	59	144
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	8	0	5	4	2	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.22	0.08	0.17	0.04	0.09
Intersection LOS	A					
Intersection V/C	0.505					

Intersection Level Of Service Report

Intersection 11: I-605 SB Ramps/Los Angeles Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.887

Intersection Setup

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
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	13.00	20.00	11.00	13.00	13.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	164.00	100.00	100.00	100.00	230.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	0	0	0	89	314	511	0	498	357	422	913	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0400	1.0400	1.0400	1.0000	1.0400	1.0400	1.0400	1.0400	1.0000
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	141	0	2	0	12	5	62	5	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]	0	0	0	234	327	533	0	530	376	501	955	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	59	82	133	0	133	94	125	239	0
Total Analysis Volume [veh/h]	0	0	0	234	327	533	0	530	376	501	955	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.15	0.23	0.23	0.00	0.17	0.24	0.31	0.30	0.00
Intersection LOS	D											
Intersection V/C	0.887											

Intersection Level Of Service Report

Intersection 12: I-605 NB ramps/Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.055

Intersection Setup

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
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	11.00	12.00	12.00	12.00	10.50	13.00	13.00	12.00	12.00	25.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	384	453	207	0	0	0	311	380	0	0	899	155
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	1.0400	1.0400	1.0400	1.0000	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	72	115	0	0	0	50	103	0	0	65	45
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]	401	543	330	0	0	0	373	498	0	0	1000	206
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	136	83	0	0	0	93	125	0	0	250	52
Total Analysis Volume [veh/h]	401	543	330	0	0	0	373	498	0	0	1000	206
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.25	0.40	0.40	0.00	0.00	0.00	0.23	0.16	0.00	0.00	0.31	0.13
Intersection LOS	F											
Intersection V/C	1.055											

Intersection Level Of Service Report

Intersection 13: Littlejohn St and Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.589

Intersection Setup

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	12.00	12.00	12.00	13.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			40.00			45.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Base Volume Input [veh/h]	78	18	0	23	0	23	54	542	0	0	958	191
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0000	1.0000	1.0000	1.0400	1.0400	1.0000	1.0000	1.0000	1.0000	1.0000
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	48	0	0	21	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]	81	19	0	23	0	24	56	590	0	0	979	191
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	20	5	0	6	0	6	14	148	0	0	245	48
Total Analysis Volume [veh/h]	81	19	0	23	0	24	56	590	0	0	979	191
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	7	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.00	0.01	0.00	0.02	0.04	0.18	0.00	0.00	0.37	0.37
Intersection LOS	A											
Intersection V/C	0.589											

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 9 Future with Project AM

Report File: J:\...\F+P AM.pdf

1/22/2020

Trip Generation summary**Added Trips**

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: Zone				1.000	0.000	50.00	50.00	301	149	450	16.63
9: Zone 1				1.000	0.000	50.00	50.00	236	66	302	11.16
10: Zone 2				1.000	0.000	50.00	50.00	606	136	742	27.42
11: Zone 5				1.000	0.000	50.00	50.00	1006	168	1174	43.39
12: Zone 4: El Monte Projects				1.000	0.000	50.00	50.00	8	20	28	1.03
14: Zone 3: Baldwin Park				1.000	0.000	50.00	50.00	2	8	10	0.37
Added Trips Total								2159	547	2706	100.00

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 10 Future with Project PM

Report File: J:\...\F+P PM.pdf

1/22/2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Arrow Highway and I-605 SB off-ramps	Signalized	ICU 1	EB Thru	0.764	-	C
2	Arrow Highway and I-605 NB On-ramp	Two-way stop	HCM 6th Edition	EB Thru	0.015	0.0	A
3	Rivergrade Rd and Arrow Hwy	Signalized	ICU 1	SB Thru	0.661	-	B
4	Rivergrade Rd and Stewart Avenue	Signalized	ICU 1	WB Left	0.379	-	A
5	Live Oak Avenue and I-605 SB On-ramp	Signalized	ICU 1	EB Right	1.639	-	F
6	Live Oak Ave and I-605 NB Off-ramp	Two-way stop	HCM 6th Edition	SB Right	1.604	1,119.2	F
7	Live Oak Avenue and Graham Access Road	Signalized	ICU 1	EB Thru	0.700	-	B
8	Rivergrade Rd and Live Oak Ave	Signalized	ICU 1	EB Thru	1.006	-	F
9	Rivergrade Road and Commerce Drive	Two-way stop	HCM 6th Edition	WB Left	0.511	34.6	D
10	Rivergrade Road and Brooks Drive	Signalized	ICU 1	NB Thru	0.407	-	A
11	I-605 SB Ramps/Los Angeles Street	Signalized	ICU 1	EB Thru	0.920	-	E
12	I-605 NB ramps/Los Angeles St	Signalized	ICU 1	NB Thru	1.032	-	F
13	Littlejohn St and Los Angeles St	Signalized	ICU 1	EB Thru	0.755	-	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Arrow Highway and I-605 SB off-ramps

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.764

Intersection Setup

Name	Southbound		Arrow Hwy		Arrow Hwy	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	11.80	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Southbound		Arrow Hwy		Arrow Hwy	
Base Volume Input [veh/h]	269	347	0	1400	477	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0000	1.0400	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	21	93	0	316	14	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	301	454	0	1772	510	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	75	114	0	443	128	0
Total Analysis Volume [veh/h]	301	454	0	1772	510	0
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	7	0	0	6	2	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.19	0.28	0.00	0.37	0.16	0.00
Intersection LOS	C					
Intersection V/C	0.764					

Intersection Level Of Service Report
Intersection 2: Arrow Highway and I-605 NB On-ramp

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.015

Intersection Setup

Name							Arrow Hwy			Arrow Hwy		
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	11.00	13.70	12.00	11.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	175.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name							Arrow Hwy			Arrow Hwy		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	1382	140	0	441	256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0400	1.0400	1.0000	1.0400	1.0400
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	25	312	0	14	40
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]	0	0	0	0	0	0	0	1462	458	0	473	306
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	366	115	0	118	77
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	1462	458	0	473	306
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane				
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance				
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS								A	A		A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											

Intersection Level Of Service Report
Intersection 3: Rivergrade Rd and Arrow Hwy

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	9.50	15.00	10.00	12.00	12.00	13.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	119.50	100.00	100.00	190.00	100.00	100.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Arrow Hwy		Arrow Hwy		Rivergrade Road	
Base Volume Input [veh/h]	46	491	1326	225	225	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	14	4	21	40	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	525	1383	255	274	28
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	131	346	64	69	7
Total Analysis Volume [veh/h]	51	525	1383	255	274	28
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	8	4	0	1	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.16	0.43	0.16	0.09	0.02
Intersection LOS	B					
Intersection V/C	0.661					

Intersection Level Of Service Report
Intersection 4: Rivergrade Rd and Stewart Avenue

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.379

Intersection Setup

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.50	11.50	11.50	13.00	13.00	13.00	12.00	13.00	15.00	12.00	13.00	14.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	171.00	100.00	100.00	64.00	100.00	100.00
Speed [mph]	30.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Stewart Ave			Stewart Ave			Rivergrade Road			Rivergrade Road		
Base Volume Input [veh/h]	5	4	71	21	14	25	21	164	45	192	64	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
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	40	0	0	24	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]	5	4	74	22	15	26	22	211	47	200	91	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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	1	19	6	4	7	6	53	12	50	23	4
Total Analysis Volume [veh/h]	5	4	74	22	15	26	22	211	47	200	91	17
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	4	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.05	0.05	0.01	0.02	0.02	0.01	0.08	0.08	0.13	0.03	0.03
Intersection LOS	A											
Intersection V/C	0.379											

Intersection Level Of Service Report
Intersection 5: Live Oak Avenue and I-605 SB On-ramp

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.639

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	11.00	15.00	11.50	13.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	375.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	0	0	1038	1274	545	996
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	4	430	122	143
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	1084	1755	689	1179
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	271	439	172	295
Total Analysis Volume [veh/h]	0	0	1084	1755	689	1179
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	0	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.34	1.10	0.43	0.37
Intersection LOS	F					
Intersection V/C	1.639					

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	1,119.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.604

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	660	0	0	596	0	1037	0	0	959	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	20	0	0	129	0	4	0	0	136	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]	0	0	706	0	0	749	0	1082	0	0	1133	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	177	0	0	187	0	271	0	0	283	0
Total Analysis Volume [veh/h]	0	0	706	0	0	749	0	1082	0	0	1133	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	1.45	0.00	0.00	1.60	0.00	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	853.72	0.00	0.00	1119.23	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	119.20	0.00	0.00	148.52	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2980.01	0.00	0.00	3713.05	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	853.72			1119.23			0.00			0.00		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	392.65											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 7: Live Oak Avenue and Graham Access Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.700

Intersection Setup

Name			Live Oak Ave		Live Oak Ave	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	13.00	10.00	12.00	13.50
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			Live Oak Ave		Live Oak Ave	
Base Volume Input [veh/h]	22	14	1675	22	9	937
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	24	0	0	136
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	15	1766	23	9	1110
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	4	442	6	2	278
Total Analysis Volume [veh/h]	23	15	1766	23	9	1110
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	8	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.56	0.56	0.01	0.35
Intersection LOS	B					
Intersection V/C	0.700					

Intersection Level Of Service Report

Intersection 8: Rivergrade Rd and Live Oak Ave

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.006

Intersection Setup

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak 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]	11.00	12.00	12.00	12.50	12.00	13.50	10.50	13.50	19.00	11.00	11.00	10.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	319.00	100.00	100.00	156.00	100.00	160.00	214.00	100.00	100.00	155.00	100.00	112.00
Speed [mph]	50.00			40.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Rivergrade Road			Rivergrade Road			Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	164	156	552	24	29	78	42	1568	28	109	663	29
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	40	40	5	0	24	0	0	24	0	0	96	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]	211	202	579	25	54	81	44	1655	29	113	786	30
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	53	51	145	6	14	20	11	414	7	28	197	8
Total Analysis Volume [veh/h]	211	202	579	25	54	81	44	1655	29	113	786	30
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	5	7	4	0	1	6	0	5	2	0
Auxiliary Signal Groups			5,8									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lag	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.13	0.29	0.02	0.02	0.05	0.03	0.52	0.02	0.07	0.25	0.02
Intersection LOS	F											
Intersection V/C	1.006											

Intersection Level Of Service Report
Intersection 9: Rivergrade Road and Commerce Drive

Control Type:	Two-way stop	Delay (sec / veh):	34.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.511

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.50	13.00	12.00	12.00
No. of Lanes in Pocket	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	185.00	100.00	100.00	250.00
Speed [mph]	45.00		45.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Commerce Drive	
Base Volume Input [veh/h]	715	27	5	214	121	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	85	0	0	24	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	829	28	5	247	126	55
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	207	7	1	62	32	14
Total Analysis Volume [veh/h]	829	28	5	247	126	55
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.00	0.51	0.10
d_M, Delay for Movement [s/veh]	0.00	0.00	9.65	0.00	34.57	11.93
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.02	0.00	2.98	0.32
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.48	0.00	74.61	7.93
d_A, Approach Delay [s/veh]	0.00		0.19		27.69	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	3.92					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 10: Rivergrade Road and Brooks Drive

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.407

Intersection Setup

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	14.00	14.00	10.00	13.00	11.50	12.00
No. of Lanes in Pocket	0	0	1	0	1	0
Pocket Length [ft]	100.00	100.00	180.00	100.00	64.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rivergrade Road		Rivergrade Road		Brooks Drive	
Base Volume Input [veh/h]	459	12	81	386	78	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0400	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	85	0	0	24	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	562	12	84	425	81	102
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	141	3	21	106	20	26
Total Analysis Volume [veh/h]	562	12	84	425	81	102
Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	8	0	5	4	2	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.18	0.05	0.13	0.05	0.06
Intersection LOS	A					
Intersection V/C	0.407					

Intersection Level Of Service Report

Intersection 11: I-605 SB Ramps/Los Angeles Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.920

Intersection Setup

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
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	13.00	20.00	11.00	13.00	13.00
No. of Lanes in Pocket	0	0	0	0	0	1	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	164.00	100.00	100.00	100.00	230.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	I-605 SB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	0	0	0	135	324	286	0	1185	501	255	716	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0400	1.0400	1.0400	1.0000	1.0400	1.0400	1.0400	1.0400	1.0000
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	66	0	6	0	8	4	127	12	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]	0	0	0	206	337	303	0	1240	525	392	757	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	52	84	76	0	310	131	98	189	0
Total Analysis Volume [veh/h]	0	0	0	206	337	303	0	1240	525	392	757	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	0	4	0	0	6	0	5	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.13	0.18	0.18	0.00	0.39	0.33	0.25	0.24	0.00
Intersection LOS	E											
Intersection V/C	0.920											

Intersection Level Of Service Report

Intersection 12: I-605 NB ramps/Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.032

Intersection Setup

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
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	11.00	12.00	12.00	12.00	10.50	13.00	13.00	12.00	12.00	25.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	I-605 NB ramp						Los Angeles St			Los Angeles St		
Base Volume Input [veh/h]	501	300	738	0	0	0	280	1030	0	0	477	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0400	1.0000	1.0000	1.0000	1.0400	1.0400	1.0400	1.0000	1.0400	1.0400
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	34	46	0	0	0	25	49	0	0	133	80
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	527	346	814	0	0	0	316	1120	0	0	629	146
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
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]	132	87	204	0	0	0	79	280	0	0	157	37
Total Analysis Volume [veh/h]	527	346	814	0	0	0	316	1120	0	0	629	146
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.33	0.53	0.53	0.00	0.00	0.00	0.20	0.35	0.00	0.00	0.20	0.09
Intersection LOS	F											
Intersection V/C	1.032											

Intersection Level Of Service Report

Intersection 13: Littlejohn St and Los Angeles St

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	1 hour	Volume to Capacity (v/c):	0.755

Intersection Setup

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	12.00	12.00	12.00	13.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	80.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00			40.00			45.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name				Littlejohn St			Los Angeles Street			Los Angeles Street		
Base Volume Input [veh/h]	1	0	3	146	0	74	22	1738	0	0	477	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 [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0400	1.0400	1.0000	1.0000	1.0000	1.0400	1.0400	1.0000	1.0000	1.0000	1.0000	1.0000
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	21	0	0	44	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]	1	0	3	146	0	77	23	1759	0	0	521	15
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	37	0	19	6	440	0	0	130	4
Total Analysis Volume [veh/h]	1	0	3	146	0	77	23	1759	0	0	521	15
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	90
Lost time [s]	10.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	8	0	7	0	0	1	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.09	0.00	0.05	0.01	0.55	0.00	0.00	0.17	0.17
Intersection LOS	C											
Intersection V/C	0.755											

JB 81279 1331 Los Angeles St TIS

Vistro File: J:\...\Vistro_ICU v2.vistro

Scenario 10 Future with Project PM

Report File: J:\...\F+P PM.pdf

1/22/2020

Trip Generation summary**Added Trips**

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: Zone				1.000	0.000	50.00	50.00	140	266	406	14.18
9: Zone 1				1.000	0.000	50.00	50.00	105	271	376	13.13
10: Zone 2				1.000	0.000	50.00	50.00	136	544	680	23.74
11: Zone 5				1.000	0.000	50.00	50.00	310	1041	1351	47.17
12: Zone 4: El Monte Projects				1.000	0.000	50.00	50.00	24	14	38	1.33
14: Zone 3: Baldwin Park				1.000	0.000	50.00	50.00	8	5	13	0.45
Added Trips Total								723	2141	2864	100.00

APPENDIX G1
Freeway Existing LOS Worksheets, Interstate 10 segments

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	8884	Heavy Vehicle Adjustment Factor (fHV)	0.939
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2516
Total Trucks, %	6.45	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.07
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	-
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	-
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	8578	Heavy Vehicle Adjustment Factor (fHV)	0.939
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2430
Total Trucks, %	6.45	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.03
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	-
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	-
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	9404	Heavy Vehicle Adjustment Factor (fHV)	0.967
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2069
Total Trucks, %	3.37	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.88
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	58.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	35.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	9080	Heavy Vehicle Adjustment Factor (fHV)	0.967
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1998
Total Trucks, %	3.37	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.85
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	59.9
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	33.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

APPENDIX G2
Freeway Existing LOS Worksheets, Interstate 210 segments

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2018
Jurisdiction	Irwindale	Time Period Analyzed	
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

General Purpose Geometric Data

Number of General Purpose Lanes, In	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

General Purpose Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

General Purpose Demand and Capacity

Demand Volume veh/h	9016	Heavy Vehicle Adjustment Factor (fHV)	0.928
Peak Hour Factor	0.94	Flow Rate (Vp,GP), pc/h/ln	2067
Total Trucks, %	7.80	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.88
Passenger Car Equivalent (ET)	2.000		

General Purpose Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	58.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (DGP), pc/mi/ln	35.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

Managed Lane Geometric Data

Managed Lane Type	Buffer 1	Free-Flow Speed (FFS), mi/h	75.4
Number of Managed Lanes, In	1	Terrain Type	Level
Managed Lane Length, ft	5280	Percent Grade, %	-

Managed Lane Adjustment Factors

Driver Population	All Familiar	Driver Population CAF	1.000
Weather Type	Non-Severe Weather	Weather Type CAF	1.000
Driver Population SAF	1.000	Final Speed Adjustment Factor (SAF)	1.000
Weather Type SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000

Demand Adjustment Factor (DAF)	1.000		
Managed Lane Demand and Capacity			
Volume (V_{ML}), veh/h	0	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor	0.94	Flow Rate ($V_{p,ML}$), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1704
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (C_{adj}), pc/h/ln	1704
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00
Passenger Car Equivalent (E_T)	2.000		
Managed Lane Speed and Density			
Breakpoint (BP_{ML})	600	Indicator Variable (I_c)	-
Speed 1 (S_1), mi/h	75.4	Average Speed (S_{ML}), mi/h	75.4
Speed 2 (S_2), mi/h	-	Density (D_{ML}), pc/mi/ln	0.0
Speed 3 (S_3), mi/h	-	Level of Service (LOS)	A

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2018
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

General Purpose Geometric Data

Number of General Purpose Lanes, In	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

General Purpose Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

General Purpose Demand and Capacity

Demand Volume veh/h	9145	Heavy Vehicle Adjustment Factor (fhv)	0.928
Peak Hour Factor	0.94	Flow Rate (Vp,GP), pc/h/ln	2097
Total Trucks, %	7.80	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.89
Passenger Car Equivalent (ET)	2.000		

General Purpose Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	58.1
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (DGP), pc/mi/ln	36.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

Managed Lane Geometric Data

Managed Lane Type	Continuous Access	Free-Flow Speed (FFS), mi/h	75.4
Number of Managed Lanes, In	1	Terrain Type	Level
Managed Lane Length, ft	5280	Percent Grade, %	-

Managed Lane Adjustment Factors

Driver Population	All Familiar	Driver Population CAF	1.000
Weather Type	Non-Severe Weather	Weather Type CAF	1.000
Driver Population SAF	1.000	Final Speed Adjustment Factor (SAF)	1.000
Weather Type SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000

Demand Adjustment Factor (DAF)	1.000		
Managed Lane Demand and Capacity			
Volume (V_{ML}), veh/h	0	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor	0.94	Flow Rate ($V_{p,ML}$), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1804
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (C_{adj}), pc/h/ln	1804
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00
Passenger Car Equivalent (E_T)	2.000		
Managed Lane Speed and Density			
Breakpoint (BP_{ML})	500	Indicator Variable (I_c)	-
Speed 1 (S_1), mi/h	75.4	Average Speed (S_{ML}), mi/h	75.4
Speed 2 (S_2), mi/h	-	Density (D_{ML}), pc/mi/ln	0.0
Speed 3 (S_3), mi/h	-	Level of Service (LOS)	A

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

General Purpose Geometric Data

Number of General Purpose Lanes, In	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

General Purpose Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

General Purpose Demand and Capacity

Demand Volume veh/h	9474	Heavy Vehicle Adjustment Factor (fHV)	0.934
Peak Hour Factor	0.94	Flow Rate (Vp,GP), pc/h/ln	2158
Total Trucks, %	7.06	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.92
Passenger Car Equivalent (ET)	2.000		

General Purpose Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	56.9
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (DGP), pc/mi/ln	37.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

Managed Lane Geometric Data

Managed Lane Type	Buffer 1	Free-Flow Speed (FFS), mi/h	75.4
Number of Managed Lanes, In	1	Terrain Type	Level
Managed Lane Length, ft	5280	Percent Grade, %	-

Managed Lane Adjustment Factors

Driver Population	All Familiar	Driver Population CAF	1.000
Weather Type	Non-Severe Weather	Weather Type CAF	1.000
Driver Population SAF	1.000	Final Speed Adjustment Factor (SAF)	1.000
Weather Type SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000

Demand Adjustment Factor (DAF)	1.000		
Managed Lane Demand and Capacity			
Volume (V_{ML}), veh/h	0	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor	0.94	Flow Rate ($V_{p,ML}$), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1704
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (C_{adj}), pc/h/ln	1704
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00
Passenger Car Equivalent (E_T)	2.000		
Managed Lane Speed and Density			
Breakpoint (BP_{ML})	600	Indicator Variable (I_c)	-
Speed 1 (S_1), mi/h	75.4	Average Speed (S_{ML}), mi/h	75.4
Speed 2 (S_2), mi/h	-	Density (D_{ML}), pc/mi/ln	0.0
Speed 3 (S_3), mi/h	-	Level of Service (LOS)	A

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

General Purpose Geometric Data

Number of General Purpose Lanes, In	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

General Purpose Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

General Purpose Demand and Capacity

Demand Volume veh/h	9609	Heavy Vehicle Adjustment Factor (fhv)	0.934
Peak Hour Factor	0.94	Flow Rate (Vp,GP), pc/h/ln	2189
Total Trucks, %	7.06	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (ET)	2.000		

General Purpose Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	56.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (DGP), pc/mi/ln	39.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

Managed Lane Geometric Data

Managed Lane Type	Buffer 1	Free-Flow Speed (FFS), mi/h	75.4
Number of Managed Lanes, In	1	Terrain Type	Level
Managed Lane Length, ft	5280	Percent Grade, %	-

Managed Lane Adjustment Factors

Driver Population	All Familiar	Driver Population CAF	1.000
Weather Type	Non-Severe Weather	Weather Type CAF	1.000
Driver Population SAF	1.000	Final Speed Adjustment Factor (SAF)	1.000
Weather Type SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000

Demand Adjustment Factor (DAF)	1.000		
Managed Lane Demand and Capacity			
Volume (V_{ML}), veh/h	0	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor	0.94	Flow Rate ($V_{p,ML}$), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1704
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (C_{adj}), pc/h/ln	1704
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00
Passenger Car Equivalent (E_T)	2.000		
Managed Lane Speed and Density			
Breakpoint (BP_{ML})	600	Indicator Variable (I_c)	-
Speed 1 (S_1), mi/h	75.4	Average Speed (S_{ML}), mi/h	75.4
Speed 2 (S_2), mi/h	-	Density (D_{ML}), pc/mi/ln	0.0
Speed 3 (S_3), mi/h	-	Level of Service (LOS)	A

APPENDIX G3
Freeway Existing LOS Worksheets, Interstate 605 Ramps and Segments

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Off to Lower Azusa/LA Street_605, Ramona to Azusa/LA Street
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	350	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6889	453
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	10.00	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.800
Flow Rate (vi),pc/h	7579	566
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.81	0.28

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.479
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1978
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.5
Flow in Lanes 1 and 2 (v12), pc/h	3624	Ramp Junction Speed (S), mi/h	60.3

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.4
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	35.4

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Off to Lower Azusa/LA Street_605, Ramona to Azusa/LA Street
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	350	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6616	435
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	10.00	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.800
Flow Rate (vi),pc/h	7278	544
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.77	0.27

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.477
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1899
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.8
Flow in Lanes 1 and 2 (v12), pc/h	3480	Ramp Junction Speed (S), mi/h	60.4

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	30.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.2

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	On from Lower Azusa/LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	610	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6436	138
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	6980	150
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.76	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.395
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	2094
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	59.3
Flow in Lanes 1 and 2 (v12), pc/h	2792	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	2942	Average Density (D), pc/mi/ln	30.8

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.4

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	On from Lower Azusa/LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	610	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6181	133
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	6704	144
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.73	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.387
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	2011
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	59.6
Flow in Lanes 1 and 2 (v12), pc/h	2682	Ramp Junction Speed (S), mi/h	58.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	2826	Average Density (D), pc/mi/ln	29.5

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.5

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Live Oak Off-ramp, NB_605, LA/ Lower Azusa St to Live Oak
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	200	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6382	280
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.800
Flow Rate (vi),pc/h	6922	350
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.74	0.18

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.460
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1854
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	68.0
Flow in Lanes 1 and 2 (v12), pc/h	3215	Ramp Junction Speed (S), mi/h	60.9

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.4
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.9

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Live Oak Off-ramp, NB_605, LA/ Lower Azusa St to Live Oak
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	200	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6128	269
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.800
Flow Rate (vi),pc/h	6646	336
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.71	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.458
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1780
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	68.3
Flow in Lanes 1 and 2 (v12), pc/h	3087	Ramp Junction Speed (S), mi/h	61.1

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	27.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.8

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	2	Segment Name	Arrow Highway EB On-ramp
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	710	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5294	95
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.50	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.930	0.935
Flow Rate (vi),pc/h	5692	102
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.62	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.363
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1708
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.7
Flow in Lanes 1 and 2 (v12), pc/h	2277	Ramp Junction Speed (S), mi/h	59.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	2379	Average Density (D), pc/mi/ln	24.6

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.1

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	2	Segment Name	Arrow Highway EB On-ramp
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	710	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5084	91
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.50	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.930	0.935
Flow Rate (vi),pc/h	5467	97
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.59	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.359
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1640
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.9
Flow in Lanes 1 and 2 (v12), pc/h	2187	Ramp Junction Speed (S), mi/h	59.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	2284	Average Density (D), pc/mi/ln	23.5

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.3

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	4	Segment Name	Arrow Highway WB On-ramp
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	520	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5389	141
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.25	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.932	0.935
Flow Rate (vi),pc/h	5782	151
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.63	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.367
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1735
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.6
Flow in Lanes 1 and 2 (v12), pc/h	2313	Ramp Junction Speed (S), mi/h	58.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2464	Average Density (D), pc/mi/ln	25.2

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.7

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	4	Segment Name	Arrow Highway WB On-ramp
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	520	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5175	136
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.25	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.932	0.935
Flow Rate (vi),pc/h	5553	145
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.61	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.363
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1666
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.8
Flow in Lanes 1 and 2 (v12), pc/h	2221	Ramp Junction Speed (S), mi/h	59.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	2366	Average Density (D), pc/mi/ln	24.1

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.9

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2019
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to Arrow Hwy
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5802	279
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.935	0.971
Flow Rate (vi),pc/h	6205	287
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.66	0.14

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.454
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1669
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	68.7
Flow in Lanes 1 and 2 (v12), pc/h	2867	Ramp Junction Speed (S), mi/h	61.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.3

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.9

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2019
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to Arrow Hwy
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5571	268
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.935	0.971
Flow Rate (vi),pc/h	5958	276
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.63	0.14

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.453
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1603
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	69.0
Flow in Lanes 1 and 2 (v12), pc/h	2753	Ramp Junction Speed (S), mi/h	61.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.2

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.9

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB on from Live Oak
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	740	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5294	593
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	7.20	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.933	0.909
Flow Rate (vi),pc/h	6036	694
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.72	0.35

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.408
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1811
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.3
Flow in Lanes 1 and 2 (v12), pc/h	2414	Ramp Junction Speed (S), mi/h	58.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3108	Average Density (D), pc/mi/ln	29.0

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.5

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB on from Live Oak
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	740	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5084	570
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.20	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.933	0.909
Flow Rate (vi),pc/h	5449	627
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.65	0.31

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.386
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1635
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.9
Flow in Lanes 1 and 2 (v12), pc/h	2180	Ramp Junction Speed (S), mi/h	58.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	2807	Average Density (D), pc/mi/ln	25.9

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.2

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	240	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6382	301
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	6922	326
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.74	0.16

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.457
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1860
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	68.0
Flow in Lanes 1 and 2 (v12), pc/h	3202	Ramp Junction Speed (S), mi/h	61.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.4

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.8

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	240	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6128	289
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	6646	313
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.71	0.16

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.456
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1786
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	68.2
Flow in Lanes 1 and 2 (v12), pc/h	3074	Ramp Junction Speed (S), mi/h	61.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	27.2

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.7

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	SB on from LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	853	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6081	449
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	15.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.870
Flow Rate (vi),pc/h	6595	516
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.76	0.26

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.412
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1979
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	59.7
Flow in Lanes 1 and 2 (v12), pc/h	2638	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	3154	Average Density (D), pc/mi/ln	30.8

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.9

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	SB on from LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	853	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5839	431
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	15.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.870
Flow Rate (vi),pc/h	6333	495
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.73	0.25

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.402
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1900
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.0
Flow in Lanes 1 and 2 (v12), pc/h	2533	Ramp Junction Speed (S), mi/h	58.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	3028	Average Density (D), pc/mi/ln	29.4

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.9

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2019
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 n/o arrow highway
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5802	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1551
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.66
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	64.1
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	24.2
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2019
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 n/o arrow highway
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5571	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1490
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.64
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	64.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	23.2
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o arrow highway
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5294	Heavy Vehicle Adjustment Factor (fHV)	0.933
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1509
Total Trucks, %	7.20	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.64
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	64.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	23.5
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o arrow highway
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5084	Heavy Vehicle Adjustment Factor (fHV)	0.933
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1362
Total Trucks, %	7.20	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.58
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	64.3
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	21.2
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o Live Oak
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	3750	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6382	Heavy Vehicle Adjustment Factor (fHV)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1730
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.74
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	62.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	27.7
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o Live Oak
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	3750	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6128	Heavy Vehicle Adjustment Factor (fHV)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1662
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.71
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.0
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	26.4
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	2193	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6889	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1895
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	61.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	30.8
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	2193	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6616	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1820
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	62.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	29.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, Ramona to Azusa/LA Street
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	2700	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6889	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1895
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	60.8
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	31.2
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, Ramona to Azusa/LA Street
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	2700	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6616	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1820
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	61.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	29.5
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, LA/Lower Azusa St to Live Oak
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3096	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6382	Heavy Vehicle Adjustment Factor (fHV)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1730
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.74
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.0
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	27.5
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, LA/Lower Azusa St to Live Oak
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3096	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6128	Heavy Vehicle Adjustment Factor (fHV)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1662
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.71
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	26.2
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

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Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	1	Segment Name	605 NB Graham Access Road to Arrow Highway On-ramp
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	3532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5294	Heavy Vehicle Adjustment Factor (fHV)	0.930
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1423
Total Trucks, %	7.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.61
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	22.3
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	1	Segment Name	605 NB Graham Access Road to Arrow Highway On-ramp
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5084	Heavy Vehicle Adjustment Factor (fHV)	0.930
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1367
Total Trucks, %	7.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.58
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	21.5
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	
Project Description	13131 Los Angeles Street Industrial EIR-North of Arrow Highway		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5802	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1650
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.70
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	64.1
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	25.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2017
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR-North of Arrow Highway		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5571	Heavy Vehicle Adjustment Factor (fhv)	0.935
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1585
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.67
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	64.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	24.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

APPENDIX H1
Freeway Future without Project LOS Worksheets, Interstate 10 Segments

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	9549	Heavy Vehicle Adjustment Factor (fHV)	0.939
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2704
Total Trucks, %	6.45	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.15
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	-
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	-
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	9225	Heavy Vehicle Adjustment Factor (fHV)	0.939
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2613
Total Trucks, %	6.45	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.11
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	-
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	-
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	10101	Heavy Vehicle Adjustment Factor (fHV)	0.967
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2222
Total Trucks, %	3.37	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.95
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	55.4
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	40.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	9758	Heavy Vehicle Adjustment Factor (fHV)	0.967
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2147
Total Trucks, %	3.37	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.91
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	57.1
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	37.6
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

APPENDIX H2
Freeway Future without Project LOS Worksheets, Interstate 210 Segments

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

General Purpose Geometric Data

Number of General Purpose Lanes, In	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

General Purpose Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

General Purpose Demand and Capacity

Demand Volume veh/h	9690	Heavy Vehicle Adjustment Factor (fHV)	0.928
Peak Hour Factor	0.94	Flow Rate (Vp,GP), pc/h/ln	2222
Total Trucks, %	7.80	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.95
Passenger Car Equivalent (ET)	2.000		

General Purpose Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	55.4
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (DGP), pc/mi/ln	40.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

Managed Lane Geometric Data

Managed Lane Type	Continuous Access	Free-Flow Speed (FFS), mi/h	75.4
Number of Managed Lanes, In	1	Terrain Type	Level
Managed Lane Length, ft	5280	Percent Grade, %	-

Managed Lane Adjustment Factors

Driver Population	All Familiar	Driver Population CAF	1.000
Weather Type	Non-Severe Weather	Weather Type CAF	1.000
Driver Population SAF	1.000	Final Speed Adjustment Factor (SAF)	1.000
Weather Type SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000

Demand Adjustment Factor (DAF)	1.000		
Managed Lane Demand and Capacity			
Volume (V_{ML}), veh/h	0	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor	0.94	Flow Rate ($V_{p,ML}$), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1804
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (C_{adj}), pc/h/ln	1804
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00
Passenger Car Equivalent (E_T)	2.000		
Managed Lane Speed and Density			
Breakpoint (BP_{ML})	500	Indicator Variable (I_c)	-
Speed 1 (S_1), mi/h	75.4	Average Speed (S_{ML}), mi/h	75.4
Speed 2 (S_2), mi/h	-	Density (D_{ML}), pc/mi/ln	0.0
Speed 3 (S_3), mi/h	-	Level of Service (LOS)	A

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

General Purpose Geometric Data

Number of General Purpose Lanes, In	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

General Purpose Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

General Purpose Demand and Capacity

Demand Volume veh/h	9831	Heavy Vehicle Adjustment Factor (fHV)	0.928
Peak Hour Factor	0.94	Flow Rate (Vp,GP), pc/h/ln	2254
Total Trucks, %	7.80	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.96
Passenger Car Equivalent (ET)	2.000		

General Purpose Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	54.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (DGP), pc/mi/ln	41.2
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

Managed Lane Geometric Data

Managed Lane Type	Continuous Access	Free-Flow Speed (FFS), mi/h	75.4
Number of Managed Lanes, In	1	Terrain Type	Level
Managed Lane Length, ft	5280	Percent Grade, %	-

Managed Lane Adjustment Factors

Driver Population	All Familiar	Driver Population CAF	1.000
Weather Type	Non-Severe Weather	Weather Type CAF	1.000
Driver Population SAF	1.000	Final Speed Adjustment Factor (SAF)	1.000
Weather Type SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000

Demand Adjustment Factor (DAF)	1.000		
Managed Lane Demand and Capacity			
Volume (V_{ML}), veh/h	0	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor	0.94	Flow Rate ($V_{p,ML}$), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1804
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (C_{adj}), pc/h/ln	1804
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00
Passenger Car Equivalent (E_T)	2.000		
Managed Lane Speed and Density			
Breakpoint (BP_{ML})	500	Indicator Variable (I_c)	-
Speed 1 (S_1), mi/h	75.4	Average Speed (S_{ML}), mi/h	75.4
Speed 2 (S_2), mi/h	-	Density (D_{ML}), pc/mi/ln	0.0
Speed 3 (S_3), mi/h	-	Level of Service (LOS)	A

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

General Purpose Geometric Data

Number of General Purpose Lanes, In	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

General Purpose Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

General Purpose Demand and Capacity

Demand Volume veh/h	10236	Heavy Vehicle Adjustment Factor (fhv)	0.934
Peak Hour Factor	0.94	Flow Rate (Vp,GP), pc/h/ln	2332
Total Trucks, %	7.06	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.99
Passenger Car Equivalent (ET)	2.000		

General Purpose Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	52.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (DGP), pc/mi/ln	44.3
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

Managed Lane Geometric Data

Managed Lane Type	Buffer 1	Free-Flow Speed (FFS), mi/h	75.4
Number of Managed Lanes, In	1	Terrain Type	Level
Managed Lane Length, ft	5280	Percent Grade, %	-

Managed Lane Adjustment Factors

Driver Population	All Familiar	Driver Population CAF	1.000
Weather Type	Non-Severe Weather	Weather Type CAF	1.000
Driver Population SAF	1.000	Final Speed Adjustment Factor (SAF)	1.000
Weather Type SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000

Demand Adjustment Factor (DAF)	1.000		
Managed Lane Demand and Capacity			
Volume (V_{ML}), veh/h	0	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor	0.94	Flow Rate ($V_{p,ML}$), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1704
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (C_{adj}), pc/h/ln	1704
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00
Passenger Car Equivalent (E_T)	2.000		
Managed Lane Speed and Density			
Breakpoint (BP_{ML})	600	Indicator Variable (I_c)	-
Speed 1 (S_1), mi/h	75.4	Average Speed (S_{ML}), mi/h	75.4
Speed 2 (S_2), mi/h	-	Density (D_{ML}), pc/mi/ln	0.0
Speed 3 (S_3), mi/h	-	Level of Service (LOS)	A

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

General Purpose Geometric Data

Number of General Purpose Lanes, In	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

General Purpose Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

General Purpose Demand and Capacity

Demand Volume veh/h	10387	Heavy Vehicle Adjustment Factor (fhv)	0.934
Peak Hour Factor	0.94	Flow Rate (Vp,GP), pc/h/ln	2366
Total Trucks, %	7.06	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.01
Passenger Car Equivalent (ET)	2.000		

General Purpose Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	-
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (DGP), pc/mi/ln	-
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

Managed Lane Geometric Data

Managed Lane Type	Buffer 1	Free-Flow Speed (FFS), mi/h	75.4
Number of Managed Lanes, In	1	Terrain Type	Level
Managed Lane Length, ft	5280	Percent Grade, %	-

Managed Lane Adjustment Factors

Driver Population	All Familiar	Driver Population CAF	1.000
Weather Type	Non-Severe Weather	Weather Type CAF	1.000
Driver Population SAF	1.000	Final Speed Adjustment Factor (SAF)	1.000
Weather Type SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000

Demand Adjustment Factor (DAF)	1.000		
Managed Lane Demand and Capacity			
Volume (V_{ML}), veh/h	0	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor	0.94	Flow Rate ($V_{p,ML}$), pc/h/ln	0
Total Trucks, %	0.00	Capacity (c), pc/h/ln	1704
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (C_{adj}), pc/h/ln	1704
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.00
Passenger Car Equivalent (E_T)	2.000		
Managed Lane Speed and Density			
Breakpoint (BP_{ML})	600	Indicator Variable (I_c)	-
Speed 1 (S_1), mi/h	75.4	Average Speed (S_{ML}), mi/h	75.4
Speed 2 (S_2), mi/h	-	Density (D_{ML}), pc/mi/ln	0.0
Speed 3 (S_3), mi/h	-	Level of Service (LOS)	A

APPENDIX H3
Freeway Future without Project LOS Worksheets, Interstate 605 Ramps and Segments

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Off to Lower Azusa/LA Street_605, Ramona to Azusa/LA Street
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	350	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	7861	526
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	10.00	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.800
Flow Rate (vi),pc/h	8648	658
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.92	0.33

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.487
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2253
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	66.4
Flow in Lanes 1 and 2 (v12), pc/h	4142	Ramp Junction Speed (S), mi/h	59.7

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	36.2
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	39.9

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Off to Lower Azusa/LA Street_605, Ramona to Azusa/LA Street
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	350	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	7188	480
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	10.00	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.800
Flow Rate (vi),pc/h	7908	600
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.84	0.30

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.482
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2061
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.2
Flow in Lanes 1 and 2 (v12), pc/h	3786	Ramp Junction Speed (S), mi/h	60.1

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	32.9
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	36.8

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	On from Lower Azusa/LA St
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	610	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	7335	151
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	7956	164
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.86	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.432
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	2387
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	57.9
Flow in Lanes 1 and 2 (v12), pc/h	3182	Ramp Junction Speed (S), mi/h	56.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	3346	Average Density (D), pc/mi/ln	35.8

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.6

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	On from Lower Azusa/LA St
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	610	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6708	145
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	7275	157
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.79	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.405
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	2183
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	58.9
Flow in Lanes 1 and 2 (v12), pc/h	2910	Ramp Junction Speed (S), mi/h	57.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	3067	Average Density (D), pc/mi/ln	32.3

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.4

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Live Oak Off-ramp, NB_605, LA/ Lower Azusa St to Live Oak
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	200	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	7283	802
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.800
Flow Rate (vi),pc/h	7899	1002
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.84	0.50

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.518
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1945
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.6
Flow in Lanes 1 and 2 (v12), pc/h	4009	Ramp Junction Speed (S), mi/h	59.4

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.2
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	38.7

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Live Oak Off-ramp, NB_605, LA/ Lower Azusa St to Live Oak
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	200	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6656	434
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.800
Flow Rate (vi),pc/h	7219	542
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.77	0.27

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.477
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1883
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.9
Flow in Lanes 1 and 2 (v12), pc/h	3453	Ramp Junction Speed (S), mi/h	60.5

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	29.8
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.9

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	2	Segment Name	Arrow Highway EB On-ramp
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	710	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5623	151
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.50	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.930	0.935
Flow Rate (vi),pc/h	6046	161
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.66	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.372
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1814
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.3
Flow in Lanes 1 and 2 (v12), pc/h	2418	Ramp Junction Speed (S), mi/h	58.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	2579	Average Density (D), pc/mi/ln	26.5

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.6

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	2	Segment Name	Arrow Highway EB On-ramp
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	710	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5399	409
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.50	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.930	0.935
Flow Rate (vi),pc/h	5805	437
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.66	0.22

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.383
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1742
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.5
Flow in Lanes 1 and 2 (v12), pc/h	2322	Ramp Junction Speed (S), mi/h	58.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2759	Average Density (D), pc/mi/ln	26.7

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.9

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	4	Segment Name	Arrow Highway WB On-ramp
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	520	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5774	150
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.25	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.932	0.935
Flow Rate (vi),pc/h	6195	160
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.68	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.376
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1859
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.1
Flow in Lanes 1 and 2 (v12), pc/h	2478	Ramp Junction Speed (S), mi/h	58.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2638	Average Density (D), pc/mi/ln	27.2

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.1

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	4	Segment Name	Arrow Highway WB On-ramp
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	520	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5808	144
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.25	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.932	0.935
Flow Rate (vi),pc/h	6232	154
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.68	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.376
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1870
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.1
Flow in Lanes 1 and 2 (v12), pc/h	2493	Ramp Junction Speed (S), mi/h	58.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2647	Average Density (D), pc/mi/ln	27.3

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.1

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to Arrow Hwy
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6461	598
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.935	0.971
Flow Rate (vi),pc/h	6910	616
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.74	0.31

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.483
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1775
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	68.3
Flow in Lanes 1 and 2 (v12), pc/h	3360	Ramp Junction Speed (S), mi/h	60.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.6

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.1

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to Arrow Hwy
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6011	377
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.935	0.971
Flow Rate (vi),pc/h	6429	388
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.68	0.19

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.463
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1704
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	68.6
Flow in Lanes 1 and 2 (v12), pc/h	3022	Ramp Junction Speed (S), mi/h	61.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.3

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.2

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB on from Live Oak
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	740	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5620	719
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.20	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.933	0.909
Flow Rate (vi),pc/h	6024	791
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.72	0.40

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.417
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1807
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.3
Flow in Lanes 1 and 2 (v12), pc/h	2410	Ramp Junction Speed (S), mi/h	57.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	3201	Average Density (D), pc/mi/ln	29.4

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.2

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB on from Live Oak
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	740	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5401	1117
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.20	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.933	0.909
Flow Rate (vi),pc/h	5789	1229
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.75	0.61

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.456
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1737
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.5
Flow in Lanes 1 and 2 (v12), pc/h	2316	Ramp Junction Speed (S), mi/h	57.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3545	Average Density (D), pc/mi/ln	30.6

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	32.6

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	240	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6865	321
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	7446	348
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.79	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2002
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.4
Flow in Lanes 1 and 2 (v12), pc/h	3443	Ramp Junction Speed (S), mi/h	60.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	30.7

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.9

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	240	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	7021	313
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	7615	339
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.81	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2052
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.2
Flow in Lanes 1 and 2 (v12), pc/h	3511	Ramp Junction Speed (S), mi/h	60.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.4

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.4

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	SB on from LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	853	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6544	493
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	15.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.870
Flow Rate (vi),pc/h	7098	567
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.82	0.28

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.439
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	2130
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	59.1
Flow in Lanes 1 and 2 (v12), pc/h	2839	Ramp Junction Speed (S), mi/h	57.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	3406	Average Density (D), pc/mi/ln	33.5

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.9

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	SB on from LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	853	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6708	500
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	15.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.870
Flow Rate (vi),pc/h	7275	575
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.84	0.29

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.448
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	2183
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	58.9
Flow in Lanes 1 and 2 (v12), pc/h	2910	Ramp Junction Speed (S), mi/h	57.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3485	Average Density (D), pc/mi/ln	34.4

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	32.5

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 n/o arrow highway
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6461	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1728
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.74
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.0
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	27.4
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 n/o arrow highway
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6011	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1607
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.69
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.8
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	25.2
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o arrow highway
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5620	Heavy Vehicle Adjustment Factor (fHV)	0.933
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1506
Total Trucks, %	7.20	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.64
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	64.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	23.5
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o arrow highway
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5401	Heavy Vehicle Adjustment Factor (fHV)	0.933
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1447
Total Trucks, %	7.20	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	64.3
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	22.5
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 SB back of Live Oak/ ahead of LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3750	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6865	Heavy Vehicle Adjustment Factor (fhv)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1862
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.80
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	61.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	30.4
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 SB back of Live Oak/ ahead of LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3750	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7021	Heavy Vehicle Adjustment Factor (fHV)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1904
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.81
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	60.6
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	31.4
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	2193	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7418	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	2040
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.87
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	59.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	34.5
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	2193	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7576	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	2084
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.89
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	58.4
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	35.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, Ahead of Ramona/ Back of LA Street
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	2700	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7861	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	2162
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.93
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	56.1
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	38.5
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, Ahead of Ramona/ Back of LA Street
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	2700	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7188	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1977
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.85
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	59.6
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	33.2
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, LA/Lower Azusa St to Live Oak
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3096	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7283	Heavy Vehicle Adjustment Factor (fhv)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1975
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.84
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	59.9
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	33.0
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, LA/Lower Azusa St to Live Oak
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3096	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6656	Heavy Vehicle Adjustment Factor (fHV)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1805
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	62.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	29.0
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	1	Segment Name	605 Ahead of Live Oak off-ramp to Arrow Highway On-ramp
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	3532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5623	Heavy Vehicle Adjustment Factor (fHV)	0.930
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1512
Total Trucks, %	7.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.65
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.6
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	23.8
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	1	Segment Name	605 Ahead of Live Oak off-ramp to Arrow Highway On-ramp
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	3532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5399	Heavy Vehicle Adjustment Factor (fHV)	0.930
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1451
Total Trucks, %	7.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	22.8
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR-North of Arrow Highway		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6212	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1767
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.75
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.1
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	28.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

Design Analysis Table

Number of Lanes, ln	2	3	4	5
Density, pc/mi/ln	-	-	28.0	21.8
LOS	F	F	D	C

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR-North of Arrow Highway		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6228	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1772
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.75
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.0
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	28.1
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

APPENDIX I1
Freeway Future with Project LOS Worksheets, Interstate 10 Segments

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	10144	Heavy Vehicle Adjustment Factor (fHV)	0.967
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2232
Total Trucks, %	3.37	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.95
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	55.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	40.4
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	9797	Heavy Vehicle Adjustment Factor (fHV)	0.967
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2156
Total Trucks, %	3.37	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.92
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	56.9
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	37.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	9578	Heavy Vehicle Adjustment Factor (fHV)	0.939
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2713
Total Trucks, %	6.45	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.15
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	-
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	-
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR: 1-10 Mainline Analysis		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	9251	Heavy Vehicle Adjustment Factor (fHV)	0.939
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2620
Total Trucks, %	6.45	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.12
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	-
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	-
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

APPENDIX 12
Freeway Future with Project LOS Worksheets, Interstate 210 Segments

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	9801	Heavy Vehicle Adjustment Factor (fHV)	0.928
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2247
Total Trucks, %	7.80	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.96
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	54.8
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	41.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	9916	Heavy Vehicle Adjustment Factor (fHV)	0.928
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2273
Total Trucks, %	7.80	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.97
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	54.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	41.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	10311	Heavy Vehicle Adjustment Factor (fHV)	0.934
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2349
Total Trucks, %	7.06	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.00
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	52.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	45.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR: 1-210 Mainline Analysis		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	10443	Heavy Vehicle Adjustment Factor (fhv)	0.934
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	2379
Total Trucks, %	7.06	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	1.01
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	-
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	-
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	F
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

APPENDIX I3
Freeway Future with Project LOS Worksheets, Interstate 605 Ramps and Segments

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Off to Lower Azusa/LA Street_605, Ramona to Azusa/LA Street
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	350	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	8005	670
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	10.00	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.800
Flow Rate (vi),pc/h	8806	838
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.94	0.42

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.503
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2247
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	66.4
Flow in Lanes 1 and 2 (v12), pc/h	4312	Ramp Junction Speed (S), mi/h	59.3

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	37.1
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	41.3

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Off to Lower Azusa/LA Street_605, Ramona to Azusa/LA Street
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	350	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	7256	548
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	10.00	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.909	0.800
Flow Rate (vi),pc/h	7982	685
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.85	0.34

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.490
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2058
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.2
Flow in Lanes 1 and 2 (v12), pc/h	3866	Ramp Junction Speed (S), mi/h	59.9

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.3
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	37.5

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	On from Lower Azusa/LA St
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	610	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	7335	241
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	7956	261
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.87	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.443
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	2387
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	57.9
Flow in Lanes 1 and 2 (v12), pc/h	3182	Ramp Junction Speed (S), mi/h	56.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	3443	Average Density (D), pc/mi/ln	36.3

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	32.3

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	On from Lower Azusa/LA St
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	610	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6708	246
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	7275	267
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.80	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.415
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	2183
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	58.9
Flow in Lanes 1 and 2 (v12), pc/h	2910	Ramp Junction Speed (S), mi/h	57.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	3177	Average Density (D), pc/mi/ln	32.8

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.2

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Live Oak Off-ramp, NB_605, LA/ Lower Azusa St to Live Oak
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	200	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	7367	802
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.800
Flow Rate (vi),pc/h	7990	1002
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.85	0.50

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.518
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1971
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.5
Flow in Lanes 1 and 2 (v12), pc/h	4049	Ramp Junction Speed (S), mi/h	59.3

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.7
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	39.1

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	Live Oak Off-ramp, NB_605, LA/ Lower Azusa St to Live Oak
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	200	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6767	434
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	25.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.800
Flow Rate (vi),pc/h	7339	542
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.78	0.27

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.477
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	1917
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.7
Flow in Lanes 1 and 2 (v12), pc/h	3505	Ramp Junction Speed (S), mi/h	60.4

Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	30.4
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.4

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	2	Segment Name	Arrow Highway EB On-ramp
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	710	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5707	151
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.50	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.930	0.935
Flow Rate (vi),pc/h	6137	161
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.67	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.374
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1841
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.2
Flow in Lanes 1 and 2 (v12), pc/h	2455	Ramp Junction Speed (S), mi/h	58.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	2616	Average Density (D), pc/mi/ln	26.9

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.9

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	2	Segment Name	Arrow Highway EB On-ramp
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	710	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5510	409
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.50	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.930	0.935
Flow Rate (vi),pc/h	5925	437
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.68	0.22

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.386
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1778
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.4
Flow in Lanes 1 and 2 (v12), pc/h	2370	Ramp Junction Speed (S), mi/h	58.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2807	Average Density (D), pc/mi/ln	27.2

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.2

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	4	Segment Name	Arrow Highway WB On-ramp
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	520	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5864	172
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.25	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.932	0.935
Flow Rate (vi),pc/h	6292	184
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.69	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.379
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1888
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.0
Flow in Lanes 1 and 2 (v12), pc/h	2517	Ramp Junction Speed (S), mi/h	58.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2701	Average Density (D), pc/mi/ln	27.7

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.5

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	4	Segment Name	Arrow Highway WB On-ramp
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	520	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5909	184
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.25	7.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.932	0.935
Flow Rate (vi),pc/h	6340	197
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.70	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.381
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1902
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.0
Flow in Lanes 1 and 2 (v12), pc/h	2536	Ramp Junction Speed (S), mi/h	58.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2733	Average Density (D), pc/mi/ln	28.0

Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.8

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to Arrow Hwy
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6647	643
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.935	0.971
Flow Rate (vi),pc/h	7109	662
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.76	0.33

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.488
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1818
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	53.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	68.1
Flow in Lanes 1 and 2 (v12), pc/h	3473	Ramp Junction Speed (S), mi/h	60.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	29.5

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.1

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to Arrow Hwy
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6098	398
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.00	3.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.935	0.971
Flow Rate (vi),pc/h	6522	410
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.69	0.21

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.465
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1724
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	68.5
Flow in Lanes 1 and 2 (v12), pc/h	3075	Ramp Junction Speed (S), mi/h	61.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.7

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.7

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB on from Live Oak
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	740	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5761	741
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.20	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.933	0.909
Flow Rate (vi),pc/h	6175	815
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.74	0.41

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.425
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1853
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.1
Flow in Lanes 1 and 2 (v12), pc/h	2470	Ramp Junction Speed (S), mi/h	57.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	3285	Average Density (D), pc/mi/ln	30.3

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.8

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB on from Live Oak
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	740	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5467	1157
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	7.20	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.933	0.909
Flow Rate (vi),pc/h	5860	1273
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.76	0.64

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.466
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	1758
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	60.5
Flow in Lanes 1 and 2 (v12), pc/h	2344	Ramp Junction Speed (S), mi/h	57.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	3617	Average Density (D), pc/mi/ln	31.2

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.2

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	240	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	7028	462
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	7623	501
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.81	0.25

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.473
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2009
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.4
Flow in Lanes 1 and 2 (v12), pc/h	3606	Ramp Junction Speed (S), mi/h	60.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.6

Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	35.3

HCS7 Freeway Diverge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	2	Segment Name	SB off to LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Deceleration Length (LA),ft	240	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	7127	379
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	8.50
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.922
Flow Rate (vi),pc/h	7730	411
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.82	0.21

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (Ds)	0.465
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/mi/ln	2064
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	54.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.436	Outer Lanes Freeway Speed (SO), mi/h	67.2
Flow in Lanes 1 and 2 (v12), pc/h	3602	Ramp Junction Speed (S), mi/h	60.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.9

Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	35.2

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	SB on from LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	853	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6566	543
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	15.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.870
Flow Rate (vi),pc/h	7121	624
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.82	0.31

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.447
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	2137
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	59.1
Flow in Lanes 1 and 2 (v12), pc/h	2848	Ramp Junction Speed (S), mi/h	57.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3472	Average Density (D), pc/mi/ln	34.0

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	32.3

HCS7 Freeway Merge Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	4	Segment Name	SB on from LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

	Freeway	Ramp
Number of Lanes (N), In	4	1
Free-Flow Speed (FFS), mi/h	65.0	35.0
Segment Length (L) / Acceleration Length (LA),ft	853	0
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	6748	588
Peak Hour Factor (PHF)	1.00	1.00
Total Trucks, %	8.50	15.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.922	0.870
Flow Rate (vi),pc/h	7319	676
Capacity (c), pc/h	9400	2000
Volume-to-Capacity Ratio (v/c)	0.85	0.34

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	2
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.464
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (VOA), pc/mi/ln	2196
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.000	Outer Lanes Freeway Speed (SO), mi/h	58.9
Flow in Lanes 1 and 2 (v12), pc/h	2928	Ramp Junction Speed (S), mi/h	56.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	3604	Average Density (D), pc/mi/ln	35.3

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 n/o arrow highway
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6647	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1777
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.76
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	62.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	28.4
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 n/o arrow highway
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6098	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1630
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.70
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	25.6
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o arrow highway
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5761	Heavy Vehicle Adjustment Factor (fHV)	0.933
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1544
Total Trucks, %	7.20	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.66
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	64.1
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	24.1
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o arrow highway
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	4039	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5467	Heavy Vehicle Adjustment Factor (fHV)	0.933
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1465
Total Trucks, %	7.20	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	64.3
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	22.8
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 SB back of Live Oak/ ahead of LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3750	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7028	Heavy Vehicle Adjustment Factor (fHV)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1906
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.82
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	60.6
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	31.5
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 SB back of Live Oak/ ahead of LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3750	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7127	Heavy Vehicle Adjustment Factor (fHV)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1932
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.83
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	60.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	32.1
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o LA St
Time Period Number	1	Segment Analysis Time Period	07:00-07:15

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	2193	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7490	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	2060
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.88
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	58.8
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	35.0
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	I-605 s/o LA St
Time Period Number	2	Segment Analysis Time Period	07:15-07:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	2193	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7704	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	2119
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.90
Passenger Car Equivalent (Et)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	57.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	36.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, Ahead of Ramona/ Back of LA Street
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	2700	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	8005	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	2202
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.94
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	55.2
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	39.9
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	E
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, Ahead of Ramona/ Back of LA Street
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	2700	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7256	Heavy Vehicle Adjustment Factor (fHV)	0.909
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1996
Total Trucks, %	10.00	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.85
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	59.3
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	33.7
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, LA/Lower Azusa St to Live Oak
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3096	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	7373	Heavy Vehicle Adjustment Factor (fHV)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1999
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.85
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	59.5
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	33.6
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM-1, PM-2
Project Description	13131 Los Angeles Street EIR		
Segment Number	1	Segment Name	605, LA/Lower Azusa St to Live Oak
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3096	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.17
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	64.3
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6757	Heavy Vehicle Adjustment Factor (fHV)	0.922
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1832
Total Trucks, %	8.50	Capacity (c), pc/h/ln	2343
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2343
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.78
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	61.9
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	29.6
Total Ramp Density Adjustment	0.7	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	64.3		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	1	Segment Name	605 Ahead of Live Oak off-ramp to Arrow Highway On-ramp
Time Period Number	1	Segment Analysis Time Period	05:00-05:15

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	3532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5713	Heavy Vehicle Adjustment Factor (fHV)	0.930
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1536
Total Trucks, %	7.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.66
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.6
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	24.2
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Corporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	1-AM, 2-PM
Project Description	13131 Los Angeles Street Industrial EIR		
Segment Number	1	Segment Name	605 Ahead of Live Oak off-ramp to Arrow Highway On-ramp
Time Period Number	2	Segment Analysis Time Period	05:15-05:30

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	3532	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.33
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	63.7
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5500	Heavy Vehicle Adjustment Factor (fHV)	0.930
Peak Hour Factor	1.00	Flow Rate (Vp), pc/h/ln	1478
Total Trucks, %	7.50	Capacity (c), pc/h/ln	2337
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2337
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	63.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	23.2
Total Ramp Density Adjustment	1.3	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	63.7		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	AM
Project Description	13131 Los Angeles Street Industrial EIR-North of Arrow Highway		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6324	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1799
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	62.7
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	28.7
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	RML	Date	5/17/2019
Agency	KOA Coporation	Analysis Year	2020
Jurisdiction	Irwindale	Time Period Analyzed	PM
Project Description	13131 Los Angeles Street Industrial EIR-North of Arrow Highway		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	0.00
Lane Width, ft	12	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	10		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6369	Heavy Vehicle Adjustment Factor (fHV)	0.935
Peak Hour Factor	0.94	Flow Rate (Vp), pc/h/ln	1812
Total Trucks, %	7.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.77
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	0.0	Average Speed (S), mi/h	62.6
Right-Side Lateral Clearance Adj. (fRLC)	0.0	Density (D), pc/mi/ln	28.9
Total Ramp Density Adjustment	0.0	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.3

APPENDIX J
Freeway Off-ramp Queuing Reports

Queuing and Blocking Report
Future No Project AM

07/29/2019

Intersection: 1: Arrow Hwy & I-605 Off-ramp

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	T	T	T	T	T	L	R
Maximum Queue (ft)	201	171	48	373	334	636	648
Average Queue (ft)	118	57	11	280	205	288	51
95th Queue (ft)	182	122	37	384	304	482	355
Link Distance (ft)	500	500	500	340	340	917	917
Upstream Blk Time (%)				4	1	0	0
Queuing Penalty (veh)				0	0	0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: I-605 nb off-ramp & Live Oak Avenue

Movement	NB	SB
Directions Served	R	R
Maximum Queue (ft)	882	1670
Average Queue (ft)	727	1622
95th Queue (ft)	1072	1769
Link Distance (ft)	827	1614
Upstream Blk Time (%)	65	95
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Los Angeles Street & Rivergrade Sb/605 offramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	R	L	T	T	LT	TR	R
Maximum Queue (ft)	305	246	262	249	253	252	270	304	189
Average Queue (ft)	195	90	46	180	146	168	163	165	121
95th Queue (ft)	284	203	189	256	222	225	247	264	232
Link Distance (ft)	294	294	294		336	336	1273	1273	
Upstream Blk Time (%)	1	0	0		0	0			
Queuing Penalty (veh)	0	0	0		1	0			
Storage Bay Dist (ft)				230					164
Storage Blk Time (%)				2	0			7	1
Queuing Penalty (veh)				12	0			19	4

Intersection: 12: I-605 nb off-ramp/Rivergrade Road Nb & Los Angeles Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	LT	TR
Maximum Queue (ft)	274	375	333	454	441	431	366	332
Average Queue (ft)	211	105	58	418	408	310	254	207
95th Queue (ft)	310	327	231	442	452	591	353	309
Link Distance (ft)		336	336	400	400	400	1359	1359
Upstream Blk Time (%)		4	0	85	54	19		
Queuing Penalty (veh)		12	0	0	0	0		
Storage Bay Dist (ft)	250							
Storage Blk Time (%)	22	0						
Queuing Penalty (veh)	43	0						

Network Summary

Network wide Queuing Penalty: 92

Intersection: 1: Arrow Hwy & I-605 Off-ramp

Movement	EB	EB	EB	WB	WB	SB
Directions Served	T	T	T	T	T	L
Maximum Queue (ft)	288	252	198	159	86	271
Average Queue (ft)	169	124	58	76	24	147
95th Queue (ft)	254	218	133	137	63	230
Link Distance (ft)	500	500	500	340	340	917
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: I-605 nb off-ramp & Live Oak Avenue

Movement	NB	SB
Directions Served	R	R
Maximum Queue (ft)	880	1665
Average Queue (ft)	820	1514
95th Queue (ft)	1000	2027
Link Distance (ft)	827	1614
Upstream Blk Time (%)	88	81
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Los Angeles Street & Rivergrade Sb/605 offramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	R	L	T	T	LT	TR	R
Maximum Queue (ft)	331	317	310	231	207	202	355	333	189
Average Queue (ft)	303	230	134	136	105	122	214	193	121
95th Queue (ft)	346	330	347	207	172	186	319	302	237
Link Distance (ft)	294	294	294		336	336	1273	1273	
Upstream Blk Time (%)	23	3	2						
Queuing Penalty (veh)	0	0	0						
Storage Bay Dist (ft)				230					164
Storage Blk Time (%)				0	0			14	1
Queuing Penalty (veh)				1	0			22	2

Intersection: 12: I-605 nb off-ramp/Rivergrade Road Nb & Los Angeles Street

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	TR
Maximum Queue (ft)	264	310	229	345	247	1402	1408
Average Queue (ft)	172	88	58	212	146	1129	1174
95th Queue (ft)	271	206	140	306	242	1739	1682
Link Distance (ft)		336	336	400	400	1359	1359
Upstream Blk Time (%)		0	0	0		42	47
Queuing Penalty (veh)		3	0	0		0	0
Storage Bay Dist (ft)	250						
Storage Blk Time (%)	7						
Queuing Penalty (veh)	37						

Network Summary

Network wide Queuing Penalty: 66

Intersection: 1: Arrow Hwy & I-605 Off-ramp

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	T	T	T	T	T	L	R
Maximum Queue (ft)	226	197	75	368	356	841	771
Average Queue (ft)	129	73	15	312	230	420	116
95th Queue (ft)	194	154	50	408	344	734	529
Link Distance (ft)	500	500	500	340	340	917	917
Upstream Blk Time (%)				9	2	0	0
Queuing Penalty (veh)				0	0	0	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 6: I-605 nb off-ramp & Live Oak Avenue

Movement	NB	SB
Directions Served	R	R
Maximum Queue (ft)	884	1668
Average Queue (ft)	768	1615
95th Queue (ft)	1086	1796
Link Distance (ft)	827	1614
Upstream Blk Time (%)	75	94
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Los Angeles Street & Rivergrade Sb/605 offramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	R	L	T	T	LT	TR	R
Maximum Queue (ft)	324	248	290	253	310	283	1066	1114	189
Average Queue (ft)	235	140	68	199	161	152	564	569	175
95th Queue (ft)	340	263	241	274	272	229	1157	1199	239
Link Distance (ft)	294	294	294		336	336	1273	1273	
Upstream Blk Time (%)	7		0		0	0	4	6	
Queuing Penalty (veh)	0		0		3	0	0	0	
Storage Bay Dist (ft)				230					164
Storage Blk Time (%)				6	0			49	12
Queuing Penalty (veh)				29	0			132	53

Intersection: 12: I-605 nb off-ramp/Rivergrade Road Nb & Los Angeles Street

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	LT	TR
Maximum Queue (ft)	275	382	355	444	447	418	466	436
Average Queue (ft)	266	311	184	419	406	294	292	263
95th Queue (ft)	311	500	426	433	447	585	436	408
Link Distance (ft)		336	336	400	400	400	1359	1359
Upstream Blk Time (%)		36	1	89	43	15		
Queuing Penalty (veh)		136	3	0	0	0		
Storage Bay Dist (ft)	250							
Storage Blk Time (%)	69	0						
Queuing Penalty (veh)	173	0						

Network Summary

Network wide Queuing Penalty: 529

Intersection: 1: Arrow Hwy & I-605 Off-ramp

Movement	EB	EB	EB	WB	WB	SB
Directions Served	T	T	T	T	T	L
Maximum Queue (ft)	253	248	145	168	117	252
Average Queue (ft)	160	121	48	78	27	142
95th Queue (ft)	239	214	108	138	78	226
Link Distance (ft)	500	500	500	340	340	917
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: I-605 nb off-ramp & Live Oak Avenue

Movement	NB	SB
Directions Served	R	R
Maximum Queue (ft)	886	1663
Average Queue (ft)	837	1500
95th Queue (ft)	955	2041
Link Distance (ft)	827	1614
Upstream Blk Time (%)	93	78
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: Los Angeles Street & Rivergrade Sb/605 offramp

Movement	EB	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	R	L	T	T	LT	TR	R
Maximum Queue (ft)	333	324	325	254	305	223	438	425	189
Average Queue (ft)	307	269	216	167	126	141	275	246	149
95th Queue (ft)	340	362	414	250	225	198	430	399	244
Link Distance (ft)	294	294	294		336	336	1273	1273	
Upstream Blk Time (%)	36	13	9		0				
Queuing Penalty (veh)	0	0	0		2				
Storage Bay Dist (ft)				230					164
Storage Blk Time (%)				3	0			30	1
Queuing Penalty (veh)				10	0			46	4

Intersection: 12: I-605 nb off-ramp/Rivergrade Road Nb & Los Angeles Street

Movement	EB	EB	EB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	LT	TR
Maximum Queue (ft)	274	361	308	416	367	1410	1411
Average Queue (ft)	186	123	86	304	232	1265	1284
95th Queue (ft)	277	283	218	423	344	1689	1644
Link Distance (ft)		336	336	400	400	1359	1359
Upstream Blk Time (%)		1	0	2	0	61	68
Queuing Penalty (veh)		9	1	0	0	0	0
Storage Bay Dist (ft)	250						
Storage Blk Time (%)	12	0					
Queuing Penalty (veh)	66	0					

Network Summary

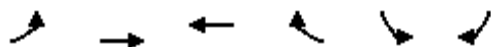
Network wide Queuing Penalty: 136

APPENDIX K
Freeway Off-ramp Level of Service Reports (Synchro 10)

HCM 6th Signalized Intersection Summary

1: Arrow Hwy & I-605 Off-ramp

Future No Project AM
08/06/2019



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↑	↑
Traffic Volume (veh/h)	0	788	1653	0	519	1180
Future Volume (veh/h)	0	788	1653	0	519	1180
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	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	857	1797	0	564	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	2821	1963	0	563	
Arrive On Green	0.00	0.55	0.55	0.00	0.32	0.00
Sat Flow, veh/h	0	5443	3741	0	1781	1585
Grp Volume(v), veh/h	0	857	1797	0	564	0
Grp Sat Flow(s),veh/h/ln	0	1702	1777	0	1781	1585
Q Serve(g_s), s	0.0	7.2	36.6	0.0	25.3	0.0
Cycle Q Clear(g_c), s	0.0	7.2	36.6	0.0	25.3	0.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2821	1963	0	563	
V/C Ratio(X)	0.00	0.30	0.92	0.00	1.00	
Avail Cap(c_a), veh/h	0	2821	1963	0	563	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	9.6	16.2	0.0	27.3	0.0
Incr Delay (d2), s/veh	0.0	0.3	7.2	0.0	38.2	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	0.0	2.3	13.5	0.0	16.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	9.9	23.4	0.0	65.6	0.0
LnGrp LOS	A	A	C	A	F	
Approach Vol, veh/h		857	1797		564	A
Approach Delay, s/veh		9.9	23.4		65.6	
Approach LOS		A	C		E	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		50.0		30.0		50.0
Change Period (Y+Rc), s		5.8		* 4.7		5.8
Max Green Setting (Gmax), s		44.2		* 25		44.2
Max Q Clear Time (g_c+I1), s		9.2		27.3		38.6
Green Ext Time (p_c), s		6.2		0.0		4.6
Intersection Summary						
HCM 6th Ctrl Delay			27.2			
HCM 6th LOS			C			

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Unsignalized Intersection Capacity Analysis

2: Arrow Hwy

Future No Project AM

08/06/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗		↑↑	↗						
Traffic Volume (veh/h)	0	779	397	0	1763	415	0	0	0	0	0	0
Future Volume (Veh/h)	0	779	397	0	1763	415	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	0	847	432	0	1916	451	0	0	0	0	0	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		544										
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94	
vC, conflicting volume	1916			847			1805	2763	424	2340	2763	958
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1916			716			1732	2749	267	2299	2749	958
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	305			830			53	18	689	20	18	258
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3						
Volume Total	424	424	432	958	958	451						
Volume Left	0	0	0	0	0	0						
Volume Right	0	0	432	0	0	451						
cSH	1700	1700	1700	1700	1700	1700						
Volume to Capacity	0.25	0.25	0.25	0.56	0.56	0.27						
Queue Length 95th (ft)	0	0	0	0	0	0						
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0						
Lane LOS												
Approach Delay (s)	0.0			0.0								
Approach LOS												
Intersection Summary												
Average Delay			0.0									
Intersection Capacity Utilization			52.1%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM 6th Signalized Intersection Summary
5: Live Oak Avenue

Future No Project AM
08/06/2019

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↵	↑↑		
Traffic Volume (veh/h)	349	633	685	1905	0	0
Future Volume (veh/h)	349	633	685	1905	0	0
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No		
Adj Sat Flow, veh/h/ln	1870	1945	1870	1945		
Adj Flow Rate, veh/h	379	688	745	2071		
Peak Hour Factor	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2		
Cap, veh/h	1617	750	679	3304		
Arrive On Green	0.46	0.46	0.38	0.89		
Sat Flow, veh/h	3647	1648	1781	3793		
Grp Volume(v), veh/h	379	688	745	2071		
Grp Sat Flow(s),veh/h/ln	1777	1648	1781	1848		
Q Serve(g_s), s	5.9	35.1	34.3	12.2		
Cycle Q Clear(g_c), s	5.9	35.1	34.3	12.2		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1617	750	679	3304		
V/C Ratio(X)	0.23	0.92	1.10	0.63		
Avail Cap(c_a), veh/h	1765	819	679	3458		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	15.0	22.9	27.9	1.2		
Incr Delay (d2), s/veh	0.1	14.4	64.2	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.1	14.9	25.2	0.2		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.0	37.3	92.1	1.5		
LnGrp LOS	B	D	F	A		
Approach Vol, veh/h	1067			2816		
Approach Delay, s/veh	29.4			25.5		
Approach LOS	C			C		
Timer - Assigned Phs			3	4		8
Phs Duration (G+Y+Rc), s			39.5	46.8		86.3
Change Period (Y+Rc), s			* 5.2	5.8		5.8
Max Green Setting (Gmax), s			* 34	44.7		84.2
Max Q Clear Time (g_c+I1), s			37.3	38.1		15.2
Green Ext Time (p_c), s			0.0	2.8		32.2
Intersection Summary						
HCM 6th Ctrl Delay			26.5			
HCM 6th LOS			C			
Notes						

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	3,409.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	2.878

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	655	0	0	613	0	374	0	0	1378	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	91	0	0	414	0	15	0	0	24	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]	0	0	772	0	0	1052	0	404	0	0	1457	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	193	0	0	263	0	101	0	0	364	0
Total Analysis Volume [veh/h]	0	0	772	0	0	1052	0	404	0	0	1457	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	0.96	0.00	0.00	2.88	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	67.77	0.00	0.00	3409.40	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	26.74	0.00	0.00	347.74	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	668.48	0.00	0.00	8693.53	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	67.77			3409.40			0.00			0.00		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	987.52											
Intersection LOS	F											

HCM Signalized Intersection Capacity Analysis

11: Los Angeles Street & Rivergrade Sb/605 offramp

Future No Project AM
08/06/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑↑	↑
Traffic Volume (vph)	0	524	376	451	952	0	0	0	0	93	327	533
Future Volume (vph)	0	524	376	451	952	0	0	0	0	93	327	533
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	16	11	13	13	12	12	12	12	12	12
Total Lost time (s)		5.8	5.8	5.2	5.8						5.1	5.1
Lane Util. Factor		0.95	1.00	1.00	0.95						0.91	0.91
Frt		1.00	0.85	1.00	1.00						0.95	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.99	1.00
Satd. Flow (prot)		3657	1794	1711	3657						3185	1441
Flt Permitted		1.00	1.00	0.95	1.00						0.99	1.00
Satd. Flow (perm)		3657	1794	1711	3657						3185	1441
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	570	409	490	1035	0	0	0	0	101	355	579
RTOR Reduction (vph)	0	0	67	0	0	0	0	0	0	0	65	122
Lane Group Flow (vph)	0	570	342	490	1035	0	0	0	0	0	646	202
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		23.7	23.7	25.8	54.7						24.4	24.4
Effective Green, g (s)		23.7	23.7	25.8	54.7						24.4	24.4
Actuated g/C Ratio		0.26	0.26	0.29	0.61						0.27	0.27
Clearance Time (s)		5.8	5.8	5.2	5.8						5.1	5.1
Vehicle Extension (s)		2.5	2.5	5.0	2.5						3.0	3.0
Lane Grp Cap (vph)		963	472	490	2222						863	390
v/s Ratio Prot		0.16		c0.29	0.28							
v/s Ratio Perm			c0.19								0.20	0.14
v/c Ratio		0.59	0.72	1.00	0.47						0.75	0.52
Uniform Delay, d1		28.9	30.2	32.1	9.7						30.0	27.8
Progression Factor		1.00	1.00	0.79	2.23						1.00	1.00
Incremental Delay, d2		2.7	9.3	12.2	0.1						5.9	4.9
Delay (s)		31.6	39.5	37.7	21.6						35.9	32.7
Level of Service		C	D	D	C						D	C
Approach Delay (s)		34.9			26.8			0.0			34.9	
Approach LOS		C			C			A			C	
Intersection Summary												
HCM 2000 Control Delay			31.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			16.1			
Intersection Capacity Utilization			90.7%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
12: I-605 nb off-ramp/Rivergrade Road Nb & Los Angeles Street

Future No Project AM
08/06/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	328	396	0	0	947	161	401	471	258	0	0	0
Future Volume (veh/h)	328	396	0	0	947	161	401	471	258	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1945	0	0	1870	1945	1900	1870	1900			
Adj Flow Rate, veh/h	357	430	0	0	1029	0	436	512	280			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0			
Cap, veh/h	336	1704	0	0	762		501	621	353			
Arrive On Green	0.06	0.15	0.00	0.00	0.21	0.00	0.42	0.42	0.42			
Sat Flow, veh/h	1781	3793	0	0	3647	1648	1200	1485	844			
Grp Volume(v), veh/h	357	430	0	0	1029	0	658	0	570			
Grp Sat Flow(s),veh/h/ln	1781	1848	0	0	1777	1648	1810	0	1718			
Q Serve(g_s), s	17.0	9.2	0.0	0.0	19.3	0.0	29.9	0.0	26.0			
Cycle Q Clear(g_c), s	17.0	9.2	0.0	0.0	19.3	0.0	29.9	0.0	26.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.66		0.49			
Lane Grp Cap(c), veh/h	336	1704	0	0	762		756	0	718			
V/C Ratio(X)	1.06	0.25	0.00	0.00	1.35		0.87	0.00	0.79			
Avail Cap(c_a), veh/h	336	1704	0	0	762		782	0	743			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.78	0.78	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	42.2	24.5	0.0	0.0	35.4	0.0	24.0	0.0	22.8			
Incr Delay (d2), s/veh	60.4	0.3	0.0	0.0	166.5	0.0	11.1	0.0	6.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	13.6	4.2	0.0	0.0	25.4	0.0	14.4	0.0	11.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	102.6	24.8	0.0	0.0	201.8	0.0	35.0	0.0	29.6			
LnGrp LOS	F	C	A	A	F		D	A	C			
Approach Vol, veh/h	787			1029			1228					
Approach Delay, s/veh	60.1			201.8			32.5					
Approach LOS	E			F			C					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	47.3			22.2			25.1			42.7		
Change Period (Y+Rc), s	5.8			* 5.2			5.8			5.1		
Max Green Setting (Gmax), s	39.2			* 17			18.0			38.9		
Max Q Clear Time (g_c+I1), s	11.2			19.0			21.3			31.9		
Green Ext Time (p_c), s	5.1			0.0			0.0			5.7		

Intersection Summary

HCM 6th Ctrl Delay	96.9
HCM 6th LOS	F

Notes

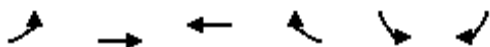
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary

1: Arrow Hwy & I-605 Off-ramp

Future No Project PM
08/06/2019



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	1772	510	0	280	454
Future Volume (veh/h)	0	1772	510	0	280	454
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	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	1926	554	0	304	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	3424	2383	0	353	
Arrive On Green	0.00	0.67	0.67	0.00	0.20	0.00
Sat Flow, veh/h	0	5443	3741	0	1781	1585
Grp Volume(v), veh/h	0	1926	554	0	304	0
Grp Sat Flow(s),veh/h/ln	0	1702	1777	0	1781	1585
Q Serve(g_s), s	0.0	16.0	4.9	0.0	13.2	0.0
Cycle Q Clear(g_c), s	0.0	16.0	4.9	0.0	13.2	0.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	3424	2383	0	353	
V/C Ratio(X)	0.00	0.56	0.23	0.00	0.86	
Avail Cap(c_a), veh/h	0	3424	2383	0	563	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	7.0	5.1	0.0	31.0	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.0	0.0	7.8	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	0.0	4.1	1.2	0.0	6.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	7.6	5.2	0.0	38.9	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h		1926	554		304	A
Approach Delay, s/veh		7.6	5.2		38.9	
Approach LOS		A	A		D	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		59.5		20.5		59.5
Change Period (Y+Rc), s		5.8		* 4.7		5.8
Max Green Setting (Gmax), s		44.2		* 25		44.2
Max Q Clear Time (g_c+I1), s		18.0		15.2		6.9
Green Ext Time (p_c), s		16.0		0.7		3.7

Intersection Summary

HCM 6th Ctrl Delay	10.6
HCM 6th LOS	B

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Unsignalized Intersection Capacity Analysis

2: Arrow Hwy

Future No Project PM

08/06/2019

																												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR																
Lane Configurations		↑↑	↗		↑↑	↗																						
Traffic Volume (veh/h)	0	1441	458	0	473	266	0	0	0	0	0	0																
Future Volume (Veh/h)	0	1441	458	0	473	266	0	0	0	0	0	0																
Sign Control		Free			Free			Stop			Stop																	
Grade		0%			0%			0%			0%																	
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																
Hourly flow rate (vph)	0	1566	498	0	514	289	0	0	0	0	0	0																
Pedestrians																												
Lane Width (ft)																												
Walking Speed (ft/s)																												
Percent Blockage																												
Right turn flare (veh)																												
Median type	None			None																								
Median storage (veh)																												
Upstream signal (ft)	544																											
pX, platoon unblocked				0.75				0.75	0.75	0.75	0.75	0.75																
vC, conflicting volume	514				1566				1823	2080	783	1297																
vC1, stage 1 conf vol																												
vC2, stage 2 conf vol																												
vCu, unblocked vol	514				1099				1440	1781	62	743																
tC, single (s)	4.1				4.1				7.5	6.5	6.9	7.5																
tC, 2 stage (s)																												
tF (s)	2.2				2.2				3.5	4.0	3.3	3.5																
p0 queue free %	100				100				100	100	100	100																
cM capacity (veh/h)	1048				476				70	61	747	229																
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3																						
Volume Total	783	783	498	257	257	289																						
Volume Left	0	0	0	0	0	0																						
Volume Right	0	0	498	0	0	289																						
cSH	1700	1700	1700	1700	1700	1700																						
Volume to Capacity	0.46	0.46	0.29	0.15	0.15	0.17																						
Queue Length 95th (ft)	0	0	0	0	0	0																						
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0																						
Lane LOS																												
Approach Delay (s)	0.0				0.0																							
Approach LOS																												
Intersection Summary																												
Average Delay				0.0																								
Intersection Capacity Utilization				43.2%	ICU Level of Service				A																			
Analysis Period (min)				15																								

HCM 6th Signalized Intersection Summary

5: Live Oak Avenue

Future No Project PM
08/06/2019

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↵	↑↑		
Traffic Volume (veh/h)	1084	1755	649	1179	0	0
Future Volume (veh/h)	1084	1755	649	1179	0	0
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No		
Adj Sat Flow, veh/h/ln	1870	1945	1870	1945		
Adj Flow Rate, veh/h	1178	1908	705	1282		
Peak Hour Factor	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2		
Cap, veh/h	1765	819	679	3458		
Arrive On Green	0.50	0.50	0.38	0.94		
Sat Flow, veh/h	3647	1648	1781	3793		
Grp Volume(v), veh/h	1178	1908	705	1282		
Grp Sat Flow(s),veh/h/ln	1777	1648	1781	1848		
Q Serve(g_s), s	22.5	44.7	34.3	3.1		
Cycle Q Clear(g_c), s	22.5	44.7	34.3	3.1		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1765	819	679	3458		
V/C Ratio(X)	0.67	2.33	1.04	0.37		
Avail Cap(c_a), veh/h	1765	819	679	3458		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	17.1	22.6	27.9	0.3		
Incr Delay (d2), s/veh	1.0	602.5	44.9	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.2	151.7	21.5	0.0		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.0	625.2	72.8	0.4		
LnGrp LOS	B	F	F	A		
Approach Vol, veh/h	3086			1987		
Approach Delay, s/veh	393.4			26.0		
Approach LOS	F			C		
Timer - Assigned Phs			3	4		8
Phs Duration (G+Y+Rc), s			39.5	50.5		90.0
Change Period (Y+Rc), s			* 5.2	5.8		5.8
Max Green Setting (Gmax), s			* 34	44.7		84.2
Max Q Clear Time (g_c+I1), s			37.3	47.7		6.1
Green Ext Time (p_c), s			0.0	0.0		12.3
Intersection Summary						
HCM 6th Ctrl Delay			249.5			
HCM 6th LOS			F			
Notes						

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	1,033.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.556

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	660	0	0	596	0	1037	0	0	959	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	20	0	0	129	0	4	0	0	96	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]	0	0	706	0	0	749	0	1082	0	0	1093	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	177	0	0	187	0	271	0	0	273	0
Total Analysis Volume [veh/h]	0	0	706	0	0	749	0	1082	0	0	1093	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	1.45	0.00	0.00	1.56	0.00	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	853.72	0.00	0.00	1033.76	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	119.20	0.00	0.00	141.74	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2980.01	0.00	0.00	3543.57	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	853.72			1033.76			0.00			0.00		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	379.34											
Intersection LOS	F											

HCM Signalized Intersection Capacity Analysis

11: Los Angeles Street & Rivergrade Sb/605 offramp

Future No Project PM
08/06/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑↑	↑
Traffic Volume (vph)	0	1237	525	304	752	0	0	0	0	140	337	303
Future Volume (vph)	0	1237	525	304	752	0	0	0	0	140	337	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	16	11	13	13	12	12	12	12	12	12
Total Lost time (s)		5.8	5.8	5.2	5.8						5.1	5.1
Lane Util. Factor		0.95	1.00	1.00	0.95						0.91	0.91
Frt		1.00	0.85	1.00	1.00						0.98	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.99	1.00
Satd. Flow (prot)		3657	1794	1711	3657						3288	1441
Flt Permitted		1.00	1.00	0.95	1.00						0.99	1.00
Satd. Flow (perm)		3657	1794	1711	3657						3288	1441
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1345	571	330	817	0	0	0	0	152	366	329
RTOR Reduction (vph)	0	0	102	0	0	0	0	0	0	0	11	212
Lane Group Flow (vph)	0	1345	469	330	817	0	0	0	0	0	576	48
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		37.3	37.3	22.7	65.2						13.9	13.9
Effective Green, g (s)		37.3	37.3	22.7	65.2						13.9	13.9
Actuated g/C Ratio		0.41	0.41	0.25	0.72						0.15	0.15
Clearance Time (s)		5.8	5.8	5.2	5.8						5.1	5.1
Vehicle Extension (s)		2.5	2.5	5.0	2.5						3.0	3.0
Lane Grp Cap (vph)		1515	743	431	2649						507	222
v/s Ratio Prot		c0.37		c0.19	0.22							
v/s Ratio Perm			0.26								0.18	0.03
v/c Ratio		0.89	0.63	0.77	0.31						1.14	0.22
Uniform Delay, d1		24.4	20.9	31.2	4.4						38.0	33.3
Progression Factor		1.00	1.00	0.82	2.61						1.00	1.00
Incremental Delay, d2		8.1	4.1	0.9	0.0						83.1	2.2
Delay (s)		32.5	24.9	26.4	11.5						121.1	35.5
Level of Service		C	C	C	B						F	D
Approach Delay (s)		30.3			15.8			0.0			94.9	
Approach LOS		C			B			A			F	
Intersection Summary												
HCM 2000 Control Delay			40.0			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				16.1		
Intersection Capacity Utilization			93.6%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
12: I-605 nb off-ramp/Rivergrade Road Nb & Los Angeles Street

Future No Project PM
08/06/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	295	1072	0	0	536	66	527	312	780	0	0	0
Future Volume (veh/h)	295	1072	0	0	536	66	527	312	780	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1945	0	0	1870	1945	1900	1870	1900			
Adj Flow Rate, veh/h	321	1165	0	0	583	0	573	339	848			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0			
Cap, veh/h	336	1651	0	0	711		492	291	685			
Arrive On Green	0.06	0.15	0.00	0.00	0.20	0.00	0.43	0.43	0.43			
Sat Flow, veh/h	1781	3793	0	0	3647	1648	1139	674	1585			
Grp Volume(v), veh/h	321	1165	0	0	583	0	912	0	848			
Grp Sat Flow(s),veh/h/ln	1781	1848	0	0	1777	1648	1813	0	1585			
Q Serve(g_s), s	16.2	27.0	0.0	0.0	14.1	0.0	38.9	0.0	38.9			
Cycle Q Clear(g_c), s	16.2	27.0	0.0	0.0	14.1	0.0	38.9	0.0	38.9			
Prop In Lane	1.00		0.00	0.00		1.00	0.63		1.00			
Lane Grp Cap(c), veh/h	336	1651	0	0	711		784	0	685			
V/C Ratio(X)	0.95	0.71	0.00	0.00	0.82		1.16	0.00	1.24			
Avail Cap(c_a), veh/h	336	1651	0	0	711		784	0	685			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.34	0.34	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	41.8	32.7	0.0	0.0	34.5	0.0	25.6	0.0	25.6			
Incr Delay (d2), s/veh	18.8	0.9	0.0	0.0	10.3	0.0	87.4	0.0	119.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	9.3	13.3	0.0	0.0	6.7	0.0	34.6	0.0	36.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.6	33.6	0.0	0.0	44.7	0.0	112.9	0.0	144.8			
LnGrp LOS	E	C	A	A	D		F	A	F			
Approach Vol, veh/h	1486				583		A		1760			
Approach Delay, s/veh	39.5				44.7				128.3			
Approach LOS	D				D				F			
Timer - Assigned Phs	2				5		6		8			
Phs Duration (G+Y+Rc), s	46.0				22.2		23.8		44.0			
Change Period (Y+Rc), s	5.8				* 5.2		5.8		5.1			
Max Green Setting (Gmax), s	39.2				* 17		18.0		38.9			
Max Q Clear Time (g_c+I1), s	29.0				18.2		16.1		40.9			
Green Ext Time (p_c), s	7.5				0.0		1.0		0.0			

Intersection Summary

HCM 6th Ctrl Delay	81.1
HCM 6th LOS	F

Notes

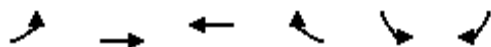
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary

1: Arrow Hwy & I-605 Off-ramp

Future with Project AM
08/06/2019



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↵	↵
Traffic Volume (veh/h)	0	788	1653	0	564	1180
Future Volume (veh/h)	0	788	1653	0	564	1180
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	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	857	1797	0	613	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	2821	1963	0	563	
Arrive On Green	0.00	0.55	0.55	0.00	0.32	0.00
Sat Flow, veh/h	0	5443	3741	0	1781	1585
Grp Volume(v), veh/h	0	857	1797	0	613	0
Grp Sat Flow(s),veh/h/ln	0	1702	1777	0	1781	1585
Q Serve(g_s), s	0.0	7.2	36.6	0.0	25.3	0.0
Cycle Q Clear(g_c), s	0.0	7.2	36.6	0.0	25.3	0.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	2821	1963	0	563	
V/C Ratio(X)	0.00	0.30	0.92	0.00	1.09	
Avail Cap(c_a), veh/h	0	2821	1963	0	563	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	9.6	16.2	0.0	27.3	0.0
Incr Delay (d2), s/veh	0.0	0.3	7.2	0.0	64.1	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	0.0	2.3	13.5	0.0	20.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	9.9	23.4	0.0	91.4	0.0
LnGrp LOS	A	A	C	A	F	
Approach Vol, veh/h		857	1797		613	A
Approach Delay, s/veh		9.9	23.4		91.4	
Approach LOS		A	C		F	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		50.0		30.0		50.0
Change Period (Y+Rc), s		5.8		* 4.7		5.8
Max Green Setting (Gmax), s		44.2		* 25		44.2
Max Q Clear Time (g_c+I1), s		9.2		27.3		38.6
Green Ext Time (p_c), s		6.2		0.0		4.6
Intersection Summary						
HCM 6th Ctrl Delay			32.6			
HCM 6th LOS			C			
Notes						

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Unsignalized Intersection Capacity Analysis

2: Arrow Hwy

Future with Project AM

08/06/2019

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations		↑↑	↗		↑↑	↗												
Traffic Volume (veh/h)	0	824	397	0	1763	437	0	0	0	0	0	0						
Future Volume (Veh/h)	0	824	397	0	1763	437	0	0	0	0	0	0						
Sign Control		Free			Free			Stop			Stop							
Grade		0%			0%			0%			0%							
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						
Hourly flow rate (vph)	0	896	432	0	1916	475	0	0	0	0	0	0						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	None			None														
Median storage (veh)																		
Upstream signal (ft)	544																	
pX, platoon unblocked				0.94			0.94	0.94	0.94	0.94	0.94							
vC, conflicting volume	1916			896			1854	2812	448	2364	2812	958						
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	1916			760			1780	2800	283	2323	2800	958						
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9						
tC, 2 stage (s)																		
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3						
p0 queue free %	100			100			100	100	100	100	100	100						
cM capacity (veh/h)	305			796			49	17	670	19	17	258						
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3												
Volume Total	448	448	432	958	958	475												
Volume Left	0	0	0	0	0	0												
Volume Right	0	0	432	0	0	475												
cSH	1700	1700	1700	1700	1700	1700												
Volume to Capacity	0.26	0.26	0.25	0.56	0.56	0.28												
Queue Length 95th (ft)	0	0	0	0	0	0												
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0												
Lane LOS																		
Approach Delay (s)	0.0			0.0														
Approach LOS																		
Intersection Summary																		
Average Delay			0.0															
Intersection Capacity Utilization			52.1%			ICU Level of Service			A									
Analysis Period (min)			15															

HCM 6th Signalized Intersection Summary

5: Live Oak Avenue

Future with Project AM
08/06/2019

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↓	↑↑		
Traffic Volume (veh/h)	349	633	707	1905	0	0
Future Volume (veh/h)	349	633	707	1905	0	0
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No		
Adj Sat Flow, veh/h/ln	1870	1945	1870	1945		
Adj Flow Rate, veh/h	379	688	768	2071		
Peak Hour Factor	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2		
Cap, veh/h	1617	750	679	3304		
Arrive On Green	0.46	0.46	0.38	0.89		
Sat Flow, veh/h	3647	1648	1781	3793		
Grp Volume(v), veh/h	379	688	768	2071		
Grp Sat Flow(s),veh/h/ln	1777	1648	1781	1848		
Q Serve(g_s), s	5.9	35.1	34.3	12.2		
Cycle Q Clear(g_c), s	5.9	35.1	34.3	12.2		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1617	750	679	3304		
V/C Ratio(X)	0.23	0.92	1.13	0.63		
Avail Cap(c_a), veh/h	1765	819	679	3458		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	15.0	22.9	27.9	1.2		
Incr Delay (d2), s/veh	0.1	14.4	76.7	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.1	14.9	27.5	0.2		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.0	37.3	104.5	1.5		
LnGrp LOS	B	D	F	A		
Approach Vol, veh/h	1067			2839		
Approach Delay, s/veh	29.4			29.4		
Approach LOS	C			C		
Timer - Assigned Phs			3	4		8
Phs Duration (G+Y+Rc), s			39.5	46.8		86.3
Change Period (Y+Rc), s			* 5.2	5.8		5.8
Max Green Setting (Gmax), s			* 34	44.7		84.2
Max Q Clear Time (g_c+I1), s			37.3	38.1		15.2
Green Ext Time (p_c), s			0.0	2.8		32.2
Intersection Summary						
HCM 6th Ctrl Delay			29.4			
HCM 6th LOS			C			
Notes						

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	3,496.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	2.926

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	655	0	0	613	0	374	0	0	1378	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	91	0	0	414	0	15	0	0	46	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]	0	0	772	0	0	1052	0	404	0	0	1479	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	193	0	0	263	0	101	0	0	370	0
Total Analysis Volume [veh/h]	0	0	772	0	0	1052	0	404	0	0	1479	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	0.96	0.00	0.00	2.93	0.00	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	67.77	0.00	0.00	3496.92	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	26.74	0.00	0.00	350.73	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	668.48	0.00	0.00	8768.26	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	67.77			3496.92			0.00			0.00		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	1006.49											
Intersection LOS	F											

HCM Signalized Intersection Capacity Analysis

11: Los Angeles Street & Rivergrade Sb/605 offramp

Future with Project AM
08/06/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑↑	↑
Traffic Volume (vph)	0	530	376	501	955	0	0	0	0	234	327	533
Future Volume (vph)	0	530	376	501	955	0	0	0	0	234	327	533
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	16	11	13	13	12	12	12	12	12	12
Total Lost time (s)		5.8	5.8	5.2	5.8						5.1	5.1
Lane Util. Factor		0.95	1.00	1.00	0.95						0.91	0.91
Frt		1.00	0.85	1.00	1.00						0.96	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.98	1.00
Satd. Flow (prot)		3657	1794	1711	3657						3211	1441
Flt Permitted		1.00	1.00	0.95	1.00						0.98	1.00
Satd. Flow (perm)		3657	1794	1711	3657						3211	1441
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	576	409	545	1038	0	0	0	0	254	355	579
RTOR Reduction (vph)	0	0	65	0	0	0	0	0	0	0	30	121
Lane Group Flow (vph)	0	576	344	545	1038	0	0	0	0	0	787	250
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		23.8	23.8	25.8	54.8						24.3	24.3
Effective Green, g (s)		23.8	23.8	25.8	54.8						24.3	24.3
Actuated g/C Ratio		0.26	0.26	0.29	0.61						0.27	0.27
Clearance Time (s)		5.8	5.8	5.2	5.8						5.1	5.1
Vehicle Extension (s)		2.5	2.5	5.0	2.5						3.0	3.0
Lane Grp Cap (vph)		967	474	490	2226						866	389
v/s Ratio Prot		0.16		c0.32	0.28							
v/s Ratio Perm			c0.19								0.25	0.17
v/c Ratio		0.60	0.73	1.11	0.47						0.91	0.64
Uniform Delay, d1		28.9	30.1	32.1	9.6						31.8	29.0
Progression Factor		1.00	1.00	0.83	2.25						1.00	1.00
Incremental Delay, d2		2.7	9.4	53.6	0.1						15.1	7.9
Delay (s)		31.6	39.5	80.1	21.7						46.9	36.9
Level of Service		C	D	F	C						D	D
Approach Delay (s)		34.9			41.8			0.0			43.8	
Approach LOS		C			D			A			D	
Intersection Summary												
HCM 2000 Control Delay			40.6			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			16.1			
Intersection Capacity Utilization			99.0%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
12: I-605 nb off-ramp/Rivergrade Road Nb & Los Angeles Street

Future with Project AM
08/06/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Traffic Volume (veh/h)	373	498	0	0	1000	206	401	543	330	0	0	0
Future Volume (veh/h)	373	498	0	0	1000	206	401	543	330	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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					
Adj Sat Flow, veh/h/ln	1870	1945	0	0	1870	1945	1900	1870	1900			
Adj Flow Rate, veh/h	405	541	0	0	1087	0	436	590	359			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0			
Cap, veh/h	336	1656	0	0	715		459	646	410			
Arrive On Green	0.06	0.15	0.00	0.00	0.20	0.00	0.43	0.43	0.43			
Sat Flow, veh/h	1781	3793	0	0	3647	1648	1064	1500	952			
Grp Volume(v), veh/h	405	541	0	0	1087	0	744	0	641			
Grp Sat Flow(s),veh/h/ln	1781	1848	0	0	1777	1648	1817	0	1699			
Q Serve(g_s), s	17.0	11.8	0.0	0.0	18.1	0.0	35.5	0.0	31.0			
Cycle Q Clear(g_c), s	17.0	11.8	0.0	0.0	18.1	0.0	35.5	0.0	31.0			
Prop In Lane	1.00		0.00	0.00		1.00	0.59		0.56			
Lane Grp Cap(c), veh/h	336	1656	0	0	715		783	0	732			
V/C Ratio(X)	1.20	0.33	0.00	0.00	1.52		0.95	0.00	0.87			
Avail Cap(c_a), veh/h	336	1656	0	0	715		785	0	734			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.77	0.77	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	42.2	26.2	0.0	0.0	35.9	0.0	24.7	0.0	23.4			
Incr Delay (d2), s/veh	111.6	0.4	0.0	0.0	241.0	0.0	21.3	0.0	12.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	18.4	5.6	0.0	0.0	31.3	0.0	18.9	0.0	14.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	153.8	26.6	0.0	0.0	276.9	0.0	46.0	0.0	35.6			
LnGrp LOS	F	C	A	A	F		D	A	D			
Approach Vol, veh/h	946			1087			1385					
Approach Delay, s/veh	81.1			276.9			41.2					
Approach LOS	F			F			D					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	46.1			22.2			23.9			43.9		
Change Period (Y+Rc), s	5.8			* 5.2			5.8			5.1		
Max Green Setting (Gmax), s	39.2			* 17			18.0			38.9		
Max Q Clear Time (g_c+I1), s	13.8			19.0			20.1			37.5		
Green Ext Time (p_c), s	6.4			0.0			0.0			1.2		

Intersection Summary

HCM 6th Ctrl Delay	127.2
HCM 6th LOS	F

Notes

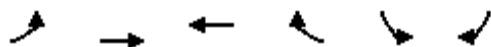
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary

1: Arrow Hwy & I-605 Off-ramp

Future with Project AM
08/06/2019



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	1772	510	0	301	454
Future Volume (veh/h)	0	1772	510	0	301	454
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	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h	0	1926	554	0	327	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2
Cap, veh/h	0	3359	2338	0	376	
Arrive On Green	0.00	0.66	0.66	0.00	0.21	0.00
Sat Flow, veh/h	0	5443	3741	0	1781	1585
Grp Volume(v), veh/h	0	1926	554	0	327	0
Grp Sat Flow(s),veh/h/ln	0	1702	1777	0	1781	1585
Q Serve(g_s), s	0.0	16.6	5.1	0.0	14.2	0.0
Cycle Q Clear(g_c), s	0.0	16.6	5.1	0.0	14.2	0.0
Prop In Lane	0.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h	0	3359	2338	0	376	
V/C Ratio(X)	0.00	0.57	0.24	0.00	0.87	
Avail Cap(c_a), veh/h	0	3359	2338	0	563	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	7.5	5.5	0.0	30.5	0.0
Incr Delay (d2), s/veh	0.0	0.7	0.1	0.0	9.5	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	0.0	4.4	1.3	0.0	6.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	8.2	5.6	0.0	40.0	0.0
LnGrp LOS	A	A	A	A	D	
Approach Vol, veh/h		1926	554		327	A
Approach Delay, s/veh		8.2	5.6		40.0	
Approach LOS		A	A		D	
Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		58.4		21.6		58.4
Change Period (Y+Rc), s		5.8		* 4.7		5.8
Max Green Setting (Gmax), s		44.2		* 25		44.2
Max Q Clear Time (g_c+I1), s		18.6		16.2		7.1
Green Ext Time (p_c), s		15.7		0.7		3.7
Intersection Summary						
HCM 6th Ctrl Delay			11.4			
HCM 6th LOS			B			

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

HCM Unsignalized Intersection Capacity Analysis

Future with Project AM

2: Arrow Hwy

08/06/2019

																		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR						
Lane Configurations		↑↑	↗		↑↑	↗												
Traffic Volume (veh/h)	0	1462	458	0	473	306	0	0	0	0	0	0						
Future Volume (Veh/h)	0	1462	458	0	473	306	0	0	0	0	0	0						
Sign Control		Free			Free			Stop			Stop							
Grade		0%			0%			0%			0%							
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						
Hourly flow rate (vph)	0	1589	498	0	514	333	0	0	0	0	0	0						
Pedestrians																		
Lane Width (ft)																		
Walking Speed (ft/s)																		
Percent Blockage																		
Right turn flare (veh)																		
Median type	None			None														
Median storage (veh)																		
Upstream signal (ft)	544																	
pX, platoon unblocked				0.75			0.75	0.75	0.75	0.75	0.75							
vC, conflicting volume	514			1589			1846	2103	794	1308	2103	257						
vC1, stage 1 conf vol																		
vC2, stage 2 conf vol																		
vCu, unblocked vol	514			1116			1459	1802	55	742	1802	257						
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9						
tC, 2 stage (s)																		
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3						
p0 queue free %	100			100			100	100	100	100	100	100						
cM capacity (veh/h)	1048			465			68	59	749	228	59	742						
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3												
Volume Total	794	794	498	257	257	333												
Volume Left	0	0	0	0	0	0												
Volume Right	0	0	498	0	0	333												
cSH	1700	1700	1700	1700	1700	1700												
Volume to Capacity	0.47	0.47	0.29	0.15	0.15	0.20												
Queue Length 95th (ft)	0	0	0	0	0	0												
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0												
Lane LOS																		
Approach Delay (s)	0.0			0.0														
Approach LOS																		
Intersection Summary																		
Average Delay			0.0															
Intersection Capacity Utilization			43.7%			ICU Level of Service			A									
Analysis Period (min)			15															

HCM 6th Signalized Intersection Summary

5: Live Oak Avenue

Future with Project AM

08/06/2019

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑	↵	↑↑		
Traffic Volume (veh/h)	1084	1755	689	1179	0	0
Future Volume (veh/h)	1084	1755	689	1179	0	0
Initial Q (Qb), veh	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No		
Adj Sat Flow, veh/h/ln	1870	1945	1870	1945		
Adj Flow Rate, veh/h	1178	1908	749	1282		
Peak Hour Factor	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	2		
Cap, veh/h	1765	819	679	3458		
Arrive On Green	0.50	0.50	0.38	0.94		
Sat Flow, veh/h	3647	1648	1781	3793		
Grp Volume(v), veh/h	1178	1908	749	1282		
Grp Sat Flow(s),veh/h/ln	1777	1648	1781	1848		
Q Serve(g_s), s	22.5	44.7	34.3	3.1		
Cycle Q Clear(g_c), s	22.5	44.7	34.3	3.1		
Prop In Lane		1.00	1.00			
Lane Grp Cap(c), veh/h	1765	819	679	3458		
V/C Ratio(X)	0.67	2.33	1.10	0.37		
Avail Cap(c_a), veh/h	1765	819	679	3458		
HCM Platoon Ratio	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	17.1	22.6	27.9	0.3		
Incr Delay (d2), s/veh	1.0	602.5	66.3	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.2	151.7	25.6	0.0		
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.0	625.2	94.2	0.4		
LnGrp LOS	B	F	F	A		
Approach Vol, veh/h	3086			2031		
Approach Delay, s/veh	393.4			35.0		
Approach LOS	F			C		
Timer - Assigned Phs			3	4		8
Phs Duration (G+Y+Rc), s			39.5	50.5		90.0
Change Period (Y+Rc), s			* 5.2	5.8		5.8
Max Green Setting (Gmax), s			* 34	44.7		84.2
Max Q Clear Time (g_c+I1), s			37.3	47.7		6.1
Green Ext Time (p_c), s			0.0	0.0		12.3
Intersection Summary						
HCM 6th Ctrl Delay			251.1			
HCM 6th LOS			F			
Notes						

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection Level Of Service Report
Intersection 6: Live Oak Ave and I-605 NB Off-ramp

Control Type:	Two-way stop	Delay (sec / veh):	1,119.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	1 hour	Volume to Capacity (v/c):	1.604

Intersection Setup

Name							Live Oak Ave			Live Oak 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	15.00	12.00	12.00	17.00	12.00	13.00	12.00	12.00	13.50	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name							Live Oak Ave			Live Oak Ave		
Base Volume Input [veh/h]	0	0	660	0	0	596	0	1037	0	0	959	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000	1.0400	1.0000	1.0000	1.0400	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	20	0	0	129	0	4	0	0	136	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]	0	0	706	0	0	749	0	1082	0	0	1133	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	177	0	0	187	0	271	0	0	283	0
Total Analysis Volume [veh/h]	0	0	706	0	0	749	0	1082	0	0	1133	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.00	1.45	0.00	0.00	1.60	0.00	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	853.72	0.00	0.00	1119.23	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS			F			F		A			A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	119.20	0.00	0.00	148.52	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2980.01	0.00	0.00	3713.05	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	853.72			1119.23			0.00			0.00		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	392.65											
Intersection LOS	F											

HCM Signalized Intersection Capacity Analysis 11: Los Angeles Street & Rivergrade Sb/605 offramp

Future with Project AM
08/06/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑↑	↑
Traffic Volume (vph)	0	1240	525	392	757	0	0	0	0	206	337	303
Future Volume (vph)	0	1240	525	392	757	0	0	0	0	206	337	303
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	16	11	13	13	12	12	12	12	12	12
Total Lost time (s)		5.8	5.8	5.2	5.8						5.1	5.1
Lane Util. Factor		0.95	1.00	1.00	0.95						0.91	0.91
Flt		1.00	0.85	1.00	1.00						0.99	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.98	1.00
Satd. Flow (prot)		3657	1794	1711	3657						3293	1441
Flt Permitted		1.00	1.00	0.95	1.00						0.98	1.00
Satd. Flow (perm)		3657	1794	1711	3657						3293	1441
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	1348	571	426	823	0	0	0	0	224	366	329
RTOR Reduction (vph)	0	0	71	0	0	0	0	0	0	0	7	210
Lane Group Flow (vph)	0	1348	500	426	823	0	0	0	0	0	632	70
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		2		1	6						4	
Permitted Phases			2							4		4
Actuated Green, G (s)		34.9	34.9	25.1	65.2						13.9	13.9
Effective Green, g (s)		34.9	34.9	25.1	65.2						13.9	13.9
Actuated g/C Ratio		0.39	0.39	0.28	0.72						0.15	0.15
Clearance Time (s)		5.8	5.8	5.2	5.8						5.1	5.1
Vehicle Extension (s)		2.5	2.5	5.0	2.5						3.0	3.0
Lane Grp Cap (vph)		1418	695	477	2649						508	222
v/s Ratio Prot		c0.37		c0.25	0.23							
v/s Ratio Perm			0.28								0.19	0.05
v/c Ratio		0.95	0.72	0.89	0.31						1.24	0.32
Uniform Delay, d1		26.7	23.4	31.2	4.4						38.0	33.8
Progression Factor		1.00	1.00	0.81	2.80						1.00	1.00
Incremental Delay, d2		14.7	6.3	2.4	0.0						125.8	3.7
Delay (s)		41.4	29.7	27.7	12.4						163.9	37.5
Level of Service		D	C	C	B						F	D
Approach Delay (s)		37.9			17.6			0.0			125.4	
Approach LOS		D			B			A			F	
Intersection Summary												
HCM 2000 Control Delay			51.4			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				16.1		
Intersection Capacity Utilization			99.4%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 6th Signalized Intersection Summary
 12: I-605 nb off-ramp/Rivergrade Road Nb & Los Angeles Street

Future with Project AM
 08/06/2019

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	316	1120	0	0	629	146	527	346	814	0	0	0
Future Volume (veh/h)	316	1120	0	0	629	146	527	346	814	0	0	0
Initial Q (Qb), veh	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			
Parking Bus, Adj	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			
Adj Sat Flow, veh/h/ln	1870	1945	0	0	1870	1945	1900	1870	1900			
Adj Flow Rate, veh/h	343	1217	0	0	684	0	573	376	885			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	0	2	0			
Cap, veh/h	336	1651	0	0	711		474	311	685			
Arrive On Green	0.06	0.15	0.00	0.00	0.20	0.00	0.43	0.43	0.43			
Sat Flow, veh/h	1781	3793	0	0	3647	1648	1096	719	1585			
Grp Volume(v), veh/h	343	1217	0	0	684	0	949	0	885			
Grp Sat Flow(s),veh/h/ln	1781	1848	0	0	1777	1648	1816	0	1585			
Q Serve(g_s), s	17.0	28.3	0.0	0.0	17.2	0.0	38.9	0.0	38.9			
Cycle Q Clear(g_c), s	17.0	28.3	0.0	0.0	17.2	0.0	38.9	0.0	38.9			
Prop In Lane	1.00		0.00	0.00		1.00	0.60		1.00			
Lane Grp Cap(c), veh/h	336	1651	0	0	711		785	0	685			
V/C Ratio(X)	1.02	0.74	0.00	0.00	0.96		1.21	0.00	1.29			
Avail Cap(c_a), veh/h	336	1651	0	0	711		785	0	685			
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.20	0.20	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	42.2	33.3	0.0	0.0	35.7	0.0	25.6	0.0	25.6			
Incr Delay (d2), s/veh	26.9	0.6	0.0	0.0	25.7	0.0	106.0	0.0	142.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	10.5	13.9	0.0	0.0	9.5	0.0	38.7	0.0	40.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.1	33.9	0.0	0.0	61.4	0.0	131.5	0.0	167.6			
LnGrp LOS	F	C	A	A	E		F	A	F			
Approach Vol, veh/h	1560				684				1834			
Approach Delay, s/veh	41.7				61.4				148.9			
Approach LOS	D				E				F			
Timer - Assigned Phs	2				5				8			
Phs Duration (G+Y+Rc), s	46.0				22.2				44.0			
Change Period (Y+Rc), s	5.8				* 5.2				5.1			
Max Green Setting (Gmax), s	39.2				* 17				38.9			
Max Q Clear Time (g_c+I1), s	30.3				19.0				40.9			
Green Ext Time (p_c), s	6.8				0.0				0.0			

Intersection Summary

HCM 6th Ctrl Delay	93.2
HCM 6th LOS	F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.
 Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

APPENDIX L
Traffic Signal Warrant Worksheets

INTERSECTION:	
MAJOR:	Los Angeles Street
MINOR:	Project Driveway
SCENARIO	Future post-project Conditions

WARRANT 1 & 2 DATA INPUT

COUNT DATE

5/2/2018 and 5/3/2018

Urban or Rural ?

R

 → population?

	# Lanes
Both Approaches - Major Street	4
Higher Approach - Minor Street	1

ADT - 8 HOUR VOLUMES

** input highest to lowest **

Time Period	MAJOR Both Approaches	MINOR Highest Approach	80% MAJOR Both Approaches	80% MINOR Highest Approach
4:00-5:00PM			0	0
6:00-7:00PM			0	0
5:00-6:00PM			0	0
3:00-4:00PM			0	0
2:00-3:00PM			0	0
7:00-8:00PM			0	0
1:00-2:00PM			0	0
12:00-1:00PM			0	0

WARRANT 3 DATA INPUT

AM Total Vol.

1996

 PM Total Vol.

2631

PEAK HOUR TRAFFIC VOLUME DATA	AM PEAK	PM PEAK	AM DELAY
Major Street-Approach 1:	814	1854	18.2
Major Street-Approach 2:	1080	596	PM DELAY
Minor Street-Higher Volume App:	102	181	37.95

WARRANTS 4 PEDESTRIAN VOLUME

** input highest to lowest **

PART 1	Vehicle Vols	Pedestrian Vols	<u>Distance to Nearest Traffic Signal</u>
Time			Feet
4:00-5:00PM	0		
5:00-6:00PM	0		<u>School Age Ped Crossing</u>
3:00-4:00PM	0		Children
2:00-3:00PM	0		

PART 2	Vehicle Vols	Pedestrian Volumes
Time		
2:00-3:00PM	0	0

Ped Crossing - < 4 ft / sec ? yes or no

WARRANTS 5 SCHOOL CROSSING

Part C

VEH / HR AM Peak PM Peak

0

School Ages Ped Cross / Hr	School Ages Ped Cross / Day
AM PEAK	AM PEAK
PM PEAK	PM PEAK

NEW INTERSECTION - Figure 4C-103

double check where these values came from

Daily Traffic Volume	Conditon A	80%
Major Approach 1 12835	Satisfy? NO	NO
Major Approach 2 13787		
TOTAL (Both) Approaches 26622	Conditon B	
Minor Approach 1105	Satisfy? YES	YES
(Higher Volume)		

INTERSECTION: Los Angeles Street & Project Driveway

Figure 4C-101 (CA). Traffic Signal Warrants Worksheets (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume

SATISFIED* YES ☐ NO ☐

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	4:00-5:00PM	5:00-6:00PM	6:00-7:00PM	7:00-8:00PM	Hour
Both Approaches - Major Street		x					
Higher Approach - Minor Street	x						

*All plotted points fall above the curves in Figure 4C-1. (Urban Areas)	YES ☐	NO ☐
<u>OR</u> , All plotted points fall above the curves in Figure 4C-2. (Rural Areas)	YES ☐	NO ☐

WARRANT 3 - Peak Hour
(Part A or Part B must be satisfied)

SATISFIED YES ☒ NO ☐

PART A

SATISFIED YES ☐ NO ☒

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1 The total delay experienced for traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; <u>AND</u> 37.95 seconds in delay & 1 vehicle-hours of delay	YES ☐	NO ☒
2 The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; <u>AND</u>	YES ☒	NO ☐
3 The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	YES ☒	NO ☐

PART B

SATISFIED YES ☒ NO ☐

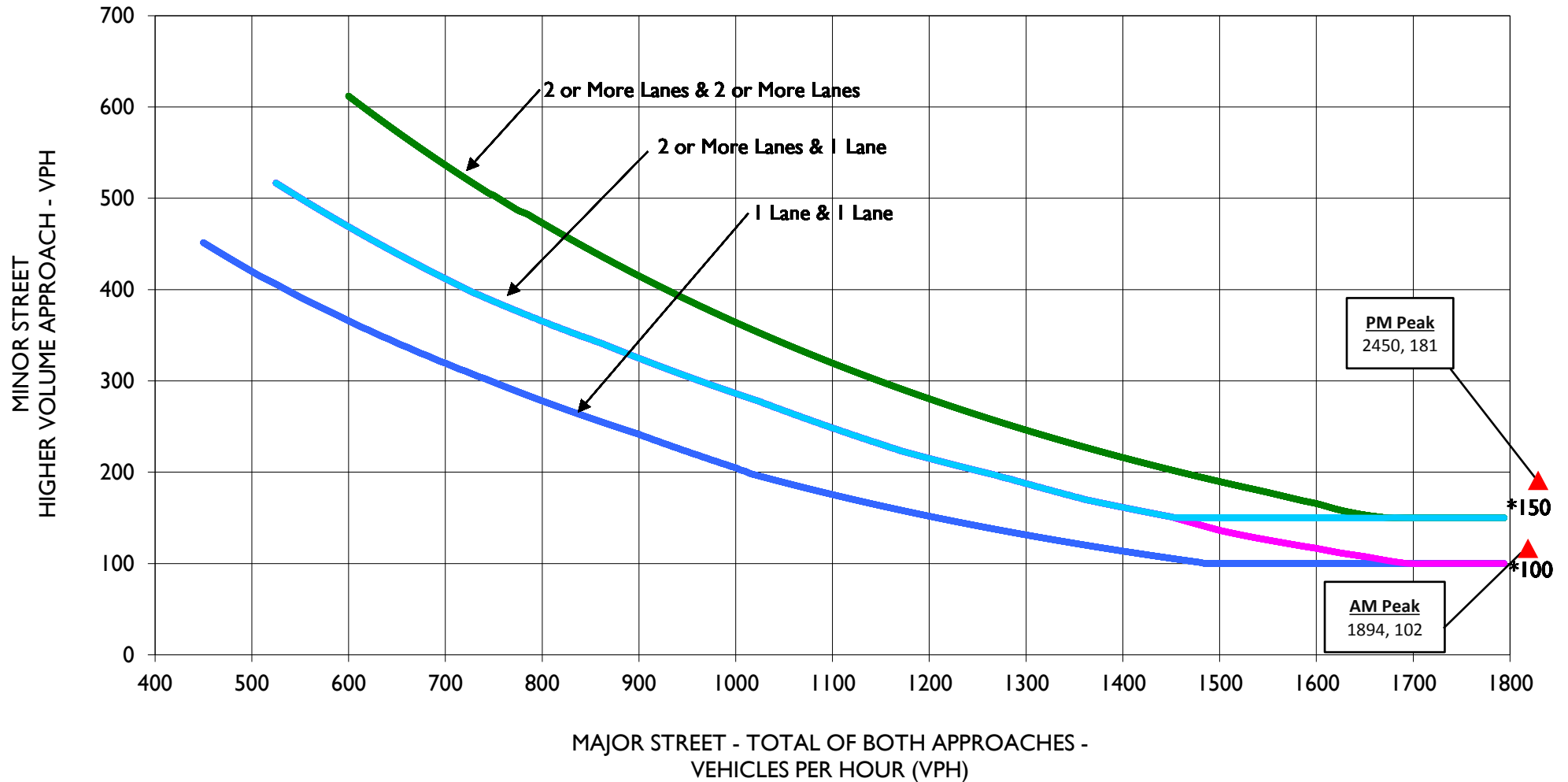
APPROACH LANES	One	2 or More	am peak	pm peak
Both Approaches - Major Street		x	1,894	2,450
Higher Approach - Minor Street	x		102	181

The plotted point falls above the curve in Figure 4C-3.	YES ☒	NO ☐
<u>OR</u> , The plotted point falls above the curve in Figure 4C-4.	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-3 Warrant 3
Project Driveway (South) and Los Angeles Street
AM (PM) Peak hour Traffic Signal Warrant Based on
California Manual on Uniform Traffic Control Devices, 2014
Existing Conditions



***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.

LEGEND

- ▲ Los Angeles Street (2 Lane Major Street)
- ▲ Project Driveway (1 Lane Minor Street)

Peak Hour Volumes Satisfy Warrants? YES