

Appendix

Appendix I Traffic Impact Analyses

Appendix

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May 10, 2019 | Technical Report

TRAFFIC IMPACT ANALYSIS

for the Christ's Church of the Valley Etiwanda Campus Expansion Project

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1. Executive Summary

This traffic impact analysis (TIA) has been prepared to analyze the potential traffic impacts for the proposed improvements to Christ's Church of the Valley (Church), Etiwanda Campus, in Rancho Cucamonga. Existing traffic conditions are used as the "baseline" for the analysis in this TIA and to evaluate the potential impacts of the proposed project. The overall purpose of this TIA is to inform the City's decision makers and the general public whether the proposed project would result in any significant impacts.

The proposed project would be at 7576 Etiwanda Avenue in the City of Rancho Cucamonga and is expected to be finalized in the fall of 2021. This analysis evaluates traffic impacts without and with the project for existing, opening year, and long-range traffic conditions. On weekdays the project would generate 6 trips in the AM peak hour and 18 trips in the PM peak hour. Because projects added contribution to the number of project weekday peak hour trips is a small fraction of the existing traffic (less than 0.5 percent) and would be dispersed via two access driveways, project traffic on weekdays would not cause a traffic impact to the circulation system. The project would generate 726 daily trips on Sundays, of which 324 vehicle trips would occur in the peak hour. Thirteen intersections have been included in this analysis for the Sunday peak hour traffic:

1. Victoria Park Lane at Base Line Road
2. Victoria Park Lane at Wine Cellar Court
3. Victoria Park Lane at Proposed Project Driveway
4. Victoria Park Lane at Long Meadow Drive
5. Victoria Park Lane at Church Street
6. I-15 Southbound Off-Ramps at Foothill Boulevard
7. I-15 Northbound On-Ramps at Foothill Boulevard
8. Etiwanda Avenue at Foothill Boulevard
9. Etiwanda Avenue at Church Street/Miller Avenue
10. Etiwanda Avenue at Existing Project Driveway
11. Etiwanda Avenue at Base Line Road
12. I-15 Southbound Off-Ramps at Base Line Road
13. I-15 Northbound On-Ramps at Base Line Road

The City of Rancho Cucamonga established a minimum of LOS D or better (lower) for local intersections. A significant impact would occur at a study area intersection if it would cause the level of service to deteriorate from satisfactory LOS D to unsatisfactory LOS E or F. All study area intersections currently operate at acceptable LOS during the Sunday peak hours for existing traffic conditions. Traffic conditions were also analyzed for Existing Plus Project, Opening Year 2021, and Horizon Year No Project and With Project. Trips

1. Executive Summary

related to ambient growth and cumulative projects were added to the background traffic conditions for the future year forecasts. All study area intersections would continue to operate at acceptable levels of service during the peak hours with the project under 2021 and 2035 traffic conditions, except for intersection #10, Etiwanda Avenue at Existing Project Driveway. The high delays would result from added egress church traffic causing delays within the church internal driveways. Northbound and southbound traffic on Etiwanda Avenue does not stop at the intersection. The delays would occur in the church driveways, however, would not result substantial traffic at the northbound and southbound lanes at Etiwanda. Therefore, impacts to roadway system would be less than significant.

Vehicular access to the campus will continue to be via the existing driveway, which will expand into one left and right turn only lane off Etiwanda Avenue, with the addition of a new ingress/egress driveway on Victoria Park Lane. Additionally, a new driveway on Long Meadow Drive will be constructed for emergency vehicle access only. The location of the new ingress/egress driveway will be on the west side of the project site via Victoria Park Lane and will have turn restrictions to allow only right-in/right-out movements. Given the low traffic volumes on Victoria Park Lane it is not anticipated that ingress and egress traffic from the project access would result in queues and delays for traffic on Victoria Park Lane. At the existing driveway, the traffic volumes would increase with the project. The queues at the existing access driveway would be contained within the church site and would not cause substantial delays and queues on Etiwanda Avenue.

2. Introduction

2.1 PROJECT OVERVIEW

The Christ's Church of the Valley is proposing expansion and renovation to its Etiwanda Campus at 7576 Etiwanda Avenue in the City of Rancho Cucamonga. The site location (see Figure 1, *Site Location*) is between Etiwanda Avenue and Victoria Park Lane, 0.15 miles north of Church Street. Single-family homes are immediately adjacent to the north and south, and across the street to the east and west (see Figure 2, *Aerial Photograph*). Approximately 0.2 mile southwest of the project site is the Victoria Gardens shopping center.

The new development shown in Figure 3, *Site Plan*, includes: a new auditorium building, children's building, and parking lot. This 36,000-square-foot, two-story auditorium building will hold all the services for the church. Services include: daily and weekly church services, funerals, weddings, etc. The building would hold 600 more seats than the existing chapel, bringing the new seating capacity to 1,200. The existing chapel will function similarly to the new auditorium building. Its primary usage will be for offices and small gatherings (under 200) during the week (weekday and weekend), primarily for weddings, funerals, bible studies, etc. As for the children's building, it will stretch over 11,000 square feet. Predominant use of this building will be for children's teaching and play for newborns to 3rd graders during church services and events. As a note, when services or events are taking place in the new auditorium building, the existing chapel building will not hold any events or services. Therefore, for traffic purposes, a full-capacity weekend service (1,200 congregants) is considered as a worst-case scenario.

This new parking lot will be built first to accommodate for parking when the existing parking area is demolished and cleared for construction of the new auditorium building. The parking improvements will not only entail renovating the existing parking lot on the western half of the campus, but also the development of a new, 200-space parking lot to make room for the new auditorium building. The other existing church buildings and structures on the campus will remain in their existing conditions and not be demolished, improved, or modified.

Vehicular access to the campus will continue to be via the existing driveway off Etiwanda Avenue as well as a new ingress/egress driveway on Victoria Park Lane. To anticipate for the upcoming traffic, the existing egress driveway will be widening to two lanes (one right and one left turn only). Construction of the new auditorium is anticipated to be finalized in the fall of 2021. For the purpose of this analysis, a three-year timeframe is assumed for Opening Year (2021).

2. Introduction

2.2 METHODOLOGY

The City of Rancho Cucamonga follows the San Bernardino Associated Governments (SANBAG), which has been renamed San Bernardino County Transportation Authority (SBCTA), Congestion Management Program (CMP) traffic impact study guidelines for analyzing traffic impacts from projects on the roadway network. The methodology used for the preparation of this traffic impact study is consistent with these guidelines. A memorandum of understanding (MOU) was prepared and reviewed by the City to establish the methodologies and key assumptions for the preparation of this traffic study. The MOU is in Appendix A.

2.2.1 Definition of Level of Service

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

2.2.2 Intersection LOS

The methodology used to assess the operation of a signalized intersection during the traffic peak hours on a Sunday is based on the 2010 Highway Capacity Manual (HCM 2010). The peak hours selected for analysis are the highest volumes that occur in four consecutive 15-minute periods from 9 AM to 1 PM on a Sunday. The Sunday hour was determined based on a review of 24-hour traffic counts on three roadway segments.

Per the HCM 2010 methodology, overall average intersection delay at signalized intersections was calculated, and the worst-case approach delay was calculated at unsignalized intersections. The level of service corresponds to the delay calculated in seconds per vehicle. Table 1, *Intersection Level of Service Description*, describes the level of service concept and the operating conditions expected under each level of service for signalized and unsignalized intersections. Intersection operation was analyzed using the Synchro software.

2. Introduction

Table 1 Intersection Level of Service Descriptions

LOS	Description	Average Delay Per Vehicle (seconds)	
		Signalized	Unsignalized
A	Level of Service A occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	0 to 10.00	0 to 10.00
B	Level of Service B generally occurs with good progression and/or short cycle lengths. More vehicles stop than for Level of Service A, causing higher levels of average total delay.	10.01 to 20.00	10.01 to 15.00
C	Level of Service C generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	20.01 to 35.00	15.01 to 25.00
D	Level of Service D generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	35.01 to 55.00	25.01 to 35.00
E	Level of Service E is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume to capacity ratios. Individual cycle failures are frequent occurrences.	55.01 to 80.00	35.01 to 50.00
F	Level of Service F is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume to capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	80.01 and up	50.01 and up

Notes: Source: Highway Capacity Manual, Transportation Research Board, 2010.

LOS Criteria and Threshold of Significance

City of Rancho Cucamonga

The City of Rancho Cucamonga established a minimum of LOS D or better (lower) for local intersections. Deficient local intersections are those found to operate at LOS E or F. Intersections under this category would require mitigation to improve the LOS to satisfactory levels, that is, to LOS D or better. These projects would have a significant impact at a study area intersection if it would cause the level of service to deteriorate from satisfactory LOS to unsatisfactory LOS.

For unsignalized intersections, an impact would occur if the intersection meets the Manual of Traffic Control Devices (MUTCD) warrants for installation of a traffic signal.

2. Introduction

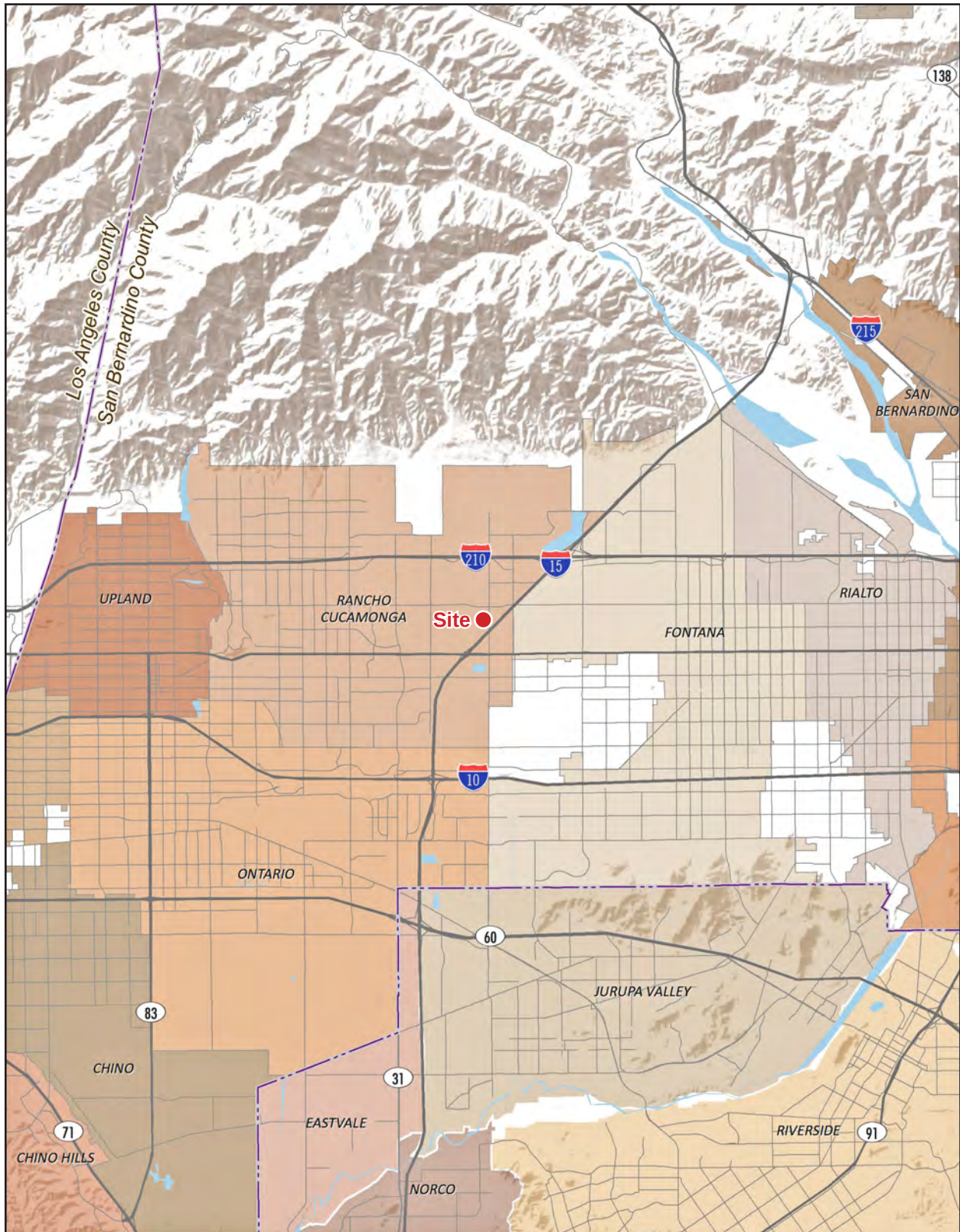
San Bernardino County CMP

The San Bernardino County Transportation Authority states in the 2016 CMP Update that all CMP segments should operate at LOS E or better. The project would have a significant impact at a study area CMP facility if it would cause the level of service to deteriorate from satisfactory LOS to unsatisfactory LOS. If a facility is already operating at unsatisfactory LOS and the project would cause an increase in delay, it is considered a significant cumulative impact. Interstate 15 is the only CMP facility in the study area.

Caltrans

Caltrans concept route 15 states that in accordance with the San Bernardino CMP, the I-15 route concept is LOS "E" for the urbanized portions of the route. The rationale for maintaining LOS "E" in the urbanized areas of the I-15 is to achieve a reasonable balance between desired levels of mobility, forecast travel demand, urban development, and constrained financial transportation resources.

Figure 1 - Site Location



Note: Unincorporated county areas are shown in white.

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Scale (Miles)

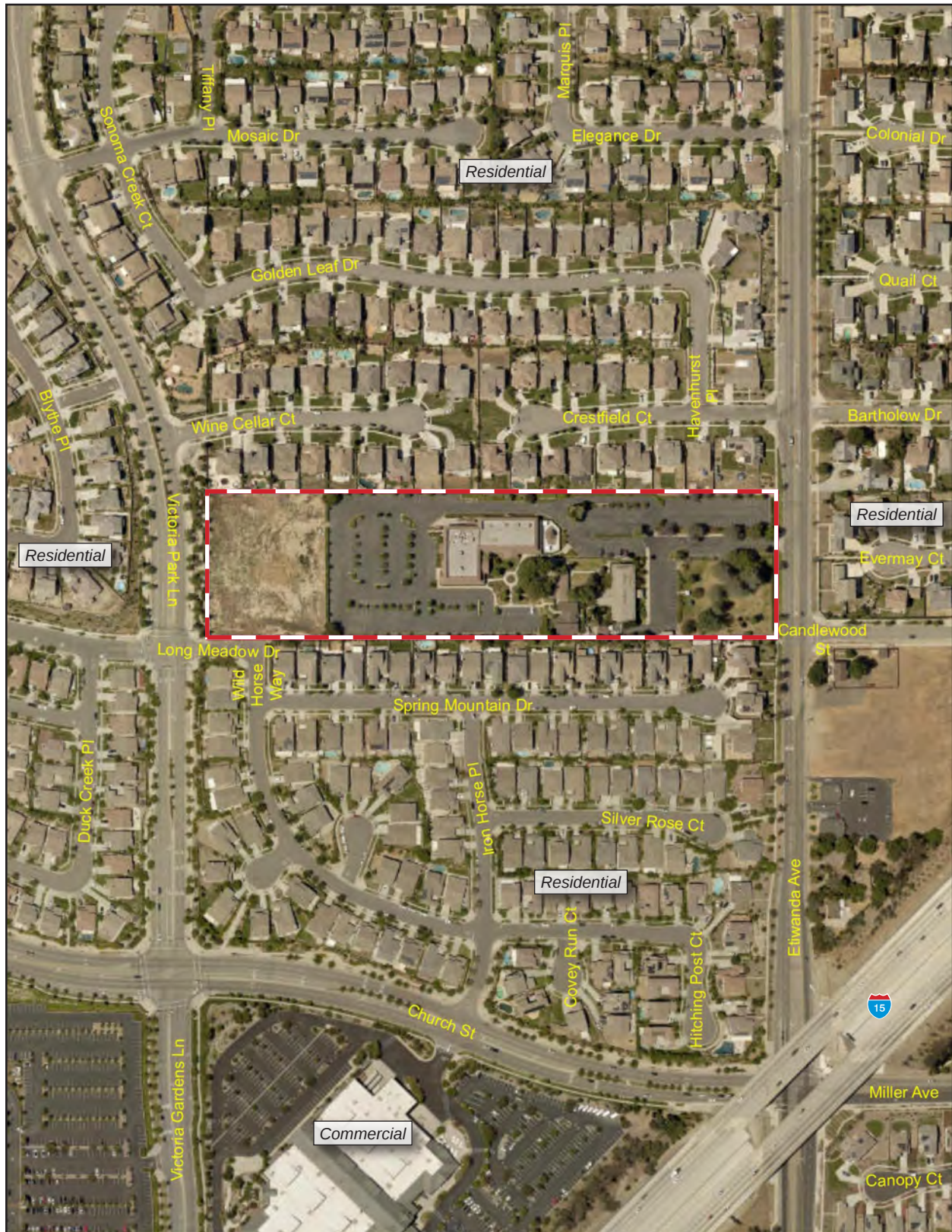


Source: ESRI, 2018

2. Introduction

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Figure 2 - Aerial Photograph



— Project Boundary

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Scale (Feet)

Source: ESRI, 2018



PlaceWorks

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Figure 3 - Site Plan



PlaceWorks

2. Introduction

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3. Existing Conditions

3.1 STUDY AREA ROADWAY NETWORK

3.1.1 Surrounding Street System

Roadways that would be utilized for project trips include: Etiwanda Avenue, Victoria Park Lane, Wine Cellar Court, Base Line Road, Long Meadows Drive, Church Street / Miller Avenue, and Interstate 15. Figure 4, *City of Rancho Cucamonga Circulation Map*, shows the classifications of the roadways in the study area.

- **Interstate 15:** Interstate 15 is a north-south freeway that provides regional access to the study area contains on-ramps and off-ramps at Base Line Road and Foothill Boulevard.
- **Etiwanda Avenue:** This north-south roadway is classified as a secondary roadway in the study area according to the City of Rancho Cucamonga's 2010 General Plan. It contains two approach lanes in each direction with center left turn lanes, no street parking, Class I bicycle plans, and paved sidewalks. The posted speed limit is 45 mph. This roadway is also listed as a truck route.
- **Victoria Park Lane:** This north-south roadway is listed as a secondary roadway according to the City of Rancho Cucamonga's General Plan. It contains two approach lanes in each direction, raised medians, paved sidewalks, and bike lanes. The speed limit ranges from 35 mph to 45 mph.
- **Base Line Road:** This east-west roadway is defined as a major divided arterial in the City of Rancho Cucamonga's 2010 General Plan. It contains three approach lanes in each direction, Class II bicycle plans, raised medians, paved sidewalks, and storage lanes. This roadway is also listed as a truck route.
- **Foothill Boulevard:** This east-west roadway is classified as a major divided arterial and truck route according to the City of Rancho Cucamonga's 2010 General Plan. It contains three approach lanes in each direction, paved sidewalks, bike lanes, and raised medians.
- **Church Street/Miller Avenue:** This roadway is classified as a modified secondary with median in the vicinity of the study area, with two approach lanes in each direction. There are storage lanes, paved sidewalks, bike lanes, and raised medians. The posted speed limit here is 40 mph.

3. Existing Conditions

- **Long Meadows Drive:** This east-west roadway contains one approach lane in each direction. There are paved sidewalks, on-street parking, and a speed limit of 25 mph.
- **Wine Cellar Court:** This roadway is a cul-de-sac with one approach lane in each. It contains paved sidewalks, street parking, and residential homes. The speed limit here is 25 mph

3.1.2 Study Area Intersections

The study area was defined in an MOU based on a review of the project's trip generation and distribution. The roadway network and study intersections are shown in Figure 5, *Roadway Network and Study Intersections*. The number of thru lanes is identified for existing roadways and the existing intersection controls. The following intersections were analyzed:

1. Victoria Park Lane at Base Line Road
2. Victoria Park Lane at Wine Cellar Court
3. Victoria Park Lane at Proposed Project Driveway
4. Victoria Park Lane at Long Meadow Drive
5. Victoria Park Lane at Church Street
6. I-15 Southbound Off-Ramps at Foothill Boulevard
7. I-15 Northbound On-Ramps at Foothill Boulevard
8. Etiwanda Avenue at Foothill Boulevard
9. Etiwanda Avenue at Church Street/Miller Avenue
10. Etiwanda Avenue at Existing Project Driveway
11. Etiwanda Avenue at Base Line Road
12. I-15 Southbound Off-Ramps at Base Line Road
13. I-15 Northbound On-Ramps at Base Line Road

3.2 EXISTING INTERSECTIONS OPERATIONS

3.2.1 Existing Traffic Volumes

Roadway segments traffic volumes were collected for a period of 24 hours during two weekdays and a Sunday. The counts were taken on Wednesday April 11, Thursday April 12, and Sunday April 15, 2018. The Sunday counts were conducted when the church had typical services. The roadway counts were taken at the following roadway segments:

- Etiwanda Avenue between Barthlow Drive and Candlewood Street
- Victoria Park Lane between Long Meadow Drive and Wine Cellar Street
- Church access driveway at Etiwanda Avenue.

The roadway segment counts on Etiwanda Avenue and on Victoria Park Lane were collected to review the

3. Existing Conditions

hourly traffic patterns on public roads. The roadway counts on the church access driveway were taken to review the traffic patterns related to church operations and are discussed in more detail in Section 4, *Project Traffic*. The results of the roadway segment counts and figures illustrating the traffic volumes per hour on each direction are in Appendix B. The roadway segment counts show that the highest traffic volumes on Sunday generally occur midday between 12 and 2 PM.

Sunday peak-hour intersection turn movement volumes were collected at the study-area intersections on Sunday, April 22, 2018, from 10 AM to 1 PM. The hours were selected based on a review of the hourly traffic volumes along major roadways and on the activity at the church and its potential to cause traffic impacts. Most of the peak hour at study intersections occurred around noon, consistent with the results of the roadway segment counts taken on April 15, 2018. Traffic count worksheets and the existing AM and PM peak-hour intersection turn-movement volumes are in Appendix B.

3.2.2 Existing Conditions Intersection Operations Analysis

The intersection operations analysis results are summarized in Table 2, *Existing Sunday Peak Hour Intersection Levels of Service*. LOS calculation worksheets for existing conditions are in Appendix C. All study area intersections currently operate at acceptable LOS during the Sunday peak hour.

Table 2 Existing Sunday Peak Hour Intersection Levels of Service

Intersection	Traffic Control	Delay (sec/veh)	LOS
1. Victoria Park Lane at Base Line Road	Signal	22.6	C
2. Victoria Park Lane at Wine Cellar Court	Stop	8.8	A
3. Victoria Park Lane at Proposed Project Driveway	-	-	-
4. Victoria Park Lane at Long Meadow Drive	Signal	3.4	A
5. Victoria Park Lane at Church Street	Signal	20.9	C
6. I-15 Southbound Off-Ramps at Foothill Boulevard	Signal	10.7	B
7. I-15 Northbound On-Ramps at Foothill Boulevard	Signal	24.1	C
8. Etiwanda Avenue at Foothill Boulevard	Signal	32.1	C
9. Etiwanda Avenue at Church Street/Miller Avenue	Signal	15.2	B
10. Etiwanda Avenue at Existing Project Driveway	Stop	19.0	C
11. Etiwanda Avenue at Base Line Road	Signal	20.6	C
12. I-15 Southbound Off-Ramps at Base Line Road	Signal	8.4	A
13. I-15 Northbound On-Ramps at Base Line Road	Signal	8.1	A

Notes: LOS calculation worksheets in Appendix C.

Bold=deficient operations

Stop=Stop control

For stop-control intersections the V/C (volume to capacity) is not reported

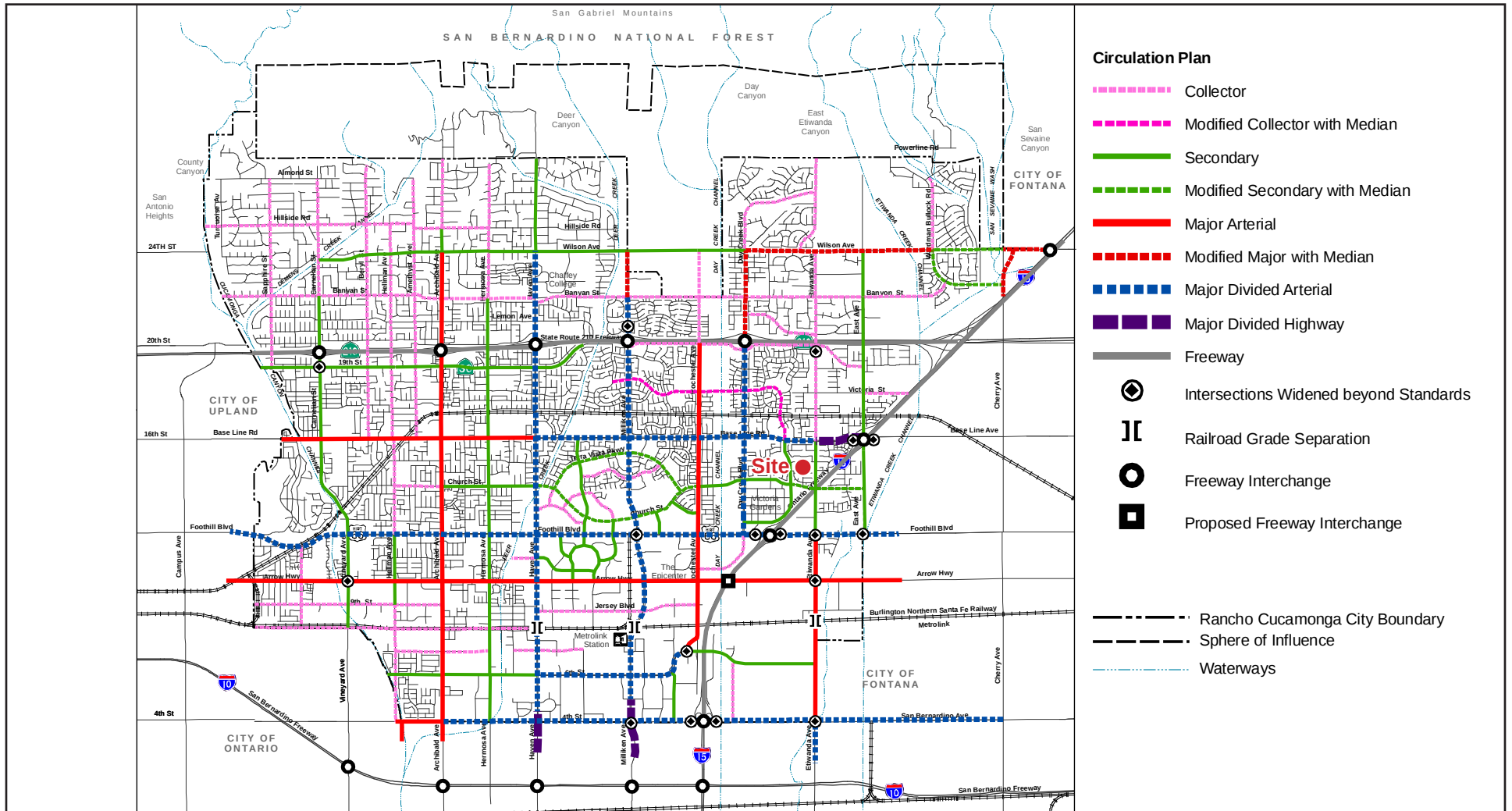
Intersection 3 would be implemented with the project.

3. Existing Conditions

3.3 TRANSIT SERVICE AND NONMOTORIZED CIRCULATION

The San Bernardino County Public Transit (also called OMNITRANS) operates public transit bus routes in the City of Rancho Cucamonga. Routes 66 and 67 are the closest routes to the site and operate seven days a week. Route 66 runs east-west along Foothill Boulevard; the closest bus stop is roughly $\frac{3}{4}$ mile from the project site at Foothill and Etiwanda and has paved sidewalks. Route 67 runs east-west along Baseline Road; the nearest bus stops are at Baseline at Victor Park and Baseline at Etiwanda. Each bus stop is approximately $\frac{1}{4}$ mile from the project site and has paved sidewalks.

Figure 4 - City of Rancho Cucamonga Circulation Map



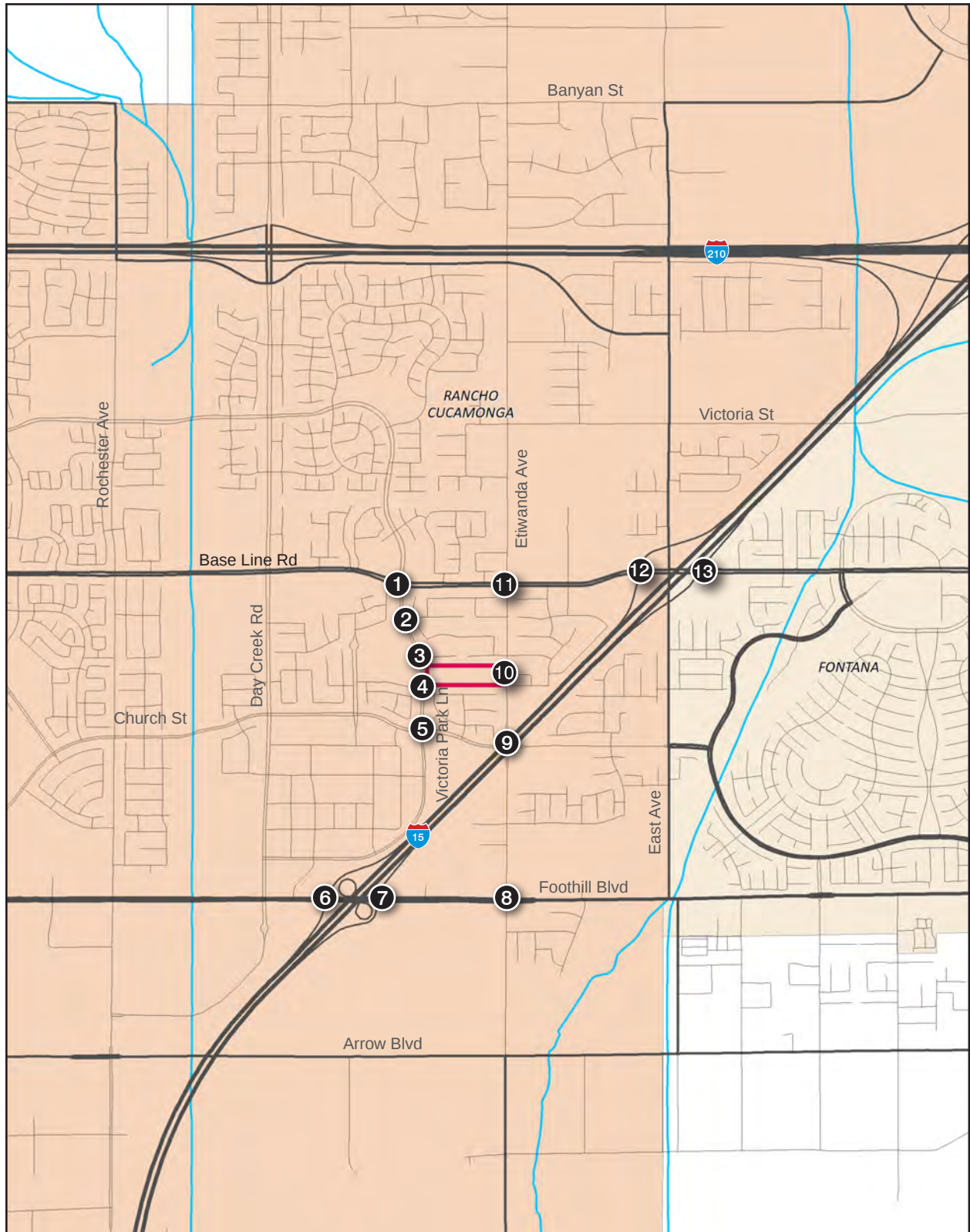
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Scale (Feet)



3. Existing Conditions

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Figure 5 - Roadway Network and Study Intersections



Note: Unincorporated county areas are shown in white.

— Project Boundary



Study Intersections (13)

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Scale (Feet)



Source: ESRI, 2018

3. Existing Conditions

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4. Project Traffic

4.1 TRIP GENERATION

The project trip generation was calculated based on rates in the ITE Trip Generation Manual (10th edition) for Land Use 560, “Church.” Table 3 shows the vehicle trip generation rates and the trips that would be generated by the additional 600 seats based on ITE trip generation rates. On weekdays, the project would generate only 6 trips for AM peak hour and 18 trips during PM peak hour. On Sunday, there would be 324 trips in the project peak hour and 726 daily trips.

Table 3 Project Trip Generation

Land Use	Unit	Trip Generation ¹									Sunday Daily
		AM Peak Hour			PM Peak Hour			Sunday Peak Hour of Generator			
		In	Out	Total	In	Out	Total	In	Out	Total	
Church	Seats	0.01	0.01	0.02	0.01	0.02	0.03	0.26	0.28	0.54	1.21
Project Trip Generation	600	3	3	6	7	11	18	159	165	324	726

¹ Trip generation rates for land use code 560 (Church), per the ITE Trip Generation Manual 10th Edition.

As discussed in Section 3.2.1, traffic counts were taken at the church’s existing access driveway at Etiwanda Avenue on two weekdays and on a Sunday during typical church services at the current seating capacity of 600. To verify the ITE trip generation estimates with existing church operations, church traffic on Sunday was compared to traffic volumes using ITE trip generation estimates for a 600-seat church. The results of the weekday and weekend counts are summarized in Table 4, which shows that the existing church trips are comparable to the estimates using ITE rates. Although the ITE estimates are slightly lower during weekday peak hours, the Sunday estimates are slightly higher. For the purpose of this analysis, the ITE trip rates are utilized. **The project is estimated to generate 726 daily trips on Sundays, with 324 trips in the Sunday peak hour.**

4. Project Traffic

Table 4 Project Trip Generation Comparison

Source	Trip Generation ¹									Sunday Daily
	AM Peak Hour			PM Peak Hour			Sunday Peak Hour of Generator			
	In	Out	Total	In	Out	Total	In	Out	Total	
ITE Estimates	3	3	6	7	11	18	159	165	324	726
Weekday Driveway Counts ²	4	7	11	15	14	29	-	-	-	-
Difference Weekday ³	-1	-4	-5	-8	-3	-11	-	-	-	-
Sunday Driveway Counts	-	-	-	-	-	-	130	141	271	747
Difference Sunday	-	-	-	-	-	-	29	24	53	-21

¹ Trip generation per ITE rates as shown in Table 3.

² Weekday counts are the average of the counts taken on Wednesday and Thursday.

³ Difference is derived by subtracting the counts from the ITE estimates.

On weekdays the project would generate 6 trips in the AM peak hour and 18 trips in the PM peak hour. The number of weekday peak hour trips on Etiwanda Avenue is 978 in the AM peak hour and 1,128 in the PM peak hour. On Victoria Park Lane, the number of weekday peak hour trips is 368 in the AM peak hour and 466 in the PM peak hour. Because the number of project weekday peak hour trips is a small fraction of the existing traffic (less than 0.5 percent) and would be dispersed via two access driveways, project traffic on weekdays would not cause a traffic impact to the circulation system.

This analysis focuses on traffic impacts that occur in the Sunday peak hour when the church generates much higher traffic volumes. The church peak traffic on Sunday occurred between 9:30 and 10:30 AM. As discussed in Section 3.2, the peak hour traffic on study roadways generally occurred between noon and 2 PM. The project peak traffic does not coincide with the traffic peak hour on the circulation network. This analysis conservatively assumes that the peak church traffic overlaps with the peak traffic on study roadways and intersections.

4.2 TRIP DISTRIBUTION

The traffic that would be generated by the church development was geographically distributed onto the street network by evaluating the layout of the study area roadway network and reviewing the land uses in the area. The trip distribution was also prepared with feedback from City staff. Figures 6 and 7 show the anticipated trip distribution for the project for inbound and outbound trips, respectively.

4.3 MODAL SPLIT AND TRIP ASSIGNMENT

The trip distribution percentages are applied to the project trip generation to determine the traffic volumes forecast to be added at each intersection (i.e., trip assignment).

4. Project Traffic

4.4 EXISTING PLUS PROJECT TRAFFIC CONDITIONS

To assess Existing Plus Project traffic conditions, existing traffic is combined with project traffic. Intersection operations for Existing Plus Project traffic conditions have been calculated and are shown in Table 5, *Existing Plus Project Sunday Peak Hour Intersection Levels of Service*. Figures that show the existing plus project AM and PM peak hour intersection volumes are in Appendix D.

Table 5 Existing Plus Project Sunday Peak Hour Intersection Levels of Service

Intersection	Traffic Control	Delay (sec/veh)	LOS
1. Victoria Park Lane at Base Line Road	Signal	23.7	C
2. Victoria Park Lane at Wine Cellar Court	Stop	8.9	A
3. Victoria Park Lane at Proposed Project Driveway	Stop	9.0	A
4. Victoria Park Lane at Long Meadow Drive	Signal	3.4	A
5. Victoria Park Lane at Church Street	Signal	21.2	C
6. I-15 Southbound Off-Ramps at Foothill Boulevard	Signal	10.7	B
7. I-15 Northbound On-Ramps at Foothill Boulevard	Signal	25.4	C
8. Etiwanda Avenue at Foothill Boulevard	Signal	33.4	C
9. Etiwanda Avenue at Church Street/Miller Avenue	Signal	15.3	B
10. Etiwanda Avenue at Existing Project Driveway	Stop	32.6	D
11. Etiwanda Avenue at Base Line Road	Signal	20.5	C
12. I-15 Southbound Off-Ramps at Base Line Road	Signal	8.5	A
13. I-15 Northbound On-Ramps at Base Line Road	Signal	8.2	A

Notes: LOS calculation worksheets in Appendix D.

Bold=deficient operations

Stop=Stop control

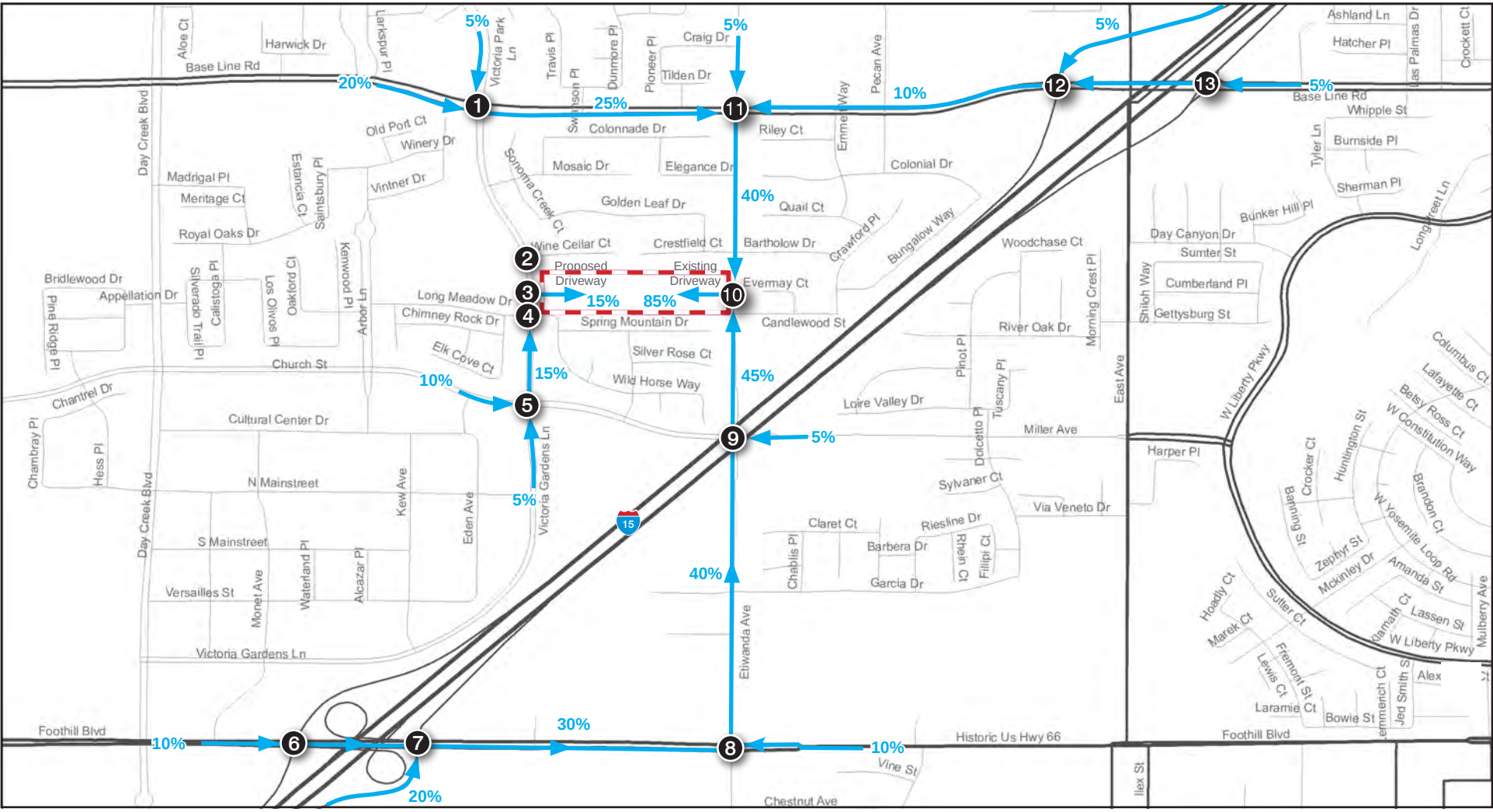
For stop-control intersections the V/C (volume to capacity) is not reported.

All study area intersections would operate at acceptable levels of service during the peak hours for Existing Plus Project traffic conditions.

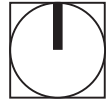
4. Project Traffic

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Figure 6 - Project Trip Distribution - Inbound



- Project Boundary
- ➔ Route to Project
- XX% % from Project
- # Study Intersections (13)

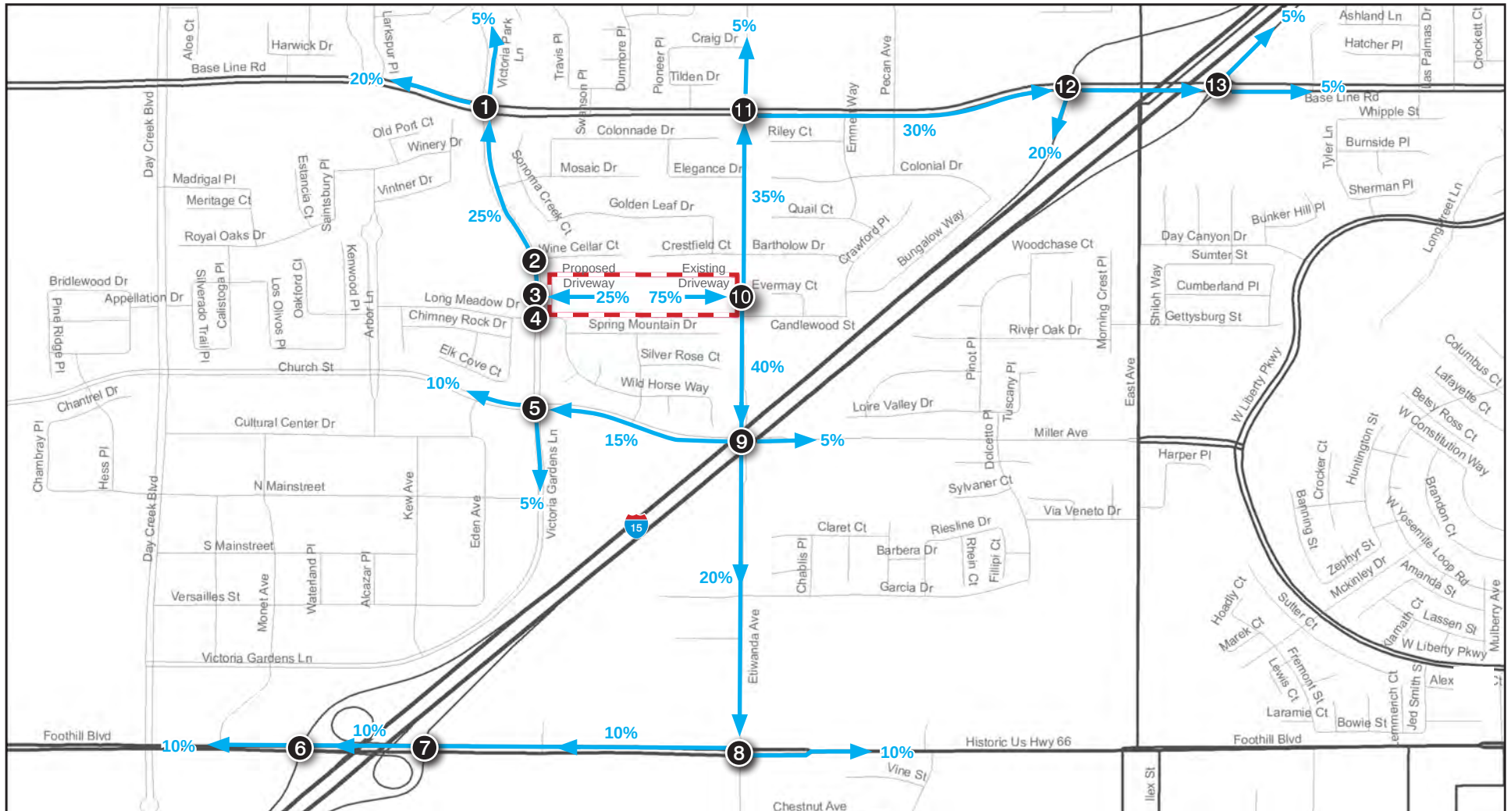


Source: ESRI, 2018

4. Project Traffic

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Figure 7 - Project Trip Distribution - Outbound



- - - Project Boundary
- # Study Intersections (13)
- ← Route from Project
- XX% % from Project

0 150
Scale (Feet)



Source: ESRI, 2018

4. Project Traffic

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5. Future Traffic Conditions

5.1 ESTIMATING FUTURE BASELINE TRAFFIC CONDITIONS

To the daily and peak hour traffic volumes on surrounding roadways has been added ambient growth and traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. The ambient growth rate is added to account for area-wide growth not reflected by cumulative development projects.

Opening year traffic forecasts for 2021 have been based on three years of ambient growth at a conservative annual growth rate of 2 percent per year. Forecasts for the horizon year 2035 traffic conditions were based on projected population, employment, and overall number of trip ends for the City's General Plan horizon year conditions. The City of Rancho Cucamonga General Plan states that the projected population growth in the City over the 20-year period from 2010 to 2030 is 0.3 percent, and the projected employment growth is 35 percent. According to the *Development Mitigation Nexus Study* of the SANBAG Congestion Management Program (SANBAG 2016b), it is anticipated that the number of trips in Rancho Cucamonga will grow by 28.7 percent between 2004 and 2030, a period of 26 years. The average annual growth rate in this period is 1 percent per year. Therefore, a 1 percent annual ambient growth rate was applied to calculate the increase in traffic for the horizon year traffic to provide forecasts in line with the anticipated population and employment growth trends and the projected growth in trips in Rancho Cucamonga.

Cumulative projects are closely related past, present, and reasonably foreseeable probable future projects. These projects include both projects in the City of Rancho Cucamonga and Fontana. The list of cumulative projects, a location map, and associated trip generation are in Appendix E. The cumulative projects were screened to calculate the cumulative traffic volumes that would directly add measurable traffic to the area street system versus cumulative traffic that would be added as ambient growth. Based on a review of the circulation system, the trip generation, location, and land use type, the highlighted cumulative projects shown on Figure 8, *Cumulative Developments Location Map*, would have the potential for directly adding measurable traffic to the area street system. Table 6, *Cumulative Projects Trip Generation*, shows that the cumulative projects assumed in this traffic analysis are estimated to generate 2,757 trip-ends per day during a typical Sunday, with approximately 397 vehicle trips during Sunday peak hour.

5. Future Traffic Conditions

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5. Future Traffic Conditions

Table 6 Cumulative Projects Trip Generations

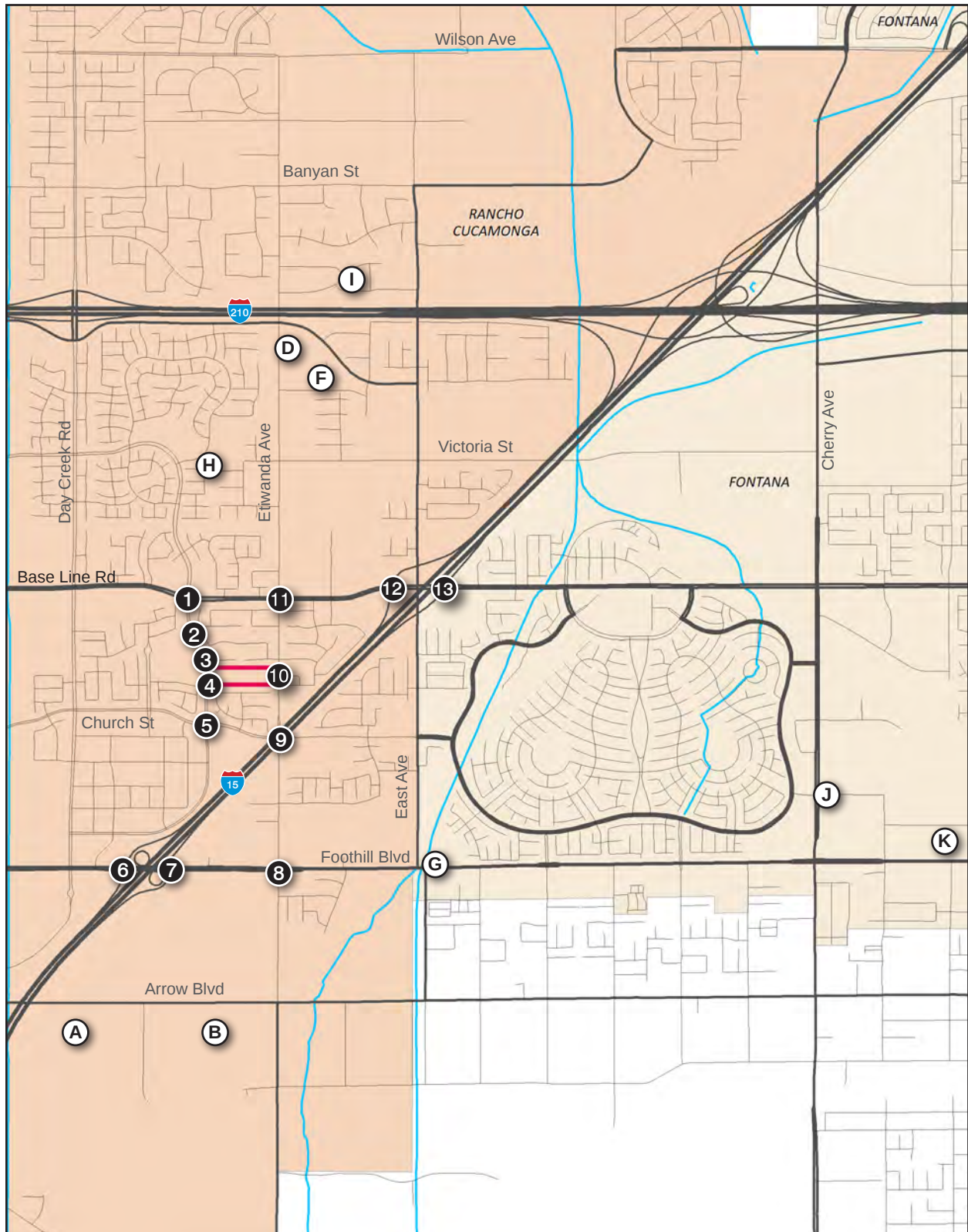
No.	Project Name	Project Type	Land Use	ITE Code	Unit Amount	Unit	Trip Generation			
							Daily	Sunday Peak Hour		
								In	Out	Total
A	DRC2015-00797	Industrial	Warehousing	150	339	TSF	20	7	7	14
B	DRC2017-00084	Industrial	Warehousing	150	57	TSF	3	1	1	2
C	DRC2017-00141 (Industry building + access support building)	Industrial	Warehousing	150	48	TSF	3	1	1	2
D	SUBTT00021	Residential	Single Family Housing	210	14	DU	120	6	6	12
E	SUBTT18012	Residential	Single Family Housing	210	9	DU	77	4	4	8
F	SUBTT18936	Residential	Single Family Housing	210	16	DU	137	7	7	14
G	SUBTT19945	Residential	Single Family Housing	210	193	DU	1212	65	64	129
H	SUBTT19995	Residential	Single Family Housing	210	16	DU	137	7	7	14
I	SUBTT20151	Residential	Single Family Housing	210	4	DU	34	2	1	3
J	Design Review No. 15- 007	Industrial	Warehousing	150	2669	TSF	160	53	54	107
K	Design Review No. 17- 002	Residential	Multifamily Housing (Low Rise)	220	136	DU	854	45	46	91
Total Trips							2,757	199	198	397

Notes: Cumulative projects trip rates and maps in Appendix E
DU= dwelling units
TSF=thousand square feet

5. Future Traffic Conditions

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Figure 8 - Cumulative Developments Location Map



Note: Unincorporated county areas are shown in white.

— Project Boundary

Study Intersections (13)

0 3,000
Scale (Feet)

A Development Locations (9)

Source: ESRI, 2018



PlaceWorks

5. Future Traffic Conditions

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5. Future Traffic Conditions

5.2 OPENING YEAR 2021 NO PROJECT TRAFFIC CONDITIONS

The intersection operations for the Opening Year 2021 No Project traffic conditions have been calculated according to the methodology described in Section 5.1 and are given in Table 7, *Opening Year 2021 No Project Sunday Peak Hour Intersection Levels of Service*.

Table 7 Opening Year 2021 No Project Sunday Peak Hour Intersection Levels of Service

Intersection	Traffic Control	Delay (sec/veh)	LOS
1. Victoria Park Lane at Base Line Road	Signal	22.7	C
2. Victoria Park Lane at Wine Cellar Court	Stop	8.8	A
3. Victoria Park Lane at Proposed Project Driveway	-	-	-
4. Victoria Park Lane at Long Meadow Drive	Signal	3.4	A
5. Victoria Park Lane at Church Street	Signal	21.0	C
6. I-15 Southbound Off-Ramps at Foothill Boulevard	Signal	11.2	B
7. I-15 Northbound On-Ramps at Foothill Boulevard	Signal	25.3	C
8. Etiwanda Avenue at Foothill Boulevard	Signal	33.7	C
9. Etiwanda Avenue at Church Street/Miller Avenue	Signal	15.2	B
10. Etiwanda Avenue at Existing Project Driveway	Stop	23.0	C
11. Etiwanda Avenue at Base Line Road	Signal	20.4	C
12. I-15 Southbound Off-Ramps at Base Line Road	Signal	8.5	A
13. I-15 Northbound On-Ramps at Base Line Road	Signal	8.4	A

Notes: LOS calculation worksheets in Appendix F.

Bold=deficient operations

Stop=Stop control

For stop-control intersections the V/C (volume to capacity) is not reported

Intersection 3 would be implemented with the project.

All study area intersections would continue to operate at acceptable levels of service during the peak hours for the Opening Year 2021 No Project traffic conditions during the Sunday peak hour.

5.3 OPENING YEAR 2021 WITH PROJECT TRAFFIC CONDITIONS

To assess future traffic conditions with the cumulative projects at the project's opening year, project traffic is added to the Opening Year 2021 No Project traffic conditions discussed in Section 5.2. The intersection operations for this scenario have been calculated and are listed in Table 8, *Opening Year 2021 With Project Sunday Peak Hour Intersection Levels of Service*.

5. Future Traffic Conditions

Table 8 Opening Year 2021 With Project Sunday Peak Hour Intersection Levels of Service

Intersection	Traffic Control	Delay (sec/veh)	LOS
1. Victoria Park Lane at Base Line Road	Signal	23.8	C
2. Victoria Park Lane at Wine Cellar Court	Stop	8.9	A
3. Victoria Park Lane at Proposed Project Driveway	-	9.1	A
4. Victoria Park Lane at Long Meadow Drive	Signal	3.4	A
5. Victoria Park Lane at Church Street	Signal	21.1	C
6. I-15 Southbound Off-Ramps at Foothill Boulevard	Signal	11.2	B
7. I-15 Northbound On-Ramps at Foothill Boulevard	Signal	25.8	C
8. Etiwanda Avenue at Foothill Boulevard	Signal	34.5	C
9. Etiwanda Avenue at Church Street/Miller Avenue	Signal	15.4	B
10. Etiwanda Avenue at Existing Project Driveway	Stop	36.0	E
11. Etiwanda Avenue at Base Line Road	Signal	20.6	C
12. I-15 Southbound Off-Ramps at Base Line Road	Signal	8.5	A
13. I-15 Northbound On-Ramps at Base Line Road	Signal	8.4	A

Notes: LOS calculation worksheets in Appendix G.

Bold=deficient operations

Stop=Stop control

For stop-control intersections the V/C (volume to capacity) is not reported.

All study area intersections would continue to operate at acceptable levels of service during the peak hours for the Opening Year 2021 With Project traffic conditions, except for intersection #10, Etiwanda Avenue at Existing Project Driveway. The City of Rancho Cucamonga established a minimum of LOS D or better (lower) for local intersections. A significant impact would occur at a study area intersection if it would cause the level of service to deteriorate from satisfactory LOS D to unsatisfactory LOS E or F. The high delays would result from added egress church traffic causing delays within the church internal driveways. Northbound and southbound traffic on Etiwanda Avenue does not stop at the intersection. The delays would occur in the church driveways, however, would not result substantial traffic at the northbound and southbound lanes at Etiwanda. Therefore, impacts to roadway system would be less than significant.

5. Future Traffic Conditions

5.4 HORIZON YEAR 2035 NO PROJECT TRAFFIC CONDITIONS

The intersection operations for the Horizon Year 2035 No Project traffic conditions have been calculated according to the methodology described in Section 5.1 and are given in Table 9, *Horizon Year 2035 No Project Sunday Peak Hour Intersection Levels of Service*.

Table 9 Horizon Year 2035 No Project Sunday Peak Hour Intersection Levels of Service

Intersection	Traffic Control	Delay (sec/veh)	LOS
1. Victoria Park Lane at Base Line Road	Signal	25.6	C
2. Victoria Park Lane at Wine Cellar Court	Stop	9.0	A
3. Victoria Park Lane at Proposed Project Driveway	-		-
4. Victoria Park Lane at Long Meadow Drive	Signal	3.7	A
5. Victoria Park Lane at Church Street	Signal	22.5	C
6. I-15 Southbound Off-Ramps at Foothill Boulevard	Signal	33.1	C
7. I-15 Northbound On-Ramps at Foothill Boulevard	Signal	48.4	D
8. Etiwanda Avenue at Foothill Boulevard	Signal	51.0	D
9. Etiwanda Avenue at Church Street/Miller Avenue	Signal	20.5	C
10. Etiwanda Avenue at Existing Project Driveway	Stop	21.5	C
11. Etiwanda Avenue at Base Line Road	Signal	23.6	C
12. I-15 Southbound Off-Ramps at Base Line Road	Signal	9.1	A
13. I-15 Northbound On-Ramps at Base Line Road	Signal	12.3	B

Notes: LOS calculation worksheets in Appendix H.

Bold=deficient operations

Stop=Stop control

For stop-control intersections the V/C (volume to capacity) is not reported

Intersection 3 would be implemented with the project.

All study area intersections would operate at acceptable levels of service during the peak hours for Horizon Year 2035 No Project traffic conditions.

5.5 HORIZON YEAR 2035 WITH PROJECT TRAFFIC CONDITIONS

To assess future traffic conditions with the cumulative projects at the project's opening year, project traffic was added to the Horizon Year 2035 No Project traffic conditions as discussed in Section 5.1. The intersection operations for this scenario have been calculated and are listed in Table 10, *Horizon Year 2035 With Project Sunday Peak Hour Intersection Levels of Service*.

5. Future Traffic Conditions

Table 10 Horizon Year 2035 With Project Sunday Peak Hour Intersection Levels of Service

Intersection	Traffic Control	Delay (sec/veh)	LOS
1. Victoria Park Lane at Base Line Road	Signal	27.0	C
2. Victoria Park Lane at Wine Cellar Court	Stop	9.1	A
3. Victoria Park Lane at Proposed Project Driveway	-	9.3	A
4. Victoria Park Lane at Long Meadow Drive	Signal	3.7	A
5. Victoria Park Lane at Church Street	Signal	22.8	C
6. I-15 Southbound Off-Ramps at Foothill Boulevard	Signal	33.1	C
7. I-15 Northbound On-Ramps at Foothill Boulevard	Signal	49.3	D
8. Etiwanda Avenue at Foothill Boulevard	Signal	51.9	D
9. Etiwanda Avenue at Church Street/Miller Avenue	Signal	20.9	C
10. Etiwanda Avenue at Existing Project Driveway	Stop	36.1	E
11. Etiwanda Avenue at Base Line Road	Signal	24.8	C
12. I-15 Southbound Off-Ramps at Base Line Road	Signal	9.1	A
13. I-15 Northbound On-Ramps at Base Line Road	Signal	12.5	B

Notes: LOS calculation worksheets in Appendix I.

Bold=deficient operations

Stop=Stop control

For stop-control intersections the V/C (volume to capacity) is not reported

All study area intersections would continue to operate at acceptable levels of service during the peak hours for the Horizon Year 2035 With Project traffic conditions, except for intersection #10, Etiwanda Avenue at Existing Project Driveway.

5. Future Traffic Conditions

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6. Site Access and Internal Circulation

6.1 PROPOSED SITE ACCESS DRIVEWAY AND QUEUES

Site access will be provided at three driveways (see Figure 3, *Site Plan*). Vehicular access to the campus will continue to be via the existing driveway off Etiwanda Avenue, which would be widened to have one left and one right turn only lane, with the addition of a new ingress/egress driveway on Victoria Park Lane. Additionally, a new driveway on Long Meadow Drive will be constructed for emergency-vehicle access only.

Weekday AM and PM peak hours generate little church traffic, as most traffic occurs during Sunday services. On Sundays the project would generate 726 daily trips. On Sunday mornings the project would generate 324 trips (159 inbound and 165 outbound) in the peak hour.

The new ingress/egress driveway will be on west side of the project site on Victoria Park Lane. A raised median on Victoria Park Lane would restrict turns to and from the proposed driveway to right turns (right in/right out). The proposed driveway is anticipated to operate at LOS A. Given the relatively low northbound traffic of 170 vehicles per hour on Victoria Park Lane, it is not anticipated that ingress and egress traffic from the project access would result in queues and delays for traffic on Victoria Park Lane.

At intersections and project driveways, a substantially clear line of sight must be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Sight distance is the continuous length of roadway visible to the driver. Based on our site visit and a review of aerial photography, there are no restrictions blocking the view from the project access driveway and northbound traffic on Victoria Park Lane Road. Our review indicates that sufficient sight distance would be provided.

6.2 EXISTING DRIVEWAY ACCESS

At the existing driveway the traffic volumes would increase with the project. According to the HCM methodology calculations, the queues would occur at the church driveway egressing the site to Etiwanda Avenue. To minimize delay, the egressing driveway will be widened to two lanes (one dedicated right and one dedicated left). The HCM methodology did not identify queues for the northbound left-turn movement for vehicles on Etiwanda Avenue. The queues at the existing access driveway would be contained within the church site and would not cause substantial delays and queues on Etiwanda Avenue.

7. Site Access and Internal Circulation

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7. References

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<https://www.cityofrc.us/civicax/filebank/blobdload.aspx?BlobID=7610>.

7. Site Access and Internal Circulation

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Appendices

Appendix A. Memorandum of Understanding

Appendices

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March 28, 2018

Jason C. Welday, Director of Engineering Services/City Engineer
City of Rancho Cucamonga
1500 Civic Center Drive
Rancho Cucamonga, CA 91730

Subject: Memorandum of Understanding (MOU) for the Traffic Impact Analysis for the Christ Church of the Valley Etiwanda Campus Expansion Project

Dear Mr. Welday:

PlaceWorks is preparing a traffic impact analysis for the proposed improvements to Christ's Church of the Valley (Church), Etiwanda Campus in Rancho Cucamonga. This memorandum of understanding (MOU) describes the project and outlines the proposed methodologies and basic assumptions for the traffic impact analysis for the project. This MOU has been prepared for the City of Rancho Cucamonga for review and comment to ensure that the traffic study uses appropriate assumptions to evaluate potential traffic impacts from the project. The MOU includes a description of the project, trip generation estimates for the project, a list of study area intersections to be evaluated, and identification of an ambient growth rate and scenarios to be evaluated. In addition, criteria to evaluate levels of service and to determine thresholds of significance are included in this memo.

Project Location and Description

The project applicant is proposing expansion of (onsite only) and improvements to the Christ's Church of the Valley (Church), Etiwanda Campus, which is located at 7576 Etiwanda Ave (see Figure 1, *Aerial Photograph*). The vicinity of the site is predominately residential with single-family homes located immediately adjacent to the north and south, and across the street to the east and west. The Victoria Gardens shopping center is located approximately 0.2 miles to the south of the project site.

The project includes development of a new auditorium building, children's building, and parking lot improvements on the existing campus (see Figure 2, *Site Plan*). The auditorium building (or Worship Center building)—which will serve as the new sanctuary for midweek and weekend services and other events (e.g., large community funerals, conferences)—will encompass 36,000 square feet, be two stories in height, and have a seating capacity of 1,200 (600 more seats than the existing chapel building onsite). The single-story children's building will encompass 11,000 square feet—its primary use will be for children's teaching and play for newborns to 3rd graders during church services and events. The existing chapel building's primary use will be for offices and small gatherings (under 200) during the week (weekday and weekend), primarily for weddings, funerals, bible studies, etc. It should be noted that during services or events in the new auditorium building, no functions or events will take place in the existing chapel building. Therefore, for traffic purposes, a full-capacity weekend service (1,200 congregants) is considered as a worst-case scenario.

The parking improvements will include modifications to the existing parking lot on the western half of the campus as well as development of a new, 200-space parking lot. The new parking lot will be built first to provide parking when the existing parking area is demolished and cleared for construction of the new auditorium building. The other existing church buildings and structures on the campus will remain in their existing conditions and not be demolished, improved, or modified.

Vehicular access to the campus will continue to be via the existing driveway off Etiwanda Avenue, plus a new ingress/egress driveway on Victoria Park Lane. Additionally, a new driveway on Long Meadow Drive will be constructed for emergency vehicle access only.

Trip Generation and Trip Distribution

Based on our experience with church projects and a review of the schedule of events for the three campuses of Christ's Church of the Valley, most traffic would be generated on Sundays and, to a lesser extent, on weekday evenings. Church activities do not normally generate traffic on weekdays and therefore project traffic during this peak hour will not be evaluated. The TIA will review potential traffic impacts on Sundays at selected offsite intersections. Potential traffic impacts on weekdays during the AM and PM peak hour will be discussed qualitatively.

The trip generation was calculated based on rates included in the ITE Trip Generation Manual 10th Edition for Land Use 560, Church. Table 1 shows the trip generation rates and project trip generation for the weekday AM and PM Peak Hours, and for the Sunday peak hour.

Table 1 Trip Generation Rates

Land Use	Unit	Trip Generation ¹									Sunday Daily
		AM Peak Hour			PM Peak Hour			Sunday Peak Hour of Generator			
		In	Out	Total	In	Out	Total	In	Out	Total	
Church	Seats	0.01	0.01	0.01	0.01	0.02	0.03	0.26	0.28	0.54	1.21

¹ Trip generation rates for land use code 560 (Church), per the ITE Trip Generation Manual 10th Edition.

Table 2 Project Trip Generation

Land Use	Seats	Trip Generation ¹									Sunday Daily
		AM Peak Hour			PM Peak Hour			Sunday Peak Hour of Generator			
		In	Out	Total	In	Out	Total	In	Out	Total	
Church	600	3	3	6	7	11	18	159	165	324	726

¹ Trip generation rates for peak hour of adjacent streets, per the ITE Trip Generation Manual 10th Edition.

Driveway counts will be taken at the existing church access driveways for two weekdays and on a Sunday during typical church activities. These counts will be used to provide a trip generation comparison and possibly adjustments to the project's trip generation estimates.

The trip distribution was based on a review of the freeways and major roads in the area, and the location of residential areas. The City's Circulation Element and functional roadway classifications were also referenced. Figures 3 and 4 show the project trip distribution for inbound and outbound trips, respectively.

Study Area Intersections and Scenarios

Based on the calculated project trip generation and trip distribution estimate included in the Attachment, the following intersections will be analyzed:

1. Victoria Park Lane at Base Line Road
2. Victoria Park Lane at Long Meadow Drive
3. Victoria Park Lane/Victoria Gardens Lane at Church Street
4. I-15 Southbound Ramps at Foothill Boulevard
5. I-15 Northbound Ramps at Foothill Boulevard
6. Etiwanda Avenue at Foothill Boulevard
7. Etiwanda Avenue at Church Street/Miller Avenue
8. Etiwanda Avenue at Existing Project Driveway
9. Etiwanda Avenue at Base Line Road
10. I-15 Southbound Ramps at Base Line Road
11. I-15 Northbound Ramps at Base Line Road

Add Victoria Park Lane at Proposed project driveway and Victoria Park Lane at Wine Cellar Court

Roadway segment 24-hour traffic counts will be taken on a weekday and on a Sunday at 2 locations:

- Etiwanda Avenue between Barthlow Drive and Candlewood Street
- Victoria Park Lane between Long Meadow Drive and Wine Cellar Street

The intersection turn movement traffic counts will be taken at the 11 intersections above on Sunday for a period of 3 hours. The hours will be determined after a review of the 24-hour roadway counts at the segments above and the driveway counts at the church.

Given low weekday volumes with less than 15 trips expected to be generated in the AM and PM peak hours, we believe that these volumes would not cause traffic impacts and an analysis of the AM and PM peak hour is not necessary. The following analysis scenarios will be provided for the Sunday peak hour:

- Existing
- Existing Plus Project
- Opening Year Without Project
- Opening Year With Project Buildout

5 hours to capture all the services

Construction of the new auditorium is anticipated to be finalized in the fall of 2021. For the purpose of this analysis, a 3-year timeframe is assumed for Opening Year (2021). An ambient growth rate of 2% per year and a list of cumulative projects to be fully operational by project opening year will be included to the background traffic conditions. Trip generation for the cumulative developments will be estimated for inclusion in the background traffic conditions at project opening year.

Horizon Year and Horizon Year with Project. Ambient growth rate of 2% per year is acceptable

LOS Criteria and Threshold of Significance

In conformance with the City's requirements, existing PM peak hour operating conditions for the key signalized study intersections will be evaluated using the Highway Capacity Method (HCM) 2010. The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions. Per the HCM methodology, the overall weighted average delay will be calculated at signalized and all-way-stop intersections, and the worst-case approach delay will be calculated at two-way stop-controlled intersections. The level of service corresponds to the delay calculated.

The City of Rancho Cucamonga has established LOS "D" as the minimum level of service for its roadways and intersections. The San Bernardino County Congestion Management Program (CMP) has established LOS "E" for intersections in the County's CMP-designated highway system. The project would have a significant impact at a study area intersection if it causes the level of service to deteriorate from satisfactory LOS to unsatisfactory LOS.

The potential for queuing at the project's access driveways and on Etiwanda Avenue and Victoria Park Lane will be evaluated, as well as internal circulation with an emphasis on Sunday operations.

Please review the following assumptions and authorize so we can proceed. Or feel free to call if you have any questions or would like to discuss.

Respectfully submitted,

FERNANDO SOTELO, PE, PTP
Senior Associate

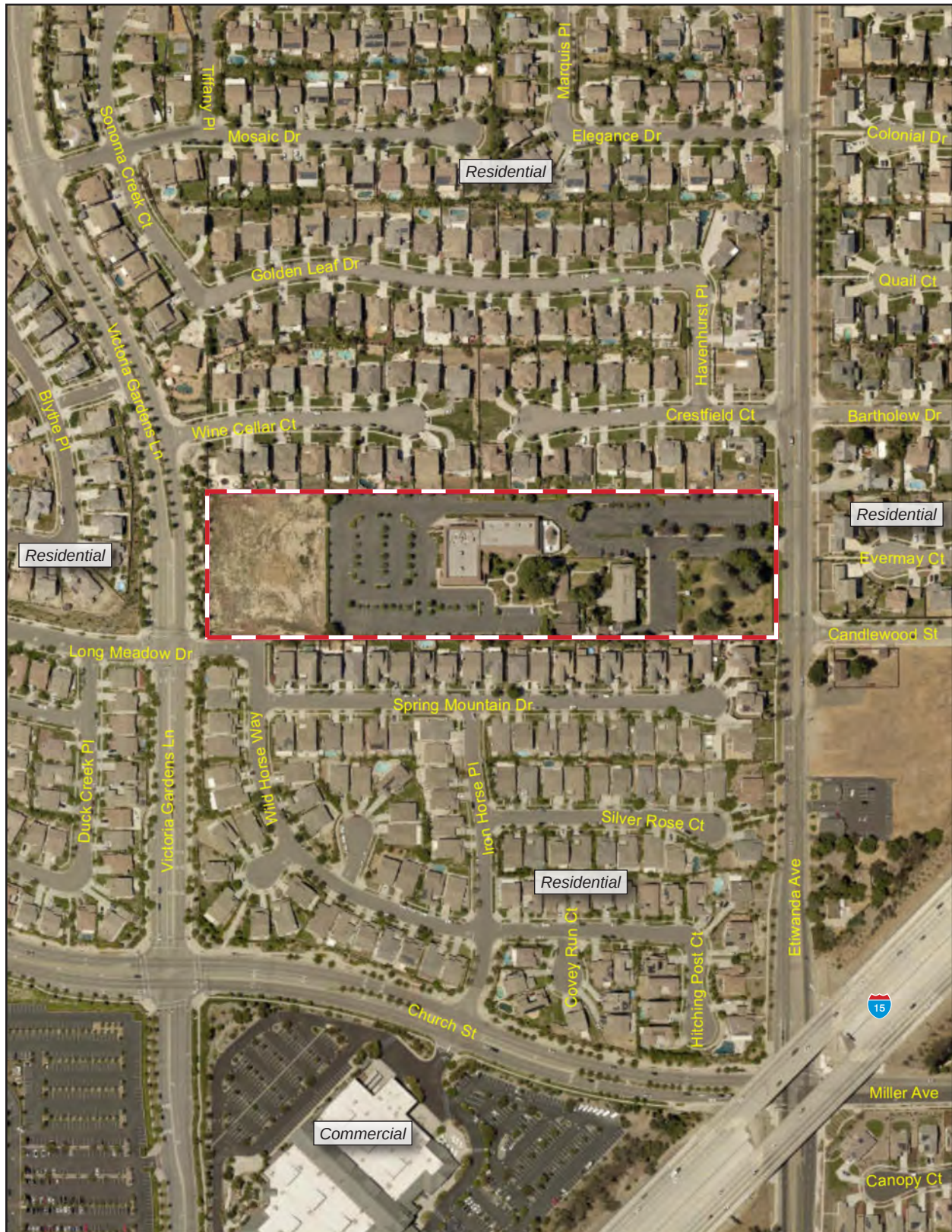


Provide language that states the study will comply with the guidelines set forth in the San Bernardino County CMP, 2016 Update

Provide language that states Synchro files will be submitted for the City to review

3 MacArthur Place, Suite 1100 | Santa Ana, California 92707
714.966.9220 | fsotelo@placeworks.com | placeworks.co

Figure 1 - Aerial Photograph



— Project Boundary

0 350
Scale (Feet)

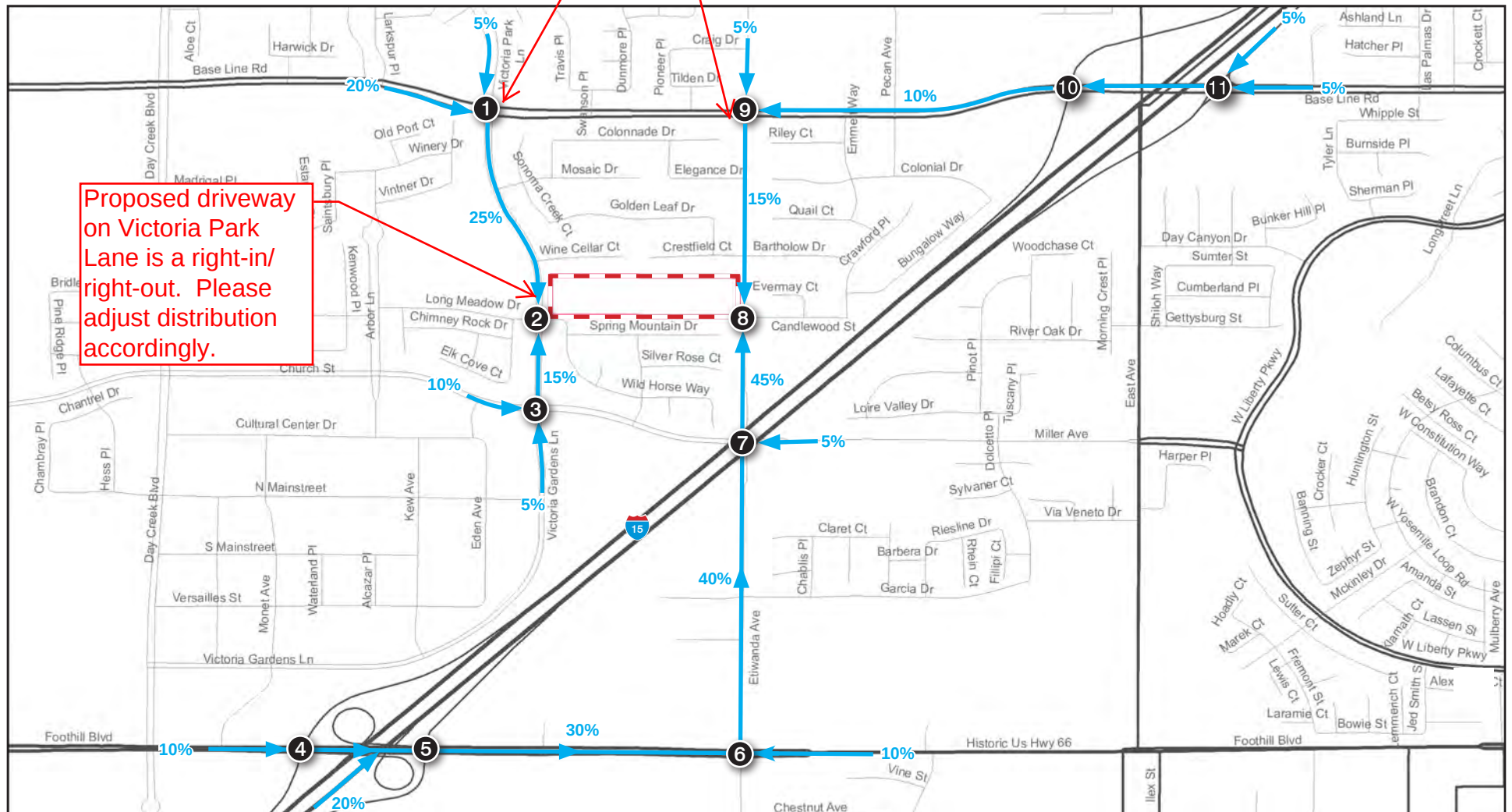
Source: ESRI, 2018



PlaceWorks



Figure 3 - Trip Distribution - Inbound



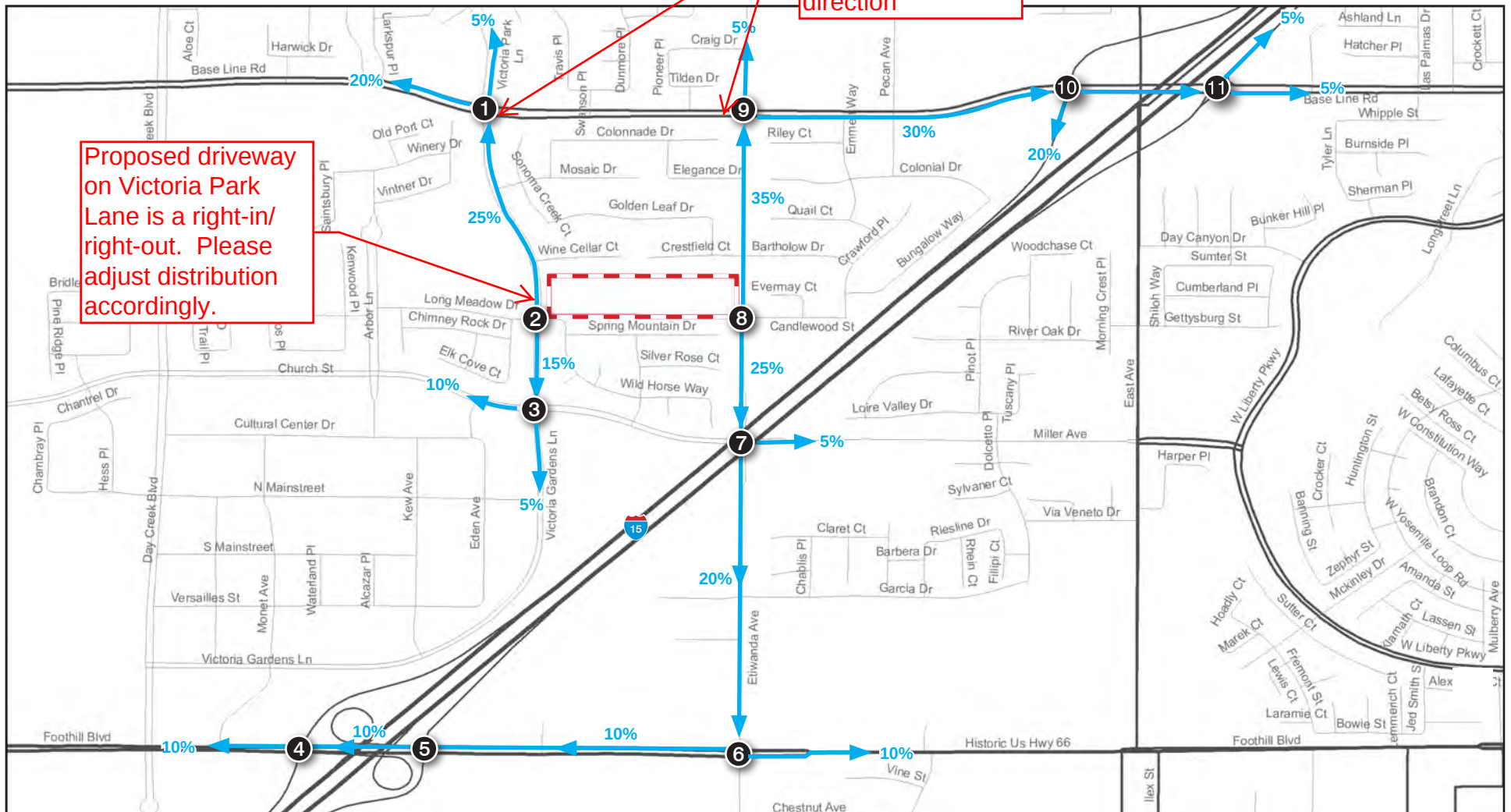
- - - Project Boundary
- # Study Intersections (11)
- Route to Project
- XX% % from Project

0 150
Scale (Feet)



Source: ESRI, 2018

Figure 4 - Trip Distribution - Outbound



Source: ESRI, 2018

Appendices

Appendix B. Traffic Counts

Appendices

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Counts Unlimited, Inc.

City of Rancho Cucamonga
Victoria Park Lane
B/ Long Meadow Drive - Wine Cellar Street
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

RNC002S
Site Code: 221-18293

Start Time	15-Apr-18 Sun	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		28	42			11	40				
12:15		27	40			7	56				
12:30		11	29			7	37				
12:45		11	47	77	158	7	49	32	182	109	340
01:00		15	33			8	35				
01:15		8	45			2	41				
01:30		11	71			8	56				
01:45		9	55	43	204	5	51	23	183	66	387
02:00		4	51			0	48				
02:15		4	50			4	51				
02:30		2	57			2	56				
02:45		2	49	12	207	3	60	9	215	21	422
03:00		2	56			3	37				
03:15		1	60			0	52				
03:30		0	51			2	48				
03:45		3	49	6	216	1	58	6	195	12	411
04:00		1	57			0	44				
04:15		1	61			3	52				
04:30		2	41			3	43				
04:45		1	63	5	222	0	45	6	184	11	406
05:00		1	50			2	42				
05:15		0	53			1	39				
05:30		1	45			1	41				
05:45		2	50	4	198	4	40	8	162	12	360
06:00		1	44			5	37				
06:15		5	47			3	44				
06:30		3	46			9	44				
06:45		6	52	15	189	4	19	21	144	36	333
07:00		3	42			6	32				
07:15		11	56			8	37				
07:30		6	34			13	15				
07:45		6	52	26	184	9	31	36	115	62	299
08:00		8	29			16	22				
08:15		14	43			18	18				
08:30		15	25			21	18				
08:45		16	33	53	130	18	11	73	69	126	199
09:00		14	22			25	6				
09:15		15	28			25	10				
09:30		20	21			35	17				
09:45		16	15	65	86	29	12	114	45	179	131
10:00		23	12			38	11				
10:15		19	8			57	11				
10:30		28	15			50	4				
10:45		41	6	111	41	40	5	185	31	296	72
11:00		38	8			61	1				
11:15		41	4			60	4				
11:30		37	6			48	4				
11:45		38	8	154	26	53	8	222	17	376	43
Total		571	1861	571	1861	735	1542	735	1542	1306	3403
Combined Total		2432		2432		2277		2277		4709	
AM Peak	-	10:45	-	-	-	11:00	-	-	-	-	-
Vol.	-	157	-	-	-	222	-	-	-	-	-
P.H.F.		0.957				0.910					
PM Peak	-	-	01:30	-	-	-	02:00	-	-	-	-
Vol.	-	-	227	-	-	-	215	-	-	-	-
P.H.F.			0.799				0.896				
Percentage		23.5%	76.5%			32.3%	67.7%				
ADT/AADT		ADT 4,709	AADT 4,709								

Counts Unlimited, Inc.

City of Rancho Cucamonga
Etiwanda Avenue
B/ Bartholow Drive - Candlewood Street
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

RNC001
Site Code: 221-18293

Start Time	11-Apr-18 Wed	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		8	93			10	64				
12:15		9	84			8	69				
12:30		7	89			1	68				
12:45		6	104	30	370	1	59	20	260	50	630
01:00		3	76			4	76				
01:15		3	89			7	68				
01:30		5	94			2	81				
01:45		5	135	16	394	1	81	14	306	30	700
02:00		1	144			1	71				
02:15		1	138			3	113				
02:30		1	120			2	155				
02:45		2	123	5	525	4	119	10	458	15	983
03:00		2	130			4	145				
03:15		8	132			5	115				
03:30		4	107			6	119				
03:45		1	128	15	497	7	91	22	470	37	967
04:00		6	136			3	96				
04:15		5	149			8	80				
04:30		9	153			10	84				
04:45		8	147	28	585	13	107	34	367	62	952
05:00		13	145			15	92				
05:15		16	128			22	85				
05:30		14	153			27	87				
05:45		23	127	66	553	49	93	113	357	179	910
06:00		31	121			26	106				
06:15		8	100			44	98				
06:30		69	104			73	77				
06:45		103	103	211	428	88	106	231	387	442	815
07:00		166	99			80	82				
07:15		85	117			129	105				
07:30		67	93			150	74				
07:45		91	85	409	394	149	67	508	328	917	722
08:00		69	100			127	55				
08:15		75	95			98	39				
08:30		77	98			73	48				
08:45		54	96	275	389	78	42	376	184	651	573
09:00		48	94			43	42				
09:15		44	86			56	32				
09:30		43	75			64	33				
09:45		52	86	187	341	56	41	219	148	406	489
10:00		53	56			72	26				
10:15		58	56			62	19				
10:30		65	32			73	12				
10:45		62	43	238	187	72	18	279	75	517	262
11:00		66	32			62	7				
11:15		69	31			90	14				
11:30		87	20			85	6				
11:45		74	20	296	103	72	11	309	38	605	141
Total		1776	4766	1776	4766	2135	3378	2135	3378	3911	8144
Combined Total		6542		6542		5513		5513		12055	
AM Peak	-	06:30	-	-	-	07:15	-	-	-	-	-
Vol.	-	423	-	-	-	555	-	-	-	-	-
P.H.F.		0.637				0.925					
PM Peak	-	-	04:15	-	-	-	02:30	-	-	-	-
Vol.	-	-	594	-	-	-	534	-	-	-	-
P.H.F.			0.971				0.861				
Percentage		27.1%	72.9%			38.7%	61.3%				

Counts Unlimited, Inc.

City of Rancho Cucamonga
Etiwanda Avenue
B/ Bartholow Drive - Candlewood Street
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

RNC001
Site Code: 221-18293

Start Time	12-Apr-18 Thu	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		7	74			5	61				
12:15		5	78			5	75				
12:30		5	88			5	77				
12:45		4	63	21	303	4	61	19	274	40	577
01:00		1	98			6	67				
01:15		4	97			4	69				
01:30		0	96			1	69				
01:45		5	123	10	414	1	68	12	273	22	687
02:00		0	124			1	68				
02:15		3	103			3	134				
02:30		1	135			5	135				
02:45		6	128	10	490	4	110	13	447	23	937
03:00		4	140			2	146				
03:15		9	111			4	120				
03:30		1	111			6	109				
03:45		5	121	19	483	7	110	19	485	38	968
04:00		6	91			4	97				
04:15		5	113			6	85				
04:30		13	116			9	87				
04:45		9	139	33	459	14	86	33	355	66	814
05:00		11	136			12	89				
05:15		20	133			17	103				
05:30		20	147			32	86				
05:45		20	128	71	544	43	83	104	361	175	905
06:00		34	100			26	107				
06:15		44	110			42	114				
06:30		55	123			32	94				
06:45		115	76	248	409	87	91	187	406	435	815
07:00		177	97			94	62				
07:15		95	89			118	86				
07:30		84	66			159	71				
07:45		76	83	432	335	143	65	514	284	946	619
08:00		54	69			128	47				
08:15		47	66			96	44				
08:30		48	58			68	45				
08:45		39	56	188	249	57	27	349	163	537	412
09:00		47	54			48	51				
09:15		50	52			52	47				
09:30		42	63			62	27				
09:45		50	57	189	226	61	41	223	166	412	392
10:00		52	26			62	20				
10:15		62	39			80	20				
10:30		57	27			54	18				
10:45		50	27	221	119	53	15	249	73	470	192
11:00		72	21			74	17				
11:15		59	18			86	9				
11:30		69	11			92	7				
11:45		81	14	281	64	88	11	340	44	621	108
Total		1723	4095	1723	4095	2062	3331	2062	3331	3785	7426
Combined Total		5818		5818		5393		5393		11211	
AM Peak	-	06:45	-	-	-	07:15	-	-	-	-	-
Vol.	-	471	-	-	-	548	-	-	-	-	-
P.H.F.		0.665				0.862					
PM Peak	-	-	04:45	-	-	-	02:15	-	-	-	-
Vol.	-	-	555	-	-	-	525	-	-	-	-
P.H.F.			0.944				0.899				
Percentage		29.6%	70.4%			38.2%	61.8%				
ADT/AADT		ADT 11,633	AADT 11,633								

Counts Unlimited, Inc.

City of Rancho Cucamonga
Etiwanda Avenue
B/ Bartholow Drive - Candlewood Street
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

RNC001S
Site Code: 221-18293

Start Time	15-Apr-18 Sun	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		23	76			14	95				
12:15		35	114			12	115				
12:30		12	129			11	71				
12:45		17	112	87	431	8	95	45	376	132	807
01:00		11	96			15	92				
01:15		11	98			5	95				
01:30		19	113			2	73				
01:45		7	83	48	390	3	103	25	363	73	753
02:00		10	84			6	100				
02:15		3	104			5	82				
02:30		3	96			5	92				
02:45		2	102	18	386	8	67	24	341	42	727
03:00		3	96			9	83				
03:15		8	95			3	76				
03:30		8	107			3	83				
03:45		4	95	23	393	1	83	16	325	39	718
04:00		3	85			3	71				
04:15		3	104			3	78				
04:30		2	95			3	95				
04:45		4	90	12	374	5	95	14	339	26	713
05:00		3	83			7	76				
05:15		5	80			2	70				
05:30		3	71			7	70				
05:45		10	103	21	337	11	88	27	304	48	641
06:00		9	77			12	81				
06:15		13	90			13	68				
06:30		11	78			14	72				
06:45		13	98	46	343	30	78	69	299	115	642
07:00		9	73			11	62				
07:15		15	82			19	56				
07:30		9	77			12	72				
07:45		27	63	60	295	19	36	61	226	121	521
08:00		24	55			41	26				
08:15		22	63			53	42				
08:30		30	54			59	31				
08:45		39	42	115	214	102	33	255	132	370	346
09:00		37	41			54	32				
09:15		36	43			50	22				
09:30		45	38			62	23				
09:45		37	39	155	161	65	24	231	101	386	262
10:00		66	11			71	20				
10:15		101	16			84	17				
10:30		74	15			89	19				
10:45		89	12	330	54	130	8	374	64	704	118
11:00		66	13			125	13				
11:15		68	10			103	10				
11:30		58	11			108	8				
11:45		81	12	273	46	83	9	419	40	692	86
Total		1188	3424	1188	3424	1560	2910	1560	2910	2748	6334
Combined Total		4612		4612		4470		4470		9082	
AM Peak	-	10:00	-	-	-	10:45	-	-	-	-	-
Vol.	-	330	-	-	-	466	-	-	-	-	-
P.H.F.		0.817				0.896					
PM Peak	-	-	00:15	-	-	-	01:45	-	-	-	-
Vol.	-	-	451	-	-	-	377	-	-	-	-
P.H.F.			0.874				0.820				
Percentage		25.8%	74.2%			34.9%	65.1%				
ADT/AADT		ADT 9,082	AADT 9,082								

Counts Unlimited, Inc.

City of Rancho Cucamonga
Victoria Park Lane
B/ Long Meadow Drive - Wine Cellar Street
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

RNC002
Site Code: 221-18293

Start Time	11-Apr-18 Wed	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		7	40			4	31				
12:15		1	15			1	36				
12:30		0	39			2	34				
12:45		0	39	8	133	1	31	8	132	16	265
01:00		0	29			0	20				
01:15		0	49			1	26				
01:30		2	36			5	41				
01:45		2	48	4	162	1	26	7	113	11	275
02:00		3	53			1	36				
02:15		0	51			0	56				
02:30		0	32			1	47				
02:45		0	55	3	191	2	40	4	179	7	370
03:00		1	49			1	47				
03:15		1	45			2	46				
03:30		0	66			2	48				
03:45		1	46	3	206	0	41	5	182	8	388
04:00		3	53			0	51				
04:15		2	56			4	51				
04:30		2	51			9	50				
04:45		5	61	12	221	4	35	17	187	29	408
05:00		2	60			5	44				
05:15		6	64			4	55				
05:30		7	59			7	49				
05:45		9	63	24	246	6	49	22	197	46	443
06:00		4	63			3	47				
06:15		17	58			19	55				
06:30		19	46			24	48				
06:45		38	43	78	210	20	67	66	217	144	427
07:00		61	47			49	34				
07:15		36	51			47	38				
07:30		42	36			50	28				
07:45		30	33	169	167	45	39	191	139	360	306
08:00		31	38			32	24				
08:15		19	40			37	27				
08:30		13	36			39	17				
08:45		10	40	73	154	17	22	125	90	198	244
09:00		24	27			18	17				
09:15		24	21			24	15				
09:30		16	25			27	13				
09:45		22	23	86	96	27	8	96	53	182	149
10:00		20	15			31	9				
10:15		21	15			27	8				
10:30		26	10			38	12				
10:45		17	19	84	59	24	8	120	37	204	96
11:00		32	12			42	4				
11:15		18	10			42	4				
11:30		27	6			41	6				
11:45		37	8	114	36	21	3	146	17	260	53
Total		658	1881	658	1881	807	1543	807	1543	1465	3424
Combined Total		2539		2539		2350		2350		4889	
AM Peak	-	06:45	-	-	-	07:00	-	-	-	-	-
Vol.	-	177	-	-	-	191	-	-	-	-	-
P.H.F.		0.725				0.955					
PM Peak	-	-	05:15	-	-	-	06:00	-	-	-	-
Vol.	-	-	249	-	-	-	217	-	-	-	-
P.H.F.			0.973				0.810				
Percentage		25.9%	74.1%			34.3%	65.7%				

Counts Unlimited, Inc.

City of Rancho Cucamonga
Victoria Park Lane
B/ Long Meadow Drive - Wine Cellar Street
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

RNC002
Site Code: 221-18293

Start Time	12-Apr-18 Thu	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		6	25			1	26				
12:15		4	16			3	47				
12:30		5	34			0	30				
12:45		2	37	17	112	3	43	7	146	24	258
01:00		3	40			0	27				
01:15		0	33			2	37				
01:30		4	26			1	27				
01:45		0	56	7	155	0	30	3	121	10	276
02:00		1	55			1	32				
02:15		0	51			1	52				
02:30		3	41			0	40				
02:45		0	55	4	202	0	44	2	168	6	370
03:00		0	50			1	44				
03:15		2	48			1	58				
03:30		1	53			1	49				
03:45		2	52	5	203	0	34	3	185	8	388
04:00		0	41			0	40				
04:15		3	54			1	40				
04:30		1	56			4	44				
04:45		1	63	5	214	7	59	12	183	17	397
05:00		2	54			5	42				
05:15		5	67			2	58				
05:30		9	51			10	42				
05:45		6	54	22	226	12	38	29	180	51	406
06:00		13	50			8	47				
06:15		15	67			10	40				
06:30		22	59			20	51				
06:45		46	40	96	216	24	48	62	186	158	402
07:00		51	58			42	39				
07:15		37	42			49	43				
07:30		50	45			37	38				
07:45		45	47	183	192	40	22	168	142	351	334
08:00		25	43			27	34				
08:15		19	44			28	18				
08:30		10	43			40	30				
08:45		15	45	69	175	22	20	117	102	186	277
09:00		15	32			23	12				
09:15		13	28			25	16				
09:30		17	27			28	18				
09:45		15	25	60	112	29	14	105	60	165	172
10:00		19	25			37	12				
10:15		23	17			28	7				
10:30		25	18			33	6				
10:45		20	18	87	78	29	4	127	29	214	107
11:00		30	6			34	3				
11:15		27	4			31	8				
11:30		36	12			51	4				
11:45		28	5	121	27	31	3	147	18	268	45
Total		676	1912	676	1912	782	1520	782	1520	1458	3432
Combined Total		2588		2588		2302		2302		4890	
AM Peak	-	06:45	-	-	-	07:00	-	-	-	-	-
Vol.	-	184	-	-	-	168	-	-	-	-	-
P.H.F.		0.902				0.857					
PM Peak	-	-	04:30	-	-	-	04:30	-	-	-	-
Vol.	-	-	240	-	-	-	203	-	-	-	-
P.H.F.			0.896				0.860				
Percentage		26.1%	73.9%			34.0%	66.0%				
ADT/AADT		ADT 4,890	AADT 4,890								

Counts Unlimited, Inc.

City of Rancho Cucamonga
Church Driveway
W/ Etiwanda Avenue
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

RNC003S
Site Code: 221-18293

Start Time	15-Apr-18 Sun	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	58			0	9				
12:15		0	25			0	0				
12:30		0	8			0	1				
12:45		0	4	0	95	0	0	0	10	0	105
01:00		0	2			0	2				
01:15		0	2			0	0				
01:30		0	2			0	2				
01:45		0	0	0	6	0	0	0	4	0	10
02:00		0	0			0	0				
02:15		0	0			0	0				
02:30		0	2			0	1				
02:45		0	0	0	2	0	0	0	1	0	3
03:00		0	1			0	1				
03:15		0	0			0	0				
03:30		0	0			0	0				
03:45		0	1	0	2	0	1	0	2	0	4
04:00		0	0			1	1				
04:15		0	1			0	0				
04:30		0	2			1	3				
04:45		1	0	1	3	4	0	6	4	7	7
05:00		0	0			0	0				
05:15		0	0			2	0				
05:30		0	0			4	0				
05:45		0	1	0	1	3	1	9	1	9	2
06:00		2	1			4	0				
06:15		0	0			0	0				
06:30		0	1			3	0				
06:45		3	0	5	2	1	0	8	0	13	2
07:00		5	0			0	0				
07:15		9	0			0	0				
07:30		8	0			23	0				
07:45		0	0	22	0	49	0	72	0	94	0
08:00		0	0			64	0				
08:15		8	0			26	0				
08:30		1	0			3	0				
08:45		1	0	10	0	0	0	93	0	103	0
09:00		1	0			2	0				
09:15		2	0			1	0				
09:30		19	0			13	0				
09:45		68	0	90	0	26	0	42	0	132	0
10:00		42	0			55	0				
10:15		12	1			36	1				
10:30		5	0			2	0				
10:45		9	0	68	1	0	0	93	1	161	2
11:00		3	0			1	0				
11:15		1	0			0	0				
11:30		17	0			3	0				
11:45		57	0	78	0	11	0	15	0	93	0
Total		274	112	274	112	338	23	338	23	612	135
Combined Total		386		386		361		361		747	
AM Peak	-	09:30	-	-	-	07:30	-	-	-	-	-
Vol.	-	141	-	-	-	162	-	-	-	-	-
P.H.F.		0.518				0.633					
PM Peak	-	-	12:00	-	-	-	12:00	-	-	-	-
Vol.	-	-	95	-	-	-	10	-	-	-	-
P.H.F.			0.409				0.278				
Percentage		71.0%	29.0%			93.6%	6.4%				
ADT/AADT		ADT 747		AADT 747							

Counts Unlimited, Inc.

Page 1

City of Rancho Cucamonga
Church Driveway
W/ Etiwanda Avenue
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

RNC003
Site Code: 221-18293

Start Time	11-Apr-18 Wed	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	3			0	3				
12:15		0	2			0	0				
12:30		0	3			0	1				
12:45		1	0	1	8	1	0	1	4	2	12
01:00		0	1			0	0				
01:15		0	1			0	1				
01:30		0	0			0	0				
01:45		0	0	0	2	0	0	0	1	0	3
02:00		0	0			0	2				
02:15		0	1			0	0				
02:30		0	2			0	2				
02:45		0	2	0	5	0	0	0	4	0	9
03:00		0	0			0	1				
03:15		0	1			0	1				
03:30		0	1			0	0				
03:45		0	0	0	2	0	0	0	2	0	4
04:00		0	1			0	0				
04:15		0	1			0	0				
04:30		0	0			0	0				
04:45		0	0	0	2	0	1	0	1	0	3
05:00		0	0			0	1				
05:15		0	0			0	4				
05:30		0	4			0	10				
05:45		0	10	0	14	0	6	0	21	0	35
06:00		0	7			1	6				
06:15		0	6			0	2				
06:30		1	0			1	0				
06:45		1	1	2	14	1	1	3	9	5	23
07:00		0	6			0	0				
07:15		0	0			0	0				
07:30		0	0			1	0				
07:45		0	0	0	6	0	1	1	1	1	7
08:00		0	2			3	1				
08:15		1	4			1	0				
08:30		0	8			0	3				
08:45		0	5	1	19	2	7	6	11	7	30
09:00		2	16			2	1				
09:15		0	2			0	0				
09:30		1	1			0	0				
09:45		3	0	6	19	0	0	2	1	8	20
10:00		1	0			0	1				
10:15		1	1			0	0				
10:30		2	0			1	0				
10:45		2	1	6	2	0	1	1	2	7	4
11:00		1	0			2	0				
11:15		0	0			3	0				
11:30		4	0			0	0				
11:45		1	0	6	0	0	0	5	0	11	0
Total		22	93	22	93	19	57	19	57	41	150
Combined Total		115		115		76		76		191	
AM Peak	-	09:45	-	-	-	08:00	-	-	-	-	-
Vol.	-	7	-	-	-	6	-	-	-	-	-
P.H.F.		0.583				0.500					
PM Peak	-	-	08:15	-	-	-	05:15	-	-	-	-
Vol.	-	-	33	-	-	-	26	-	-	-	-
P.H.F.			0.516				0.650				
Percentage		19.1%	80.9%			25.0%	75.0%				

Counts Unlimited, Inc.

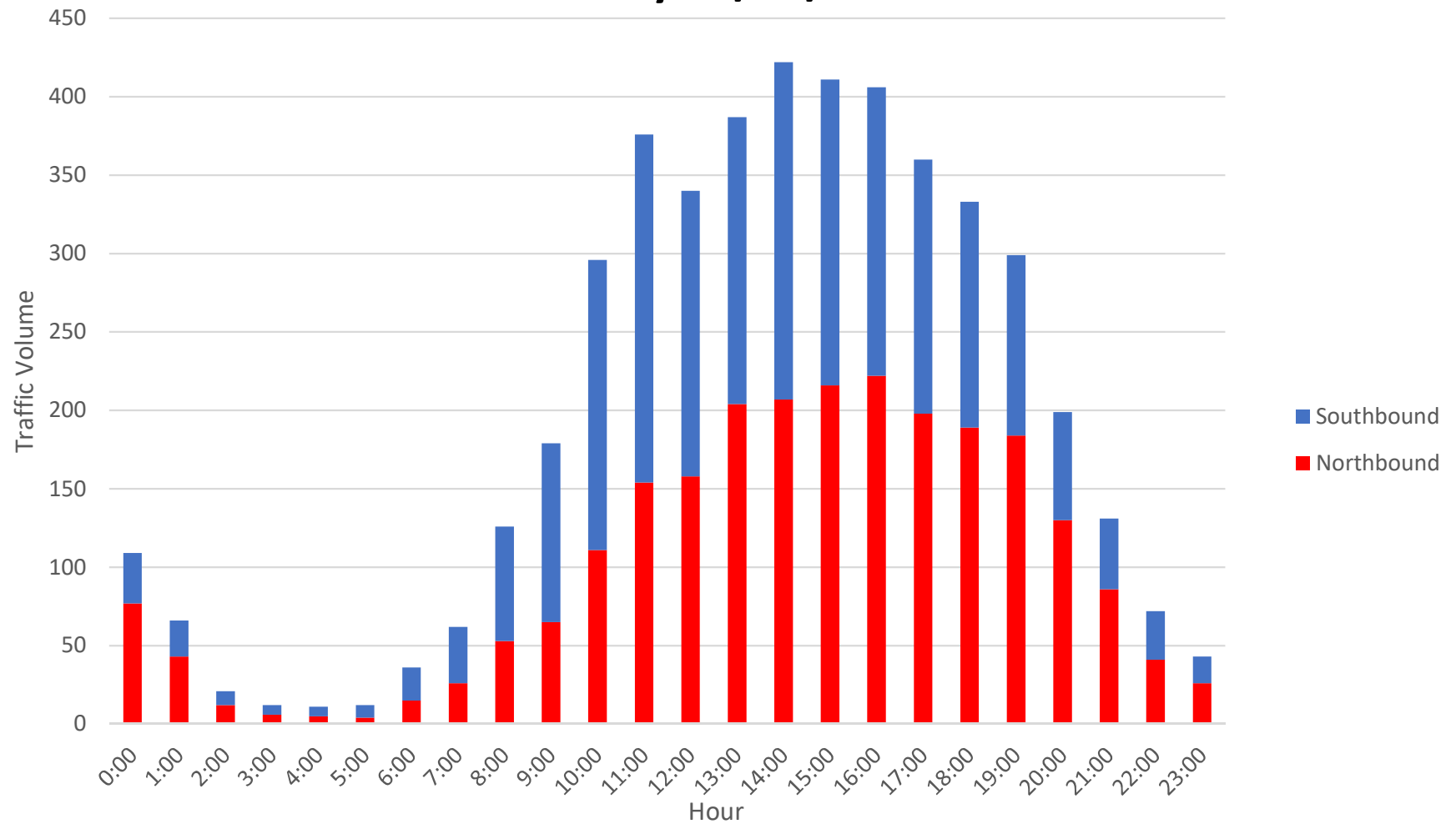
City of Rancho Cucamonga
Church Driveway
W/ Etiwanda Avenue
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

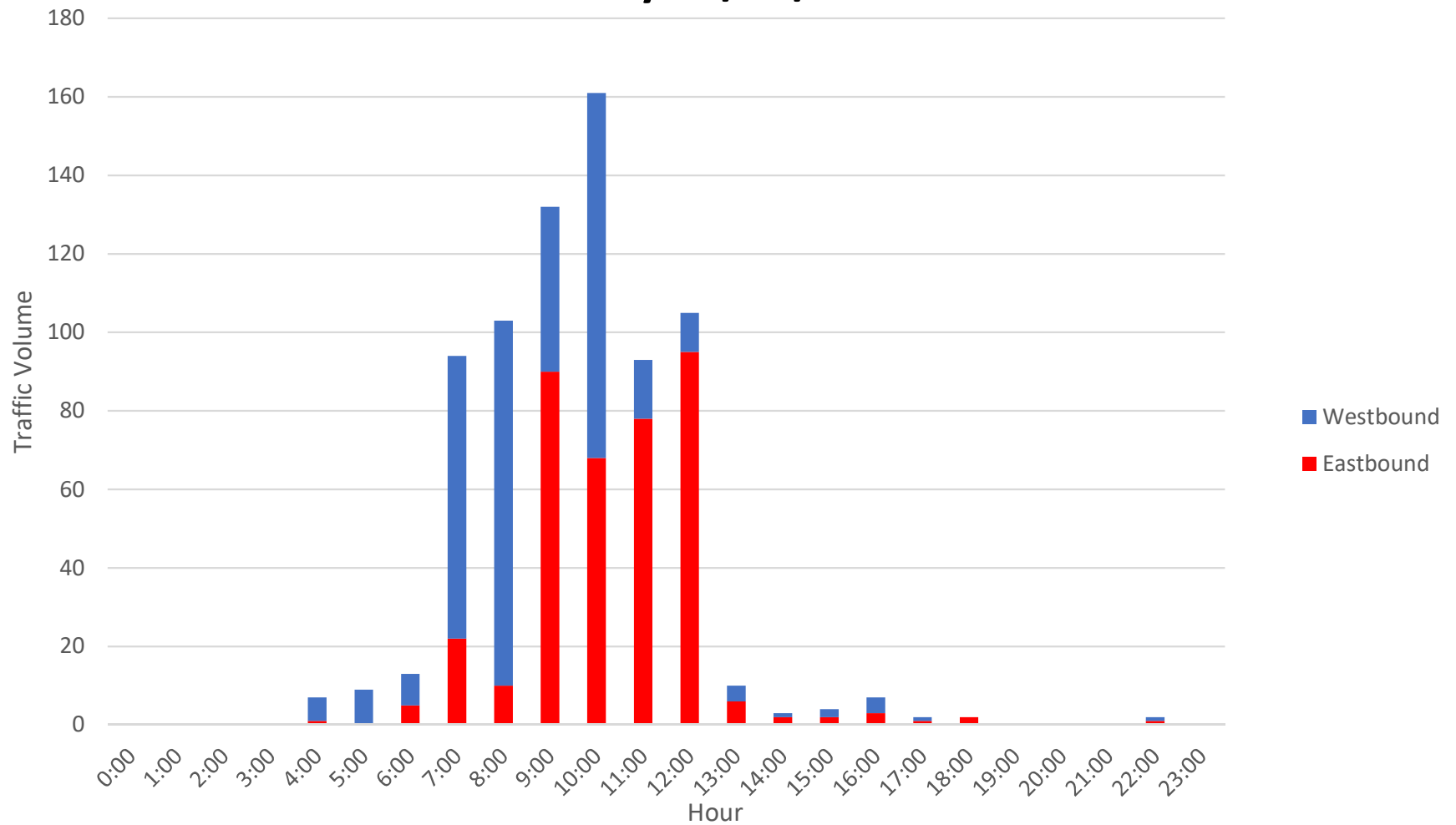
RNC003
Site Code: 221-18293

Start Time	12-Apr-18 Thu	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	0			0	0				
12:15		0	0			0	0				
12:30		0	2			0	0				
12:45		0	0	0	2	0	0	0	0	0	2
01:00		0	1			0	2				
01:15		0	2			0	0				
01:30		0	0			0	3				
01:45		0	3	0	6	0	0	0	5	0	11
02:00		0	1			0	0				
02:15		0	3			0	0				
02:30		0	0			0	1				
02:45		0	2	0	6	0	0	0	1	0	7
03:00		0	1			0	0				
03:15		0	1			0	0				
03:30		0	0			0	0				
03:45		0	1	0	3	0	0	0	0	0	3
04:00		0	0			0	0				
04:15		0	0			0	1				
04:30		0	1			0	0				
04:45		0	0	0	1	0	0	0	1	0	2
05:00		0	1			0	1				
05:15		0	1			0	2				
05:30		0	0			0	0				
05:45		3	1	3	3	4	1	4	4	7	7
06:00		2	0			2	0				
06:15		1	0			0	0				
06:30		1	0			0	0				
06:45		0	0	4	0	0	0	2	0	6	0
07:00		0	0			0	0				
07:15		2	0			0	0				
07:30		0	0			1	0				
07:45		0	0	2	0	0	0	1	0	3	0
08:00		0	0			0	0				
08:15		0	0			1	0				
08:30		1	0			0	0				
08:45		0	0	1	0	0	0	1	0	2	0
09:00		0	0			1	0				
09:15		0	0			1	0				
09:30		1	0			1	0				
09:45		0	0	1	0	1	0	4	0	5	0
10:00		1	0			0	0				
10:15		2	0			1	0				
10:30		0	0			2	0				
10:45		2	0	5	0	0	0	3	0	8	0
11:00		0	0			4	0				
11:15		2	0			1	0				
11:30		3	0			2	0				
11:45		0	0	5	0	0	0	7	0	12	0
Total		21	21	21	21	22	11	22	11	43	32
Combined Total		42		42		33		33		75	
AM Peak	-	05:45	-	-	-	10:15	-	-	-	-	-
Vol.	-	7	-	-	-	7	-	-	-	-	-
P.H.F.		0.583				0.438					
PM Peak	-	-	01:30	-	-	-	00:45	-	-	-	-
Vol.	-	-	7	-	-	-	5	-	-	-	-
P.H.F.			0.583				0.417				
Percentage		50.0%	50.0%			66.7%	33.3%				
ADT/AADT		ADT 133		AADT 133							

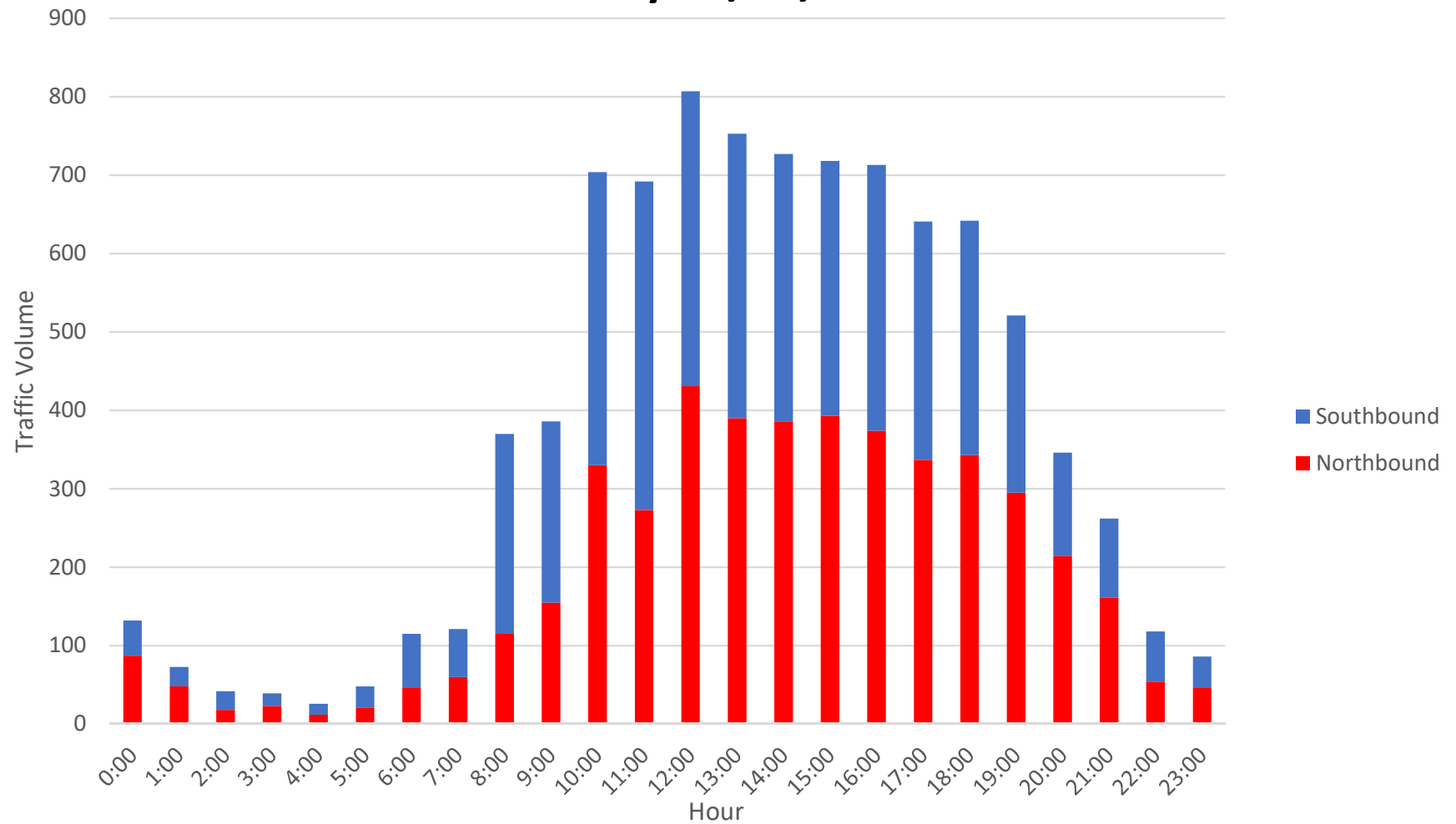
Traffic Volumes on Victoria Park Lane Sunday 04/15/2018



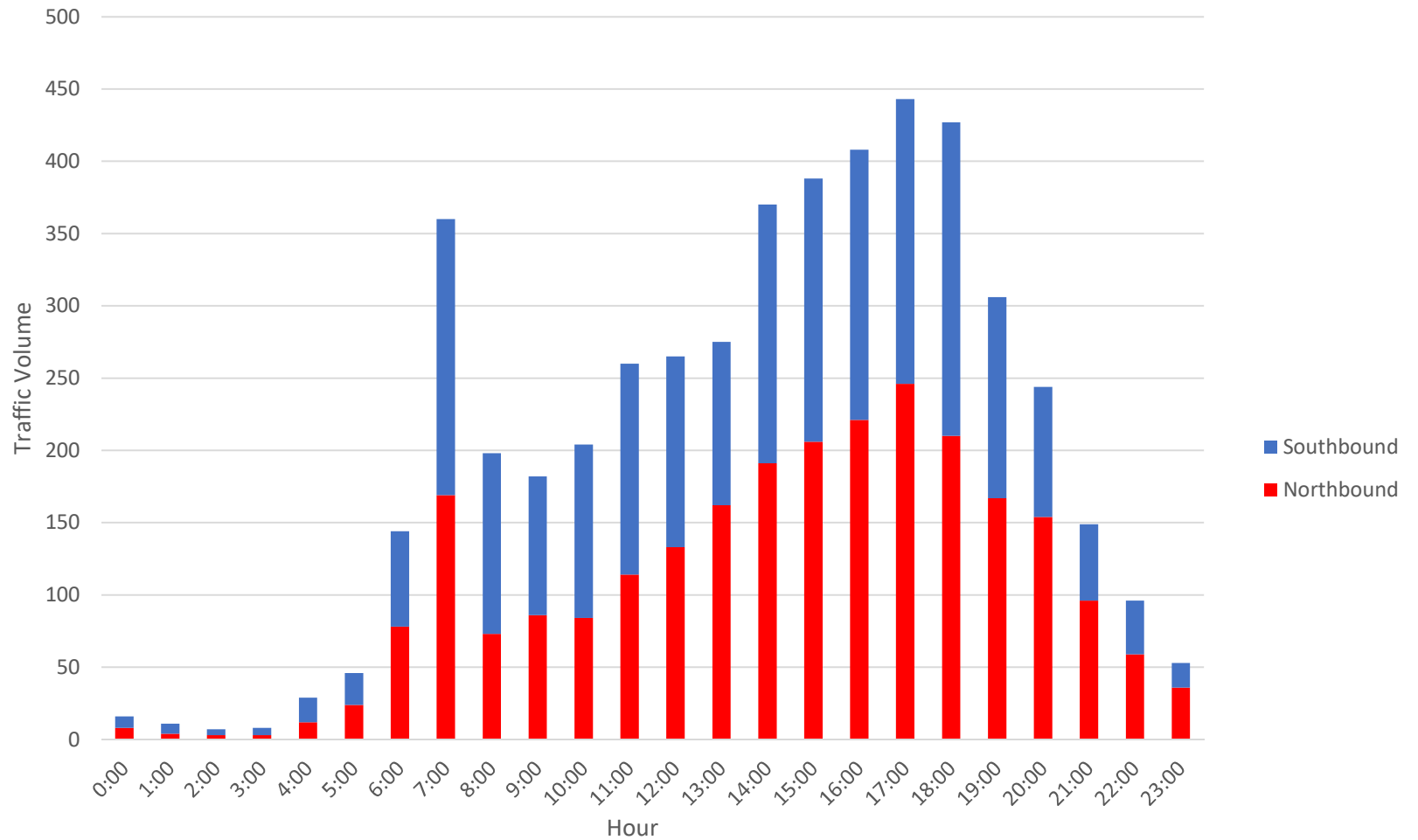
Traffic Volumes on Church Driveway Sunday 04/15/2018



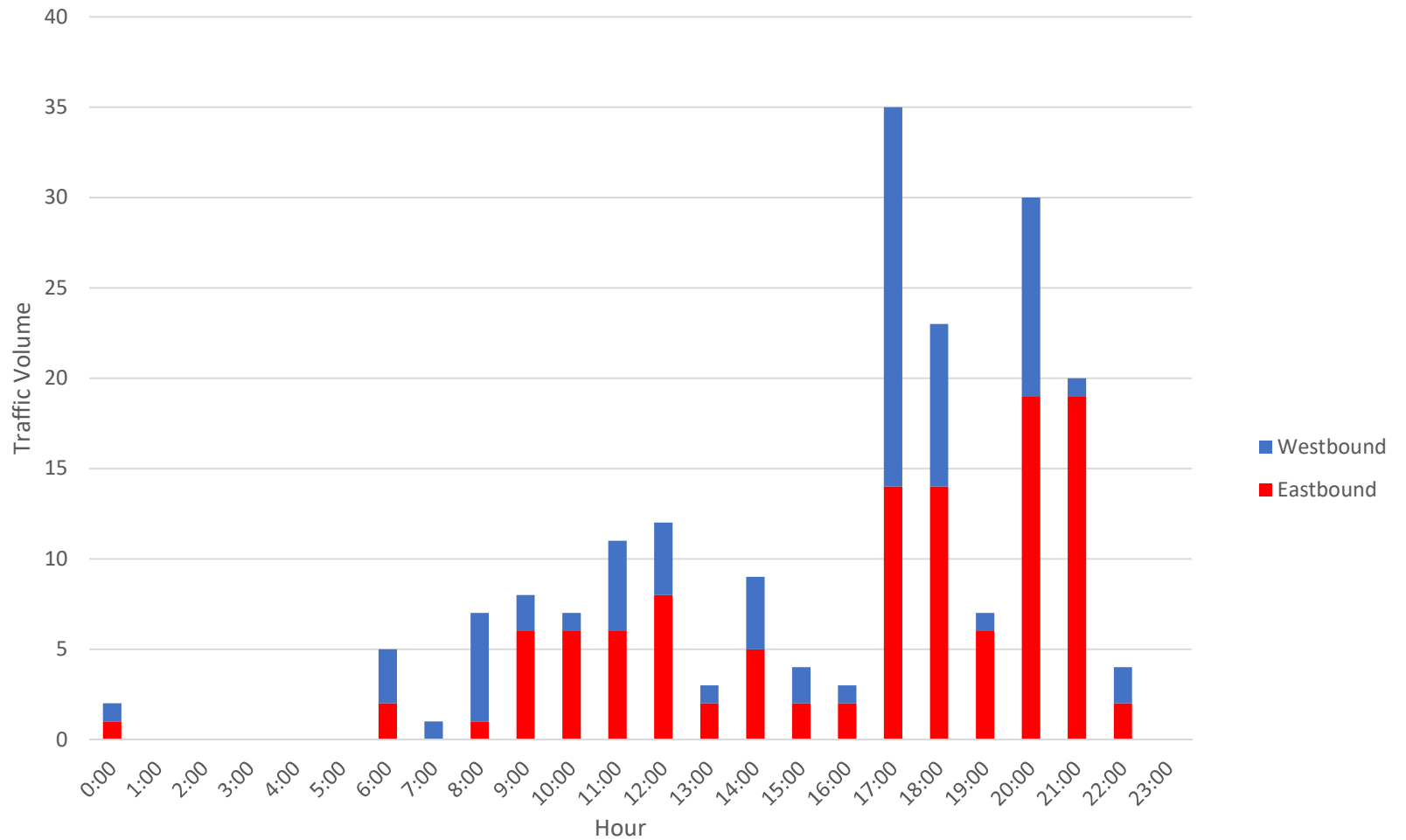
Traffic Volumes on Etiwanda Avenue Sunday 04/15/2018



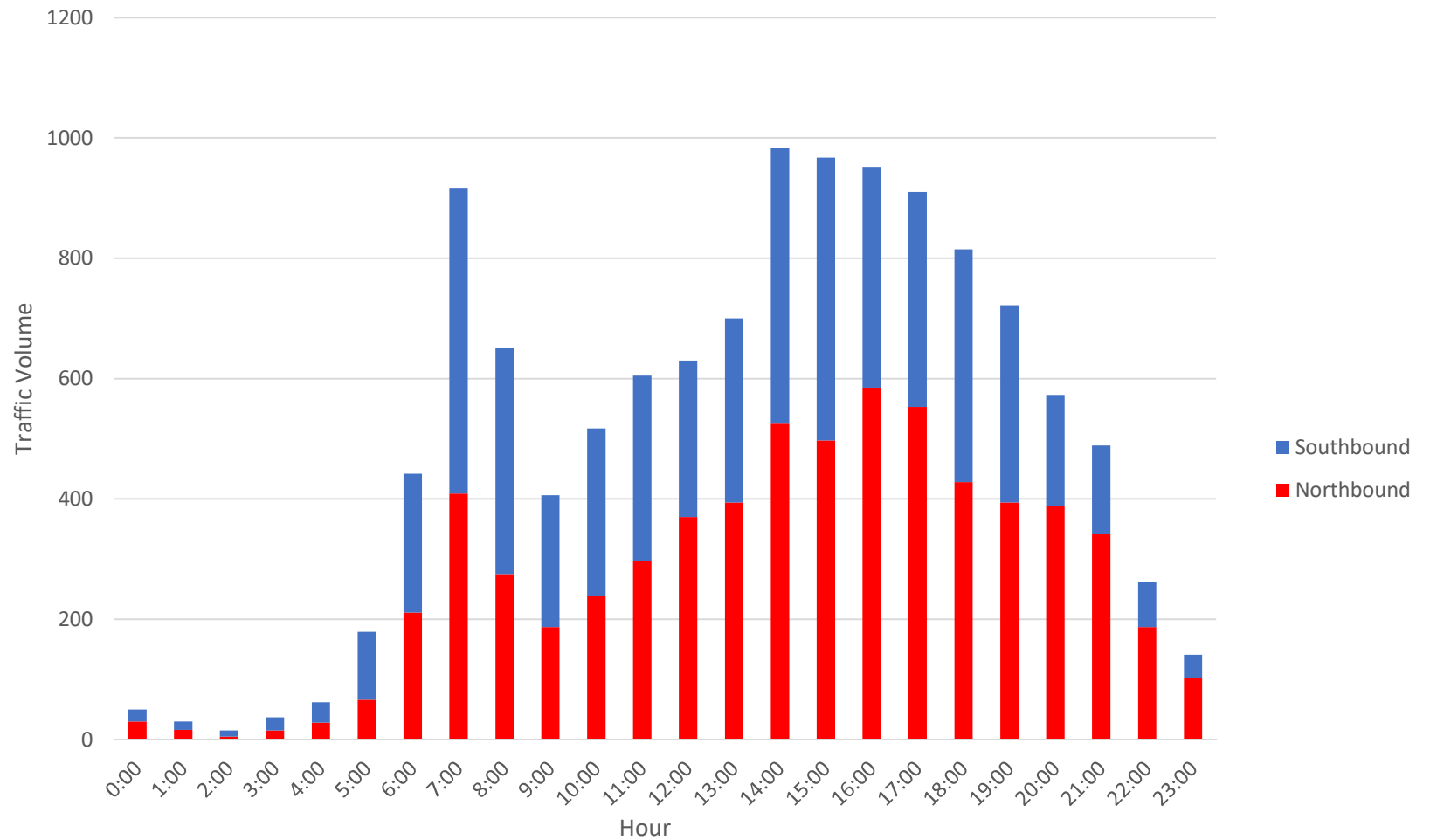
Traffic Volumes on Victoria Park Lane Wednesday 04/11/2018



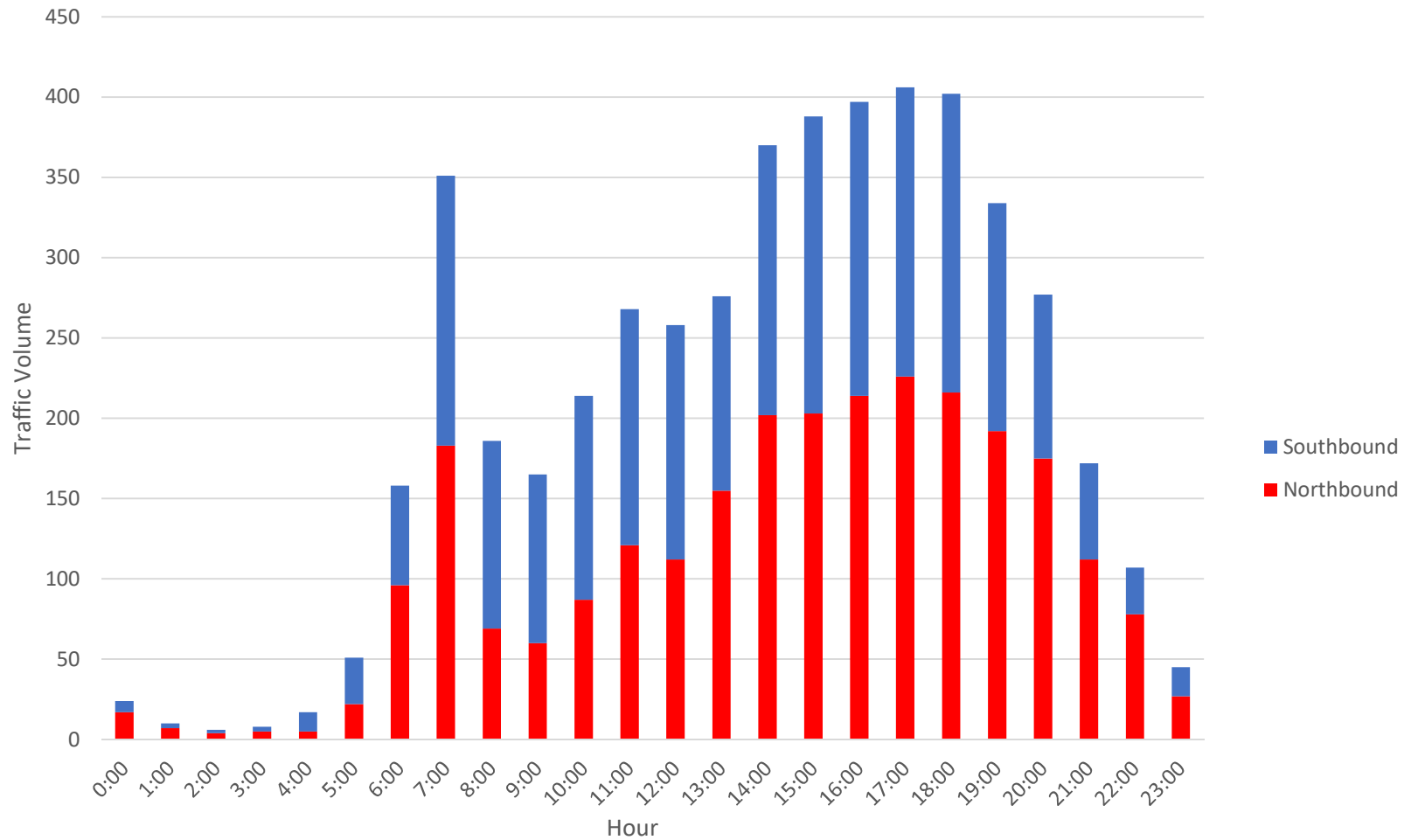
Traffic Volumes on Church Driveway Wednesday 04/11/2018



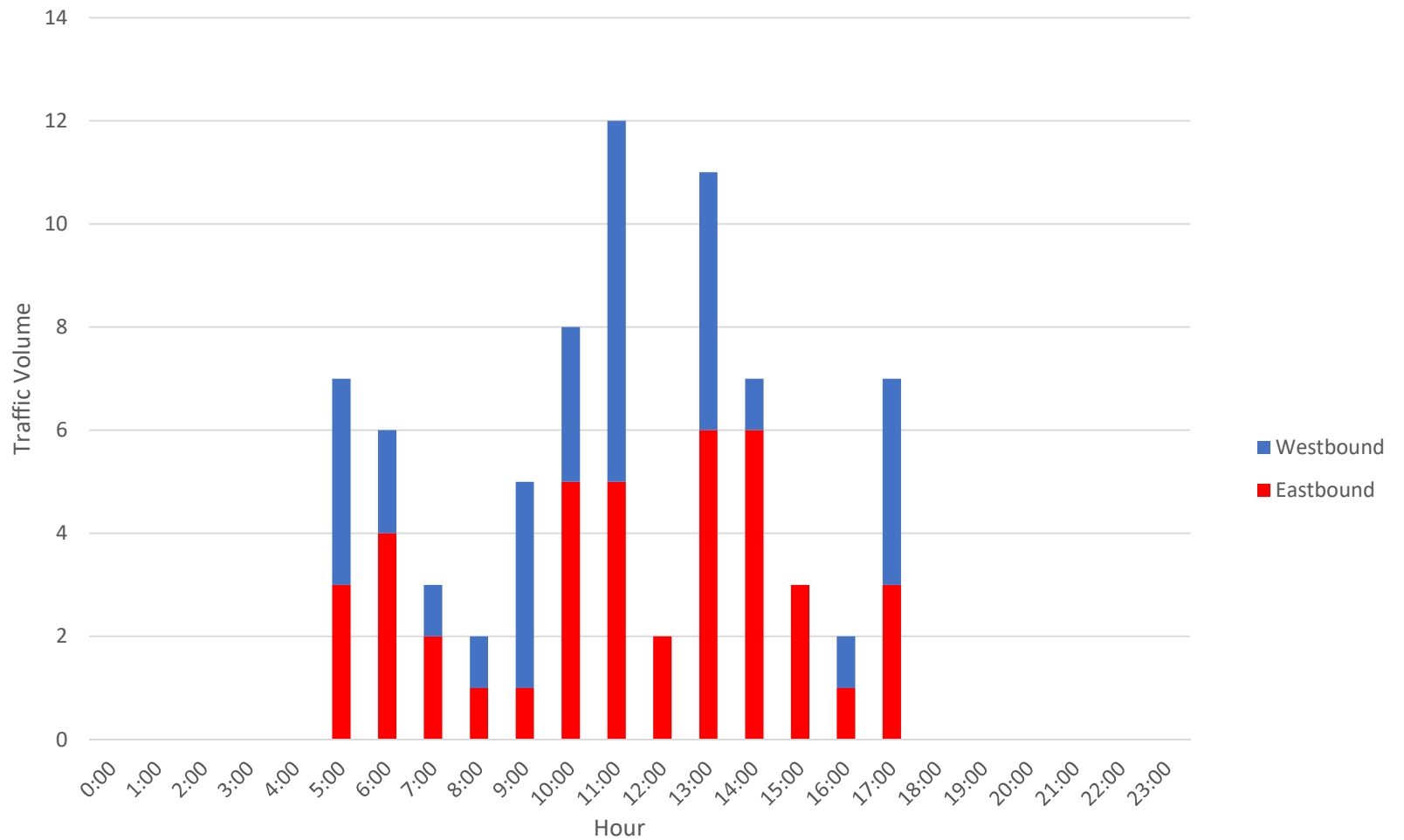
Traffic Volumes on Etiwanda Avenue Wednesday 04/11/2018



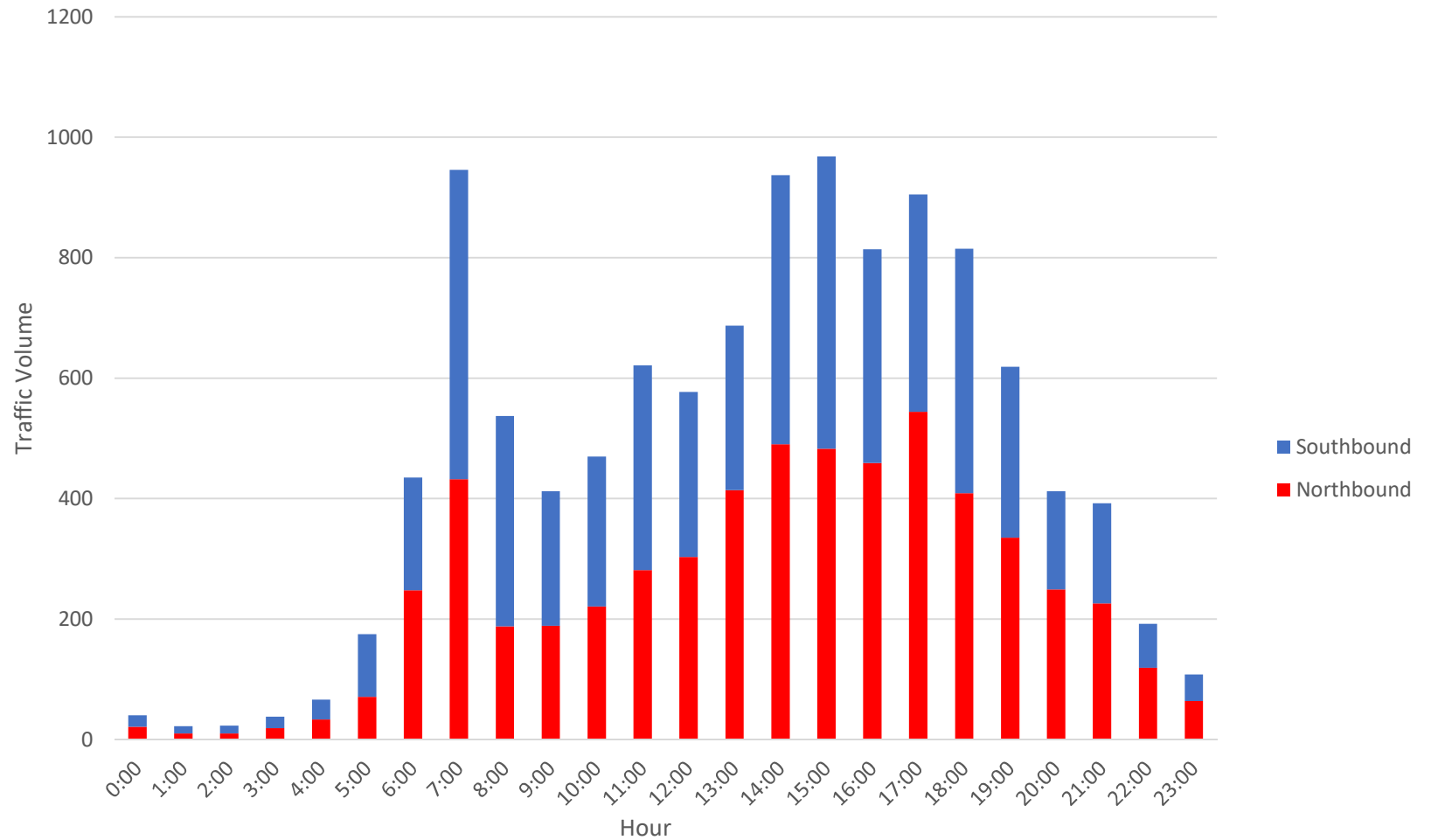
Traffic Volumes on Victoria Park Lane Thursday 04/12/2018



Traffic Volumes on Church Driveway Thursday 04/12/2018



Traffic Volumes on Etiwanda Avenue Thursday 04/12/2018



City of Rancho Cucamonga
N/S: Victoria Park Lane
E/W: Baseline Avenue
Weather: Clear

File Name : 01_RNC_Victoria Park_Baseline MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

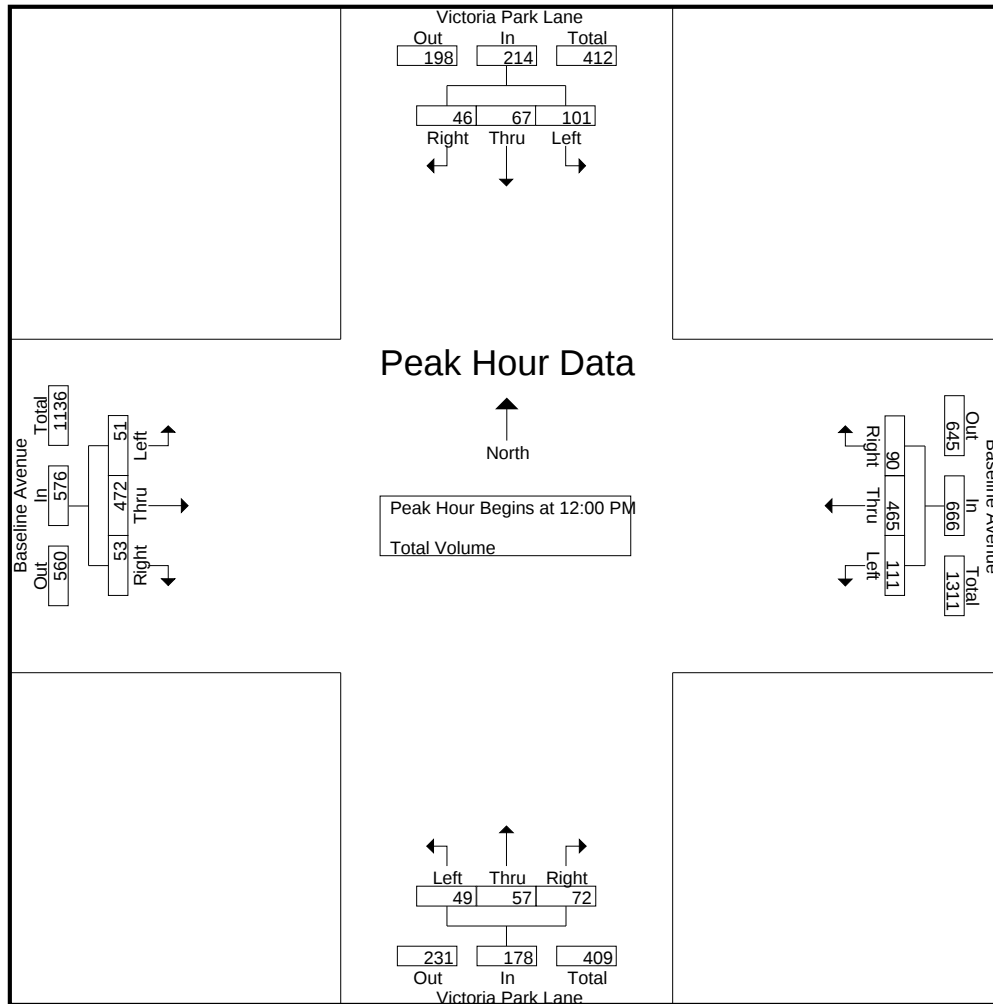
Groups Printed- Total Volume

	Victoria Park Lane Southbound				Baseline Avenue Westbound				Victoria Park Lane Northbound				Baseline Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
10:00 AM	13	16	14	43	12	83	8	103	3	2	8	13	13	58	2	73	232
10:15 AM	21	12	13	46	12	106	6	124	8	6	3	17	8	81	2	91	278
10:30 AM	19	16	11	46	19	107	12	138	14	4	4	22	17	76	3	96	302
10:45 AM	25	19	11	55	23	105	15	143	9	6	9	24	19	97	18	134	356
Total	78	63	49	190	66	401	41	508	34	18	24	76	57	312	25	394	1168
11:00 AM	32	14	8	54	19	129	16	164	13	14	13	40	11	80	11	102	360
11:15 AM	27	19	9	55	30	155	11	196	13	11	13	37	11	106	8	125	413
11:30 AM	22	6	13	41	18	110	12	140	8	11	12	31	10	103	16	129	341
11:45 AM	15	14	14	43	27	113	16	156	7	12	11	30	16	101	14	131	360
Total	96	53	44	193	94	507	55	656	41	48	49	138	48	390	49	487	1474
12:00 PM	17	20	13	50	34	116	17	167	10	14	13	37	20	115	16	151	405
12:15 PM	29	17	12	58	28	117	27	172	9	19	23	51	14	113	7	134	415
12:30 PM	36	13	12	61	27	109	25	161	14	15	18	47	5	112	17	134	403
12:45 PM	19	17	9	45	22	123	21	166	16	9	18	43	12	132	13	157	411
Total	101	67	46	214	111	465	90	666	49	57	72	178	51	472	53	576	1634
Grand Total	275	183	139	597	271	1373	186	1830	124	123	145	392	156	1174	127	1457	4276
Apprch %	46.1	30.7	23.3		14.8	75	10.2		31.6	31.4	37		10.7	80.6	8.7		
Total %	6.4	4.3	3.3	14	6.3	32.1	4.3	42.8	2.9	2.9	3.4	9.2	3.6	27.5	3	34.1	

	Victoria Park Lane Southbound				Baseline Avenue Westbound				Victoria Park Lane Northbound				Baseline Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	17	20	13	50	34	116	17	167	10	14	13	37	20	115	16	151	405
12:15 PM	29	17	12	58	28	117	27	172	9	19	23	51	14	113	7	134	415
12:30 PM	36	13	12	61	27	109	25	161	14	15	18	47	5	112	17	134	403
12:45 PM	19	17	9	45	22	123	21	166	16	9	18	43	12	132	13	157	411
Total Volume	101	67	46	214	111	465	90	666	49	57	72	178	51	472	53	576	1634
% App. Total	47.2	31.3	21.5		16.7	69.8	13.5		27.5	32	40.4		8.9	81.9	9.2		
PHF	.701	.838	.885	.877	.816	.945	.833	.968	.766	.750	.783	.873	.638	.894	.779	.917	.984

City of Rancho Cucamonga
N/S: Victoria Park Lane
E/W: Baseline Avenue
Weather: Clear

File Name : 01_RNC_Victoria Park_Baseline MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 2



Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:00 PM				12:00 PM				12:00 PM				12:00 PM			
+0 mins.	17	20	13	50	34	116	17	167	10	14	13	37	20	115	16	151
+15 mins.	29	17	12	58	28	117	27	172	9	19	23	51	14	113	7	134
+30 mins.	36	13	12	61	27	109	25	161	14	15	18	47	5	112	17	134
+45 mins.	19	17	9	45	22	123	21	166	16	9	18	43	12	132	13	157
Total Volume	101	67	46	214	111	465	90	666	49	57	72	178	51	472	53	576
% App. Total	47.2	31.3	21.5		16.7	69.8	13.5		27.5	32	40.4		8.9	81.9	9.2	
PHF	.701	.838	.885	.877	.816	.945	.833	.968	.766	.750	.783	.873	.638	.894	.779	.917

City of Rancho Cucamonga
N/S: Victoria Park Lane
E/W: Wine Cellar Court
Weather: Clear

File Name : 02_RNC_Victoria Park_Wine Cellar MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

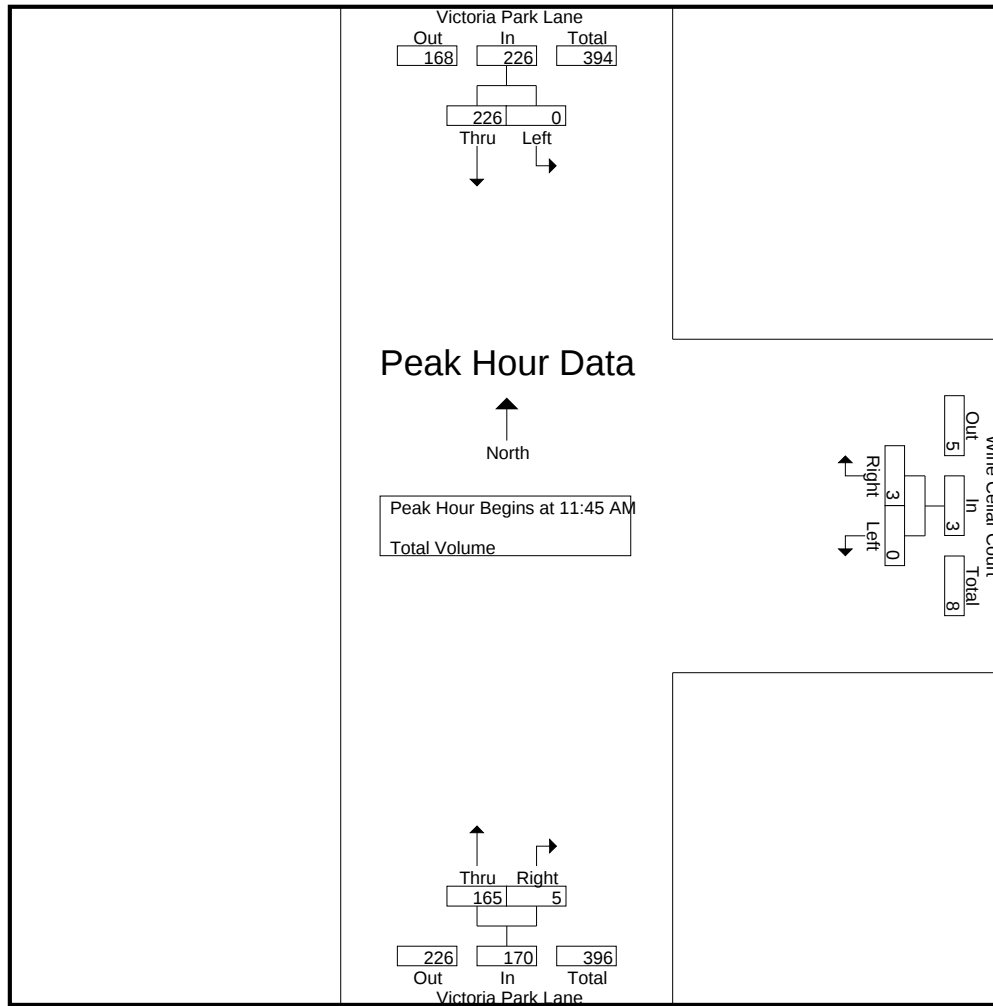
Groups Printed- Total Volume

	Victoria Park Lane Southbound			Wine Cellar Court Westbound			Victoria Park Lane Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
10:00 AM	0	33	33	0	0	0	12	1	13	46
10:15 AM	0	27	27	0	1	1	15	0	15	43
10:30 AM	0	38	38	0	2	2	19	0	19	59
10:45 AM	0	57	57	0	2	2	24	1	25	84
Total	0	155	155	0	5	5	70	2	72	232
11:00 AM	0	42	42	0	3	3	26	1	27	72
11:15 AM	0	56	56	0	1	1	31	0	31	88
11:30 AM	0	40	40	0	2	2	29	2	31	73
11:45 AM	0	52	52	0	0	0	42	1	43	95
Total	0	190	190	0	6	6	128	4	132	328
12:00 PM	0	69	69	0	0	0	34	2	36	105
12:15 PM	0	49	49	0	2	2	44	1	45	96
12:30 PM	0	56	56	0	1	1	45	1	46	103
12:45 PM	0	50	50	0	3	3	37	2	39	92
Total	0	224	224	0	6	6	160	6	166	396
Grand Total	0	569	569	0	17	17	358	12	370	956
Apprch %	0	100		0	100		96.8	3.2		
Total %	0	59.5	59.5	0	1.8	1.8	37.4	1.3	38.7	

	Victoria Park Lane Southbound			Wine Cellar Court Westbound			Victoria Park Lane Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:45 AM										
11:45 AM	0	52	52	0	0	0	42	1	43	95
12:00 PM	0	69	69	0	0	0	34	2	36	105
12:15 PM	0	49	49	0	2	2	44	1	45	96
12:30 PM	0	56	56	0	1	1	45	1	46	103
Total Volume	0	226	226	0	3	3	165	5	170	399
% App. Total	0	100		0	100		97.1	2.9		
PHF	.000	.819	.819	.000	.375	.375	.917	.625	.924	.950

City of Rancho Cucamonga
N/S: Victoria Park Lane
E/W: Wine Cellar Court
Weather: Clear

File Name : 02_RNC_Victoria Park_Wine Cellar MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 2



Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	11:45 AM			10:15 AM			11:45 AM		
+0 mins.	0	52	52	0	1	1	42	1	43
+15 mins.	0	69	69	0	2	2	34	2	36
+30 mins.	0	49	49	0	2	2	44	1	45
+45 mins.	0	56	56	0	3	3	45	1	46
Total Volume	0	226	226	0	8	8	165	5	170
% App. Total	0	100		0	100		97.1	2.9	
PHF	.000	.819	.819	.000	.667	.667	.917	.625	.924

City of Rancho Cucamonga
N/S: Victoria Park Lane
E/W: Long Meadow Drive
Weather: Clear

File Name : 03_RNC_Victoria Park_Long Meadow MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

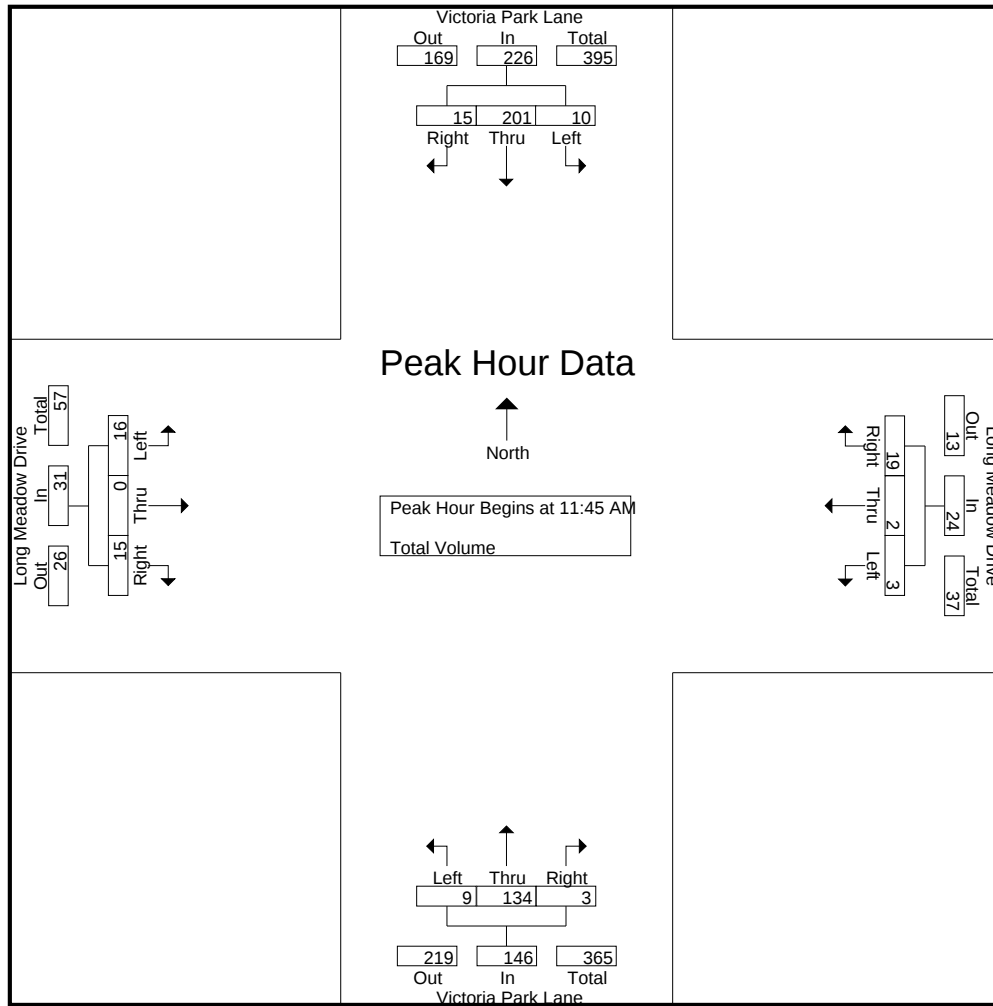
Groups Printed- Total Volume

	Victoria Park Lane Southbound				Long Meadow Drive Westbound				Victoria Park Lane Northbound				Long Meadow Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
10:00 AM	5	25	4	34	0	0	4	4	4	8	0	12	3	0	3	6	56
10:15 AM	1	24	3	28	0	0	1	1	4	10	2	16	2	0	2	4	49
10:30 AM	3	34	1	38	0	0	3	3	2	11	0	13	4	0	7	11	65
10:45 AM	3	45	4	52	0	0	0	0	2	19	0	21	4	0	4	8	81
Total	12	128	12	152	0	0	8	8	12	48	2	62	13	0	16	29	251
11:00 AM	1	43	3	47	0	0	2	2	3	21	0	24	5	0	5	10	83
11:15 AM	1	53	2	56	0	0	4	4	4	25	0	29	1	0	2	3	92
11:30 AM	2	35	3	40	0	0	0	0	3	30	0	33	0	0	4	4	77
11:45 AM	0	50	2	52	1	0	5	6	2	34	1	37	6	0	4	10	105
Total	4	181	10	195	1	0	11	12	12	110	1	123	12	0	15	27	357
12:00 PM	4	60	4	68	0	0	4	4	4	24	0	28	5	0	3	8	108
12:15 PM	1	43	6	50	1	1	7	9	3	36	1	40	4	0	5	9	108
12:30 PM	5	48	3	56	1	1	3	5	0	40	1	41	1	0	3	4	106
12:45 PM	3	44	3	50	0	2	1	3	1	31	0	32	5	0	1	6	91
Total	13	195	16	224	2	4	15	21	8	131	2	141	15	0	12	27	413
Grand Total	29	504	38	571	3	4	34	41	32	289	5	326	40	0	43	83	1021
Apprch %	5.1	88.3	6.7		7.3	9.8	82.9		9.8	88.7	1.5		48.2	0	51.8		
Total %	2.8	49.4	3.7	55.9	0.3	0.4	3.3	4	3.1	28.3	0.5	31.9	3.9	0	4.2	8.1	

	Victoria Park Lane Southbound				Long Meadow Drive Westbound				Victoria Park Lane Northbound				Long Meadow Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	0	50	2	52	1	0	5	6	2	34	1	37	6	0	4	10	105
12:00 PM	4	60	4	68	0	0	4	4	4	24	0	28	5	0	3	8	108
12:15 PM	1	43	6	50	1	1	7	9	3	36	1	40	4	0	5	9	108
12:30 PM	5	48	3	56	1	1	3	5	0	40	1	41	1	0	3	4	106
Total Volume	10	201	15	226	3	2	19	24	9	134	3	146	16	0	15	31	427
% App. Total	4.4	88.9	6.6		12.5	8.3	79.2		6.2	91.8	2.1		51.6	0	48.4		
PHF	.500	.838	.625	.831	.750	.500	.679	.667	.563	.838	.750	.890	.667	.000	.750	.775	.988

City of Rancho Cucamonga
N/S: Victoria Park Lane
E/W: Long Meadow Drive
Weather: Clear

File Name : 03_RNC_Victoria Park_Long Meadow MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 2



Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	11:45 AM				11:45 AM				11:45 AM				10:15 AM			
+0 mins.	0	50	2	52	1	0	5	6	2	34	1	37	2	0	2	4
+15 mins.	4	60	4	68	0	0	4	4	4	24	0	28	4	0	7	11
+30 mins.	1	43	6	50	1	1	7	9	3	36	1	40	4	0	4	8
+45 mins.	5	48	3	56	1	1	3	5	0	40	1	41	5	0	5	10
Total Volume	10	201	15	226	3	2	19	24	9	134	3	146	15	0	18	33
% App. Total	4.4	88.9	6.6		12.5	8.3	79.2		6.2	91.8	2.1		45.5	0	54.5	
PHF	.500	.838	.625	.831	.750	.500	.679	.667	.563	.838	.750	.890	.750	.000	.643	.750

City of Rancho Cucamonga
N/S: Victoria Park Ln/Victoria Gardens Ln
E/W: Church Street
Weather: Clear

File Name : 04_RNC_Victoria Park_Victoria Gardens_Church MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

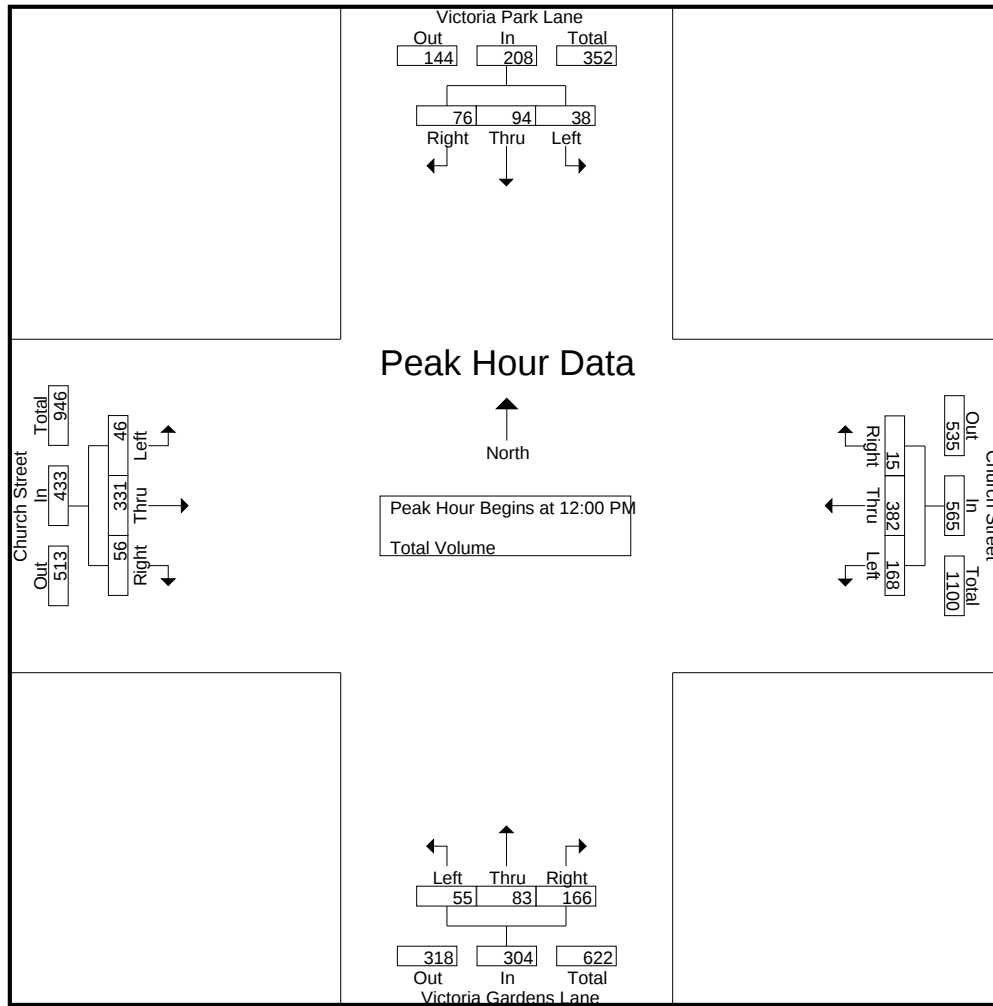
Groups Printed- Total Volume

	Victoria Park Lane Southbound				Church Street Westbound				Victoria Gardens Lane Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
10:00 AM	5	14	8	27	19	47	1	67	2	8	11	21	2	37	7	46	161
10:15 AM	4	14	9	27	29	55	4	88	4	8	20	32	5	47	5	57	204
10:30 AM	7	17	15	39	30	55	5	90	3	6	20	29	2	68	9	79	237
10:45 AM	11	20	18	49	37	71	8	116	10	9	25	44	5	69	8	82	291
Total	27	65	50	142	115	228	18	361	19	31	76	126	14	221	29	264	893
11:00 AM	9	25	15	49	44	139	10	193	3	9	26	38	8	79	11	98	378
11:15 AM	4	29	23	56	39	118	8	165	10	12	26	48	10	90	15	115	384
11:30 AM	8	14	16	38	42	89	5	136	12	20	32	64	4	97	5	106	344
11:45 AM	11	27	19	57	38	65	9	112	4	17	30	51	11	80	18	109	329
Total	32	95	73	200	163	411	32	606	29	58	114	201	33	346	49	428	1435
12:00 PM	12	27	24	63	46	85	1	132	13	16	40	69	11	64	10	85	349
12:15 PM	4	27	13	44	31	99	6	136	14	18	41	73	16	90	8	114	367
12:30 PM	13	21	22	56	44	98	4	146	10	29	35	74	12	93	13	118	394
12:45 PM	9	19	17	45	47	100	4	151	18	20	50	88	7	84	25	116	400
Total	38	94	76	208	168	382	15	565	55	83	166	304	46	331	56	433	1510
Grand Total	97	254	199	550	446	1021	65	1532	103	172	356	631	93	898	134	1125	3838
Apprch %	17.6	46.2	36.2		29.1	66.6	4.2		16.3	27.3	56.4		8.3	79.8	11.9		
Total %	2.5	6.6	5.2	14.3	11.6	26.6	1.7	39.9	2.7	4.5	9.3	16.4	2.4	23.4	3.5	29.3	

	Victoria Park Lane Southbound				Church Street Westbound				Victoria Gardens Lane Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	12	27	24	63	46	85	1	132	13	16	40	69	11	64	10	85	349
12:15 PM	4	27	13	44	31	99	6	136	14	18	41	73	16	90	8	114	367
12:30 PM	13	21	22	56	44	98	4	146	10	29	35	74	12	93	13	118	394
12:45 PM	9	19	17	45	47	100	4	151	18	20	50	88	7	84	25	116	400
Total Volume	38	94	76	208	168	382	15	565	55	83	166	304	46	331	56	433	1510
% App. Total	18.3	45.2	36.5		29.7	67.6	2.7		18.1	27.3	54.6		10.6	76.4	12.9		
PHF	.731	.870	.792	.825	.894	.955	.625	.935	.764	.716	.830	.864	.719	.890	.560	.917	.944

City of Rancho Cucamonga
N/S: Victoria Park Ln/Victoria Gardens Ln
E/W: Church Street
Weather: Clear

File Name : 04_RNC_Victoria Park_Victoria Gardens_Church MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 2



Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	11:45 AM				10:45 AM				12:00 PM				12:00 PM			
+0 mins.	11	27	19	57	37	71	8	116	13	16	40	69	11	64	10	85
+15 mins.	12	27	24	63	44	139	10	193	14	18	41	73	16	90	8	114
+30 mins.	4	27	13	44	39	118	8	165	10	29	35	74	12	93	13	118
+45 mins.	13	21	22	56	42	89	5	136	18	20	50	88	7	84	25	116
Total Volume	40	102	78	220	162	417	31	610	55	83	166	304	46	331	56	433
% App. Total	18.2	46.4	35.5		26.6	68.4	5.1		18.1	27.3	54.6		10.6	76.4	12.9	
PHF	.769	.944	.813	.873	.920	.750	.775	.790	.764	.716	.830	.864	.719	.890	.560	.917

City of Rancho Cucamonga
N/S: I-15 Southbound Ramps
E/W: Foothill Blvd (Historic Route 66)
Weather: Clear

File Name : 05_RNC_15SB_Foothill MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

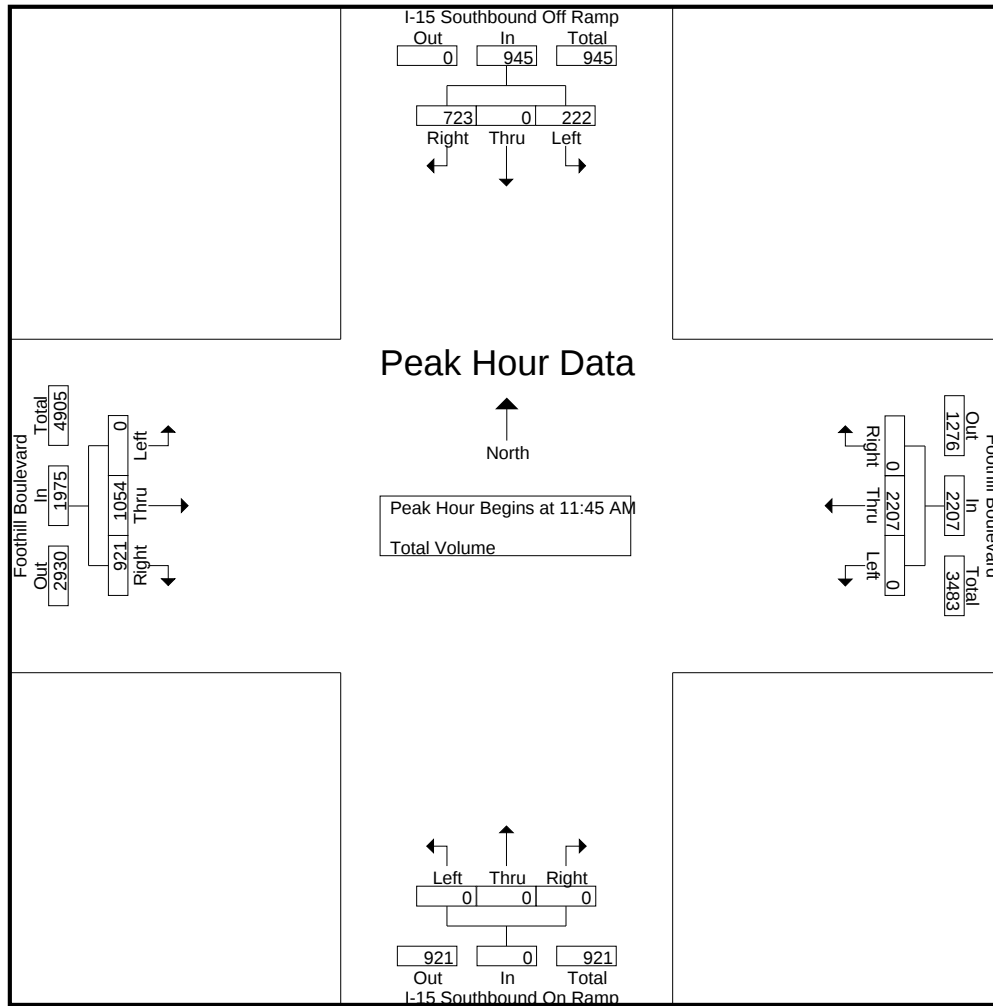
Groups Printed- Total Volume

	I-15 Southbound Off Ramp Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
10:00 AM	53	0	110	163	0	370	0	370	0	0	0	0	0	152	126	278	811
10:15 AM	60	0	122	182	0	392	0	392	0	0	0	0	0	188	167	355	929
10:30 AM	54	0	153	207	0	405	0	405	0	0	0	0	0	184	187	371	983
10:45 AM	45	0	198	243	0	473	0	473	0	0	0	0	0	243	173	416	1132
Total	212	0	583	795	0	1640	0	1640	0	0	0	0	0	767	653	1420	3855
11:00 AM	43	0	225	268	0	463	0	463	0	0	0	0	0	172	186	358	1089
11:15 AM	64	0	195	259	0	499	0	499	0	0	0	0	0	188	202	390	1148
11:30 AM	42	0	180	222	0	574	0	574	0	0	0	0	0	235	206	441	1237
11:45 AM	42	0	191	233	0	591	0	591	0	0	0	0	0	243	213	456	1280
Total	191	0	791	982	0	2127	0	2127	0	0	0	0	0	838	807	1645	4754
12:00 PM	49	0	169	218	0	580	0	580	0	0	0	0	0	270	237	507	1305
12:15 PM	75	0	172	247	0	508	0	508	0	0	0	0	0	265	226	491	1246
12:30 PM	56	0	191	247	0	528	0	528	0	0	0	0	0	276	245	521	1296
12:45 PM	50	0	194	244	0	529	0	529	0	0	0	0	0	271	224	495	1268
Total	230	0	726	956	0	2145	0	2145	0	0	0	0	0	1082	932	2014	5115
Grand Total	633	0	2100	2733	0	5912	0	5912	0	0	0	0	0	2687	2392	5079	13724
Apprch %	23.2	0	76.8		0	100	0		0	0	0		0	52.9	47.1		
Total %	4.6	0	15.3	19.9	0	43.1	0	43.1	0	0	0	0	0	19.6	17.4	37	

	I-15 Southbound Off Ramp Southbound				Foothill Boulevard Westbound				I-15 Southbound On Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	42	0	191	233	0	591	0	591	0	0	0	0	0	243	213	456	1280
12:00 PM	49	0	169	218	0	580	0	580	0	0	0	0	0	270	237	507	1305
12:15 PM	75	0	172	247	0	508	0	508	0	0	0	0	0	265	226	491	1246
12:30 PM	56	0	191	247	0	528	0	528	0	0	0	0	0	276	245	521	1296
Total Volume	222	0	723	945	0	2207	0	2207	0	0	0	0	0	1054	921	1975	5127
% App. Total	23.5	0	76.5		0	100	0		0	0	0		0	53.4	46.6		
PHF	.740	.000	.946	.956	.000	.934	.000	.934	.000	.000	.000	.000	.000	.955	.940	.948	.982

City of Rancho Cucamonga
N/S: I-15 Southbound Ramps
E/W: Foothill Blvd (Historic Route 66)
Weather: Clear

File Name : 05_RNC_15SB_Foothill MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 2



Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	10:45 AM				11:30 AM				10:00 AM				12:00 PM			
+0 mins.	45	0	198	243	0	574	0	574	0	0	0	0	0	270	237	507
+15 mins.	43	0	225	268	0	591	0	591	0	0	0	0	0	265	226	491
+30 mins.	64	0	195	259	0	580	0	580	0	0	0	0	0	276	245	521
+45 mins.	42	0	180	222	0	508	0	508	0	0	0	0	0	271	224	495
Total Volume	194	0	798	992	0	2253	0	2253	0	0	0	0	0	1082	932	2014
% App. Total	19.6	0	80.4		0	100	0		0	0	0	0	0	53.7	46.3	
PHF	.758	.000	.887	.925	.000	.953	.000	.953	.000	.000	.000	.000	.000	.980	.951	.966

City of Rancho Cucamonga
N/S: I-15 Northbound Ramps
E/W: Foothill Blvd (Historic Route 66)
Weather: Clear

File Name : 06_RNC_15NB_Foothill MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

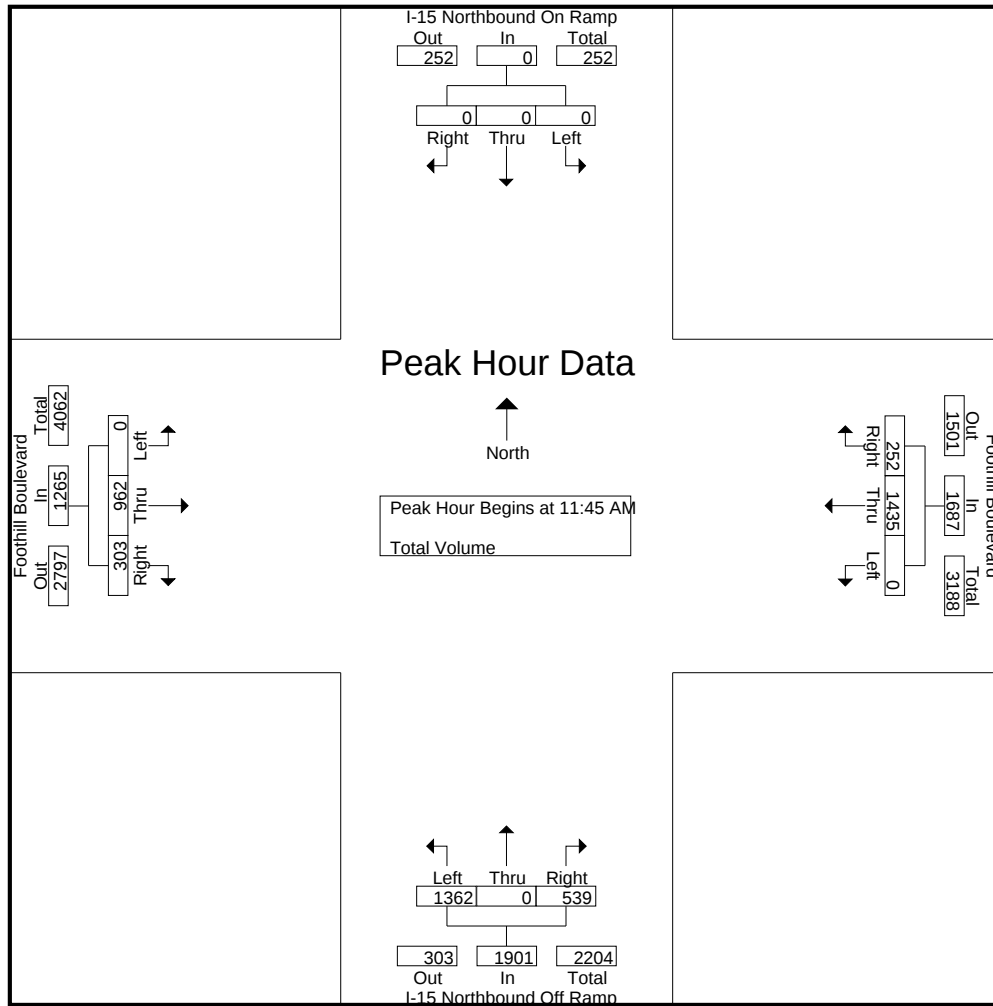
Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Off Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
10:00 AM	0	0	0	0	0	313	54	367	224	0	97	321	0	155	50	205	893
10:15 AM	0	0	0	0	0	250	44	294	261	0	131	392	0	200	39	239	925
10:30 AM	0	0	0	0	0	248	56	304	258	0	113	371	0	174	59	233	908
10:45 AM	0	0	0	0	0	287	45	332	306	0	109	415	0	211	76	287	1034
Total	0	0	0	0	0	1098	199	1297	1049	0	450	1499	0	740	224	964	3760
11:00 AM	0	0	0	0	0	321	41	362	266	0	137	403	0	170	56	226	991
11:15 AM	0	0	0	0	0	289	47	336	333	0	119	452	0	190	61	251	1039
11:30 AM	0	0	0	0	0	336	40	376	354	0	152	506	0	200	60	260	1142
11:45 AM	0	0	0	0	0	374	67	441	365	0	117	482	0	213	61	274	1197
Total	0	0	0	0	0	1320	195	1515	1318	0	525	1843	0	773	238	1011	4369
12:00 PM	0	0	0	0	0	416	82	498	324	0	133	457	0	230	76	306	1261
12:15 PM	0	0	0	0	0	319	55	374	333	0	137	470	0	253	87	340	1184
12:30 PM	0	0	0	0	0	326	48	374	340	0	152	492	0	266	79	345	1211
12:45 PM	0	0	0	0	0	318	68	386	350	0	142	492	0	218	85	303	1181
Total	0	0	0	0	0	1379	253	1632	1347	0	564	1911	0	967	327	1294	4837
Grand Total	0	0	0	0	0	3797	647	4444	3714	0	1539	5253	0	2480	789	3269	12966
Apprch %	0	0	0		0	85.4	14.6		70.7	0	29.3		0	75.9	24.1		
Total %	0	0	0		0	29.3	5	34.3	28.6	0	11.9	40.5	0	19.1	6.1	25.2	

	I-15 Northbound On Ramp Southbound				Foothill Boulevard Westbound				I-15 Northbound Off Ramp Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	0	0	0	0	0	374	67	441	365	0	117	482	0	213	61	274	1197
12:00 PM	0	0	0	0	0	416	82	498	324	0	133	457	0	230	76	306	1261
12:15 PM	0	0	0	0	0	319	55	374	333	0	137	470	0	253	87	340	1184
12:30 PM	0	0	0	0	0	326	48	374	340	0	152	492	0	266	79	345	1211
Total Volume	0	0	0	0	0	1435	252	1687	1362	0	539	1901	0	962	303	1265	4853
% App. Total	0	0	0		0	85.1	14.9		71.6	0	28.4		0	76	24		
PHF	.000	.000	.000	.000	.000	.862	.768	.847	.933	.000	.887	.966	.000	.904	.871	.917	.962

City of Rancho Cucamonga
N/S: I-15 Northbound Ramps
E/W: Foothill Blvd (Historic Route 66)
Weather: Clear

File Name : 06_RNC_15NB_Foothill MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 2



Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	10:00 AM				11:30 AM				11:30 AM				12:00 PM			
+0 mins.	0	0	0	0	0	336	40	376	354	0	152	506	0	230	76	306
+15 mins.	0	0	0	0	0	374	67	441	365	0	117	482	0	253	87	340
+30 mins.	0	0	0	0	0	416	82	498	324	0	133	457	0	266	79	345
+45 mins.	0	0	0	0	0	319	55	374	333	0	137	470	0	218	85	303
Total Volume	0	0	0	0	0	1445	244	1689	1376	0	539	1915	0	967	327	1294
% App. Total	0	0	0	0	0	85.6	14.4		71.9	0	28.1		0	74.7	25.3	
PHF	.000	.000	.000	.000	.000	.868	.744	.848	.942	.000	.887	.946	.000	.909	.940	.938

City of Rancho Cucamonga
N/S: Etiwanda Avenue
E/W: Foothill Blvd (Historic Route 66)
Weather: Clear

File Name : 07_RNC_Etiwanda_Foothill MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

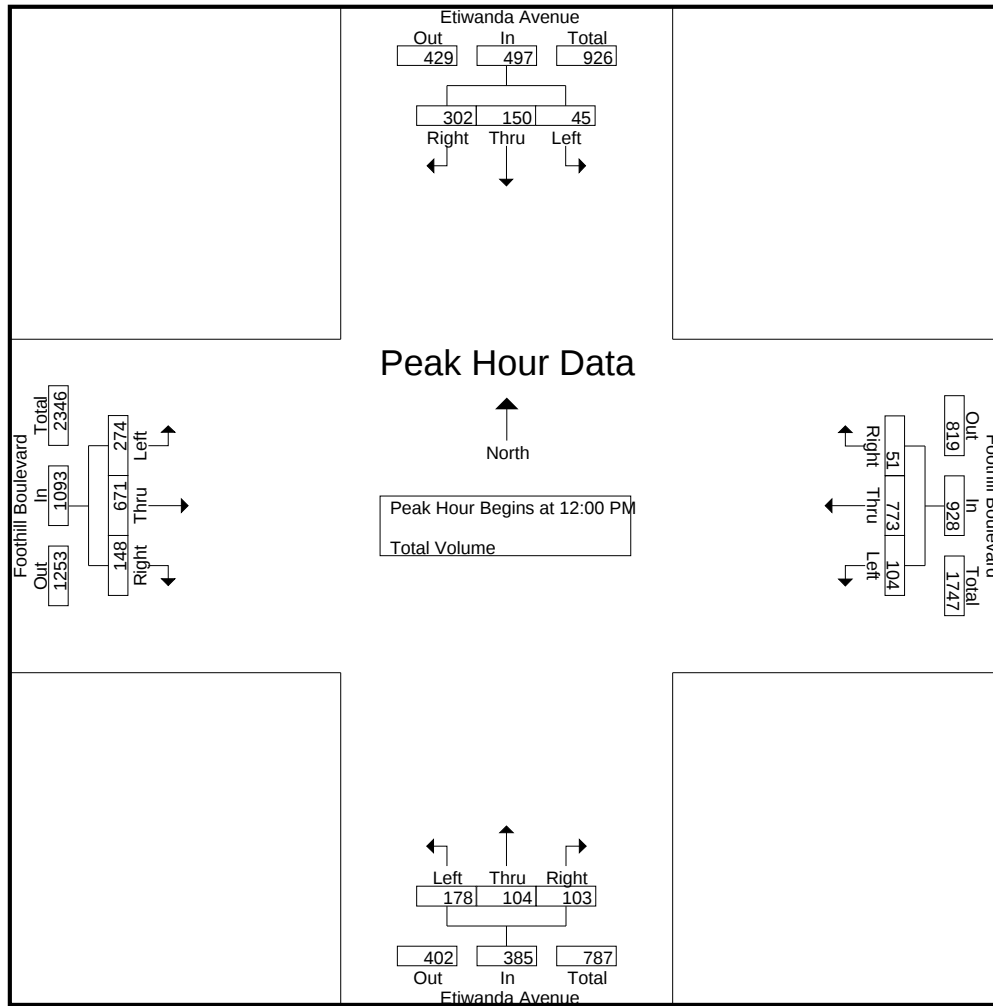
Groups Printed- Total Volume

	Etiwanda Avenue Southbound				Foothill Boulevard Westbound				Etiwanda Avenue Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
10:00 AM	2	32	59	93	13	193	11	217	40	36	10	86	49	150	27	226	622
10:15 AM	11	33	80	124	22	186	5	213	37	18	18	73	46	129	20	195	605
10:30 AM	7	29	73	109	27	191	11	229	36	42	22	100	50	116	21	187	625
10:45 AM	8	43	48	99	32	180	12	224	38	36	14	88	54	129	22	205	616
Total	28	137	260	425	94	750	39	883	151	132	64	347	199	524	90	813	2468
11:00 AM	15	53	59	127	29	222	13	264	36	36	37	109	58	126	26	210	710
11:15 AM	8	43	50	101	27	209	19	255	41	26	23	90	47	144	21	212	658
11:30 AM	4	45	63	112	29	182	15	226	46	36	27	109	66	157	27	250	697
11:45 AM	16	43	37	96	24	185	10	219	44	34	23	101	63	187	26	276	692
Total	43	184	209	436	109	798	57	964	167	132	110	409	234	614	100	948	2757
12:00 PM	15	36	60	111	16	202	12	230	60	28	25	113	69	173	32	274	728
12:15 PM	11	33	84	128	30	168	19	217	50	25	21	96	62	165	38	265	706
12:30 PM	11	40	83	134	33	228	10	271	33	25	23	81	57	170	41	268	754
12:45 PM	8	41	75	124	25	175	10	210	35	26	34	95	86	163	37	286	715
Total	45	150	302	497	104	773	51	928	178	104	103	385	274	671	148	1093	2903
Grand Total	116	471	771	1358	307	2321	147	2775	496	368	277	1141	707	1809	338	2854	8128
Apprch %	8.5	34.7	56.8		11.1	83.6	5.3		43.5	32.3	24.3		24.8	63.4	11.8		
Total %	1.4	5.8	9.5	16.7	3.8	28.6	1.8	34.1	6.1	4.5	3.4	14	8.7	22.3	4.2	35.1	

	Etiwanda Avenue Southbound				Foothill Boulevard Westbound				Etiwanda Avenue Northbound				Foothill Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	15	36	60	111	16	202	12	230	60	28	25	113	69	173	32	274	728
12:15 PM	11	33	84	128	30	168	19	217	50	25	21	96	62	165	38	265	706
12:30 PM	11	40	83	134	33	228	10	271	33	25	23	81	57	170	41	268	754
12:45 PM	8	41	75	124	25	175	10	210	35	26	34	95	86	163	37	286	715
Total Volume	45	150	302	497	104	773	51	928	178	104	103	385	274	671	148	1093	2903
% App. Total	9.1	30.2	60.8		11.2	83.3	5.5		46.2	27	26.8		25.1	61.4	13.5		
PHF	.750	.915	.899	.927	.788	.848	.671	.856	.742	.929	.757	.852	.797	.970	.902	.955	.963

City of Rancho Cucamonga
N/S: Etiwanda Avenue
E/W: Foothill Blvd (Historic Route 66)
Weather: Clear

File Name : 07_RNC_Etiwanda_Foothill MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 2



Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:00 PM				10:30 AM				11:30 AM				12:00 PM			
+0 mins.	15	36	60	111	27	191	11	229	46	36	27	109	69	173	32	274
+15 mins.	11	33	84	128	32	180	12	224	44	34	23	101	62	165	38	265
+30 mins.	11	40	83	134	29	222	13	264	60	28	25	113	57	170	41	268
+45 mins.	8	41	75	124	27	209	19	255	50	25	21	96	86	163	37	286
Total Volume	45	150	302	497	115	802	55	972	200	123	96	419	274	671	148	1093
% App. Total	9.1	30.2	60.8		11.8	82.5	5.7		47.7	29.4	22.9		25.1	61.4	13.5	
PHF	.750	.915	.899	.927	.898	.903	.724	.920	.833	.854	.889	.927	.797	.970	.902	.955

City of Rancho Cucamonga
N/S: Etiwanda Avenue
E/W: Churst Street/Miller Avenue
Weather: Clear

File Name : 08_RNC_Etiwanda_Church_Miller MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

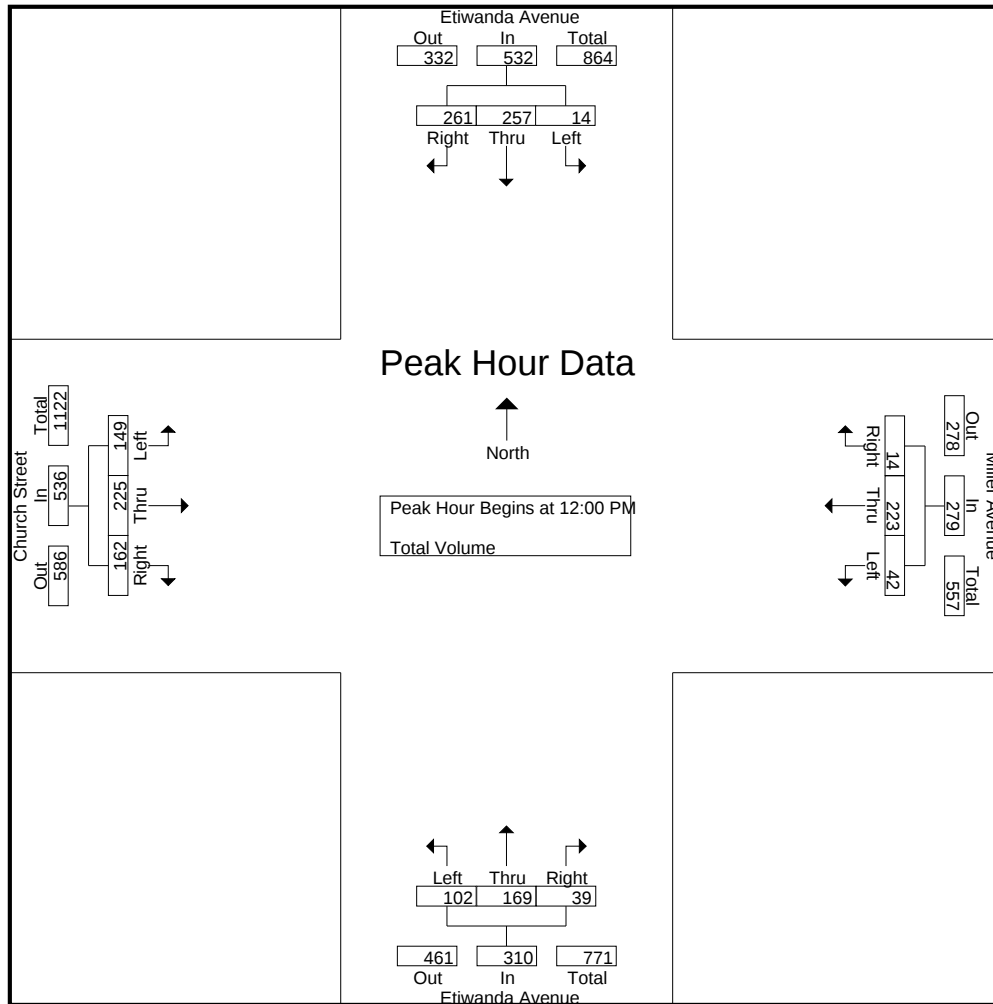
Groups Printed- Total Volume

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
10:00 AM	1	43	23	67	12	27	1	40	30	31	9	70	7	28	20	55	232
10:15 AM	5	61	44	110	17	38	3	58	16	37	2	55	14	30	30	74	297
10:30 AM	4	39	37	80	11	37	5	53	22	54	13	89	33	38	28	99	321
10:45 AM	1	44	44	89	3	52	3	58	25	50	10	85	35	42	27	104	336
Total	11	187	148	346	43	154	12	209	93	172	34	299	89	138	105	332	1186
11:00 AM	11	44	42	97	24	121	9	154	36	42	14	92	21	63	35	119	462
11:15 AM	11	50	48	109	17	114	12	143	22	34	11	67	19	68	29	116	435
11:30 AM	1	38	52	91	16	59	6	81	28	40	9	77	37	77	27	141	390
11:45 AM	3	46	57	106	6	47	5	58	25	34	16	75	28	53	42	123	362
Total	26	178	199	403	63	341	32	436	111	150	50	311	105	261	133	499	1649
12:00 PM	2	49	60	111	8	48	1	57	24	38	14	76	31	50	39	120	364
12:15 PM	5	58	55	118	10	62	6	78	26	46	6	78	37	52	46	135	409
12:30 PM	6	76	71	153	17	51	7	75	28	36	14	78	39	57	35	131	437
12:45 PM	1	74	75	150	7	62	0	69	24	49	5	78	42	66	42	150	447
Total	14	257	261	532	42	223	14	279	102	169	39	310	149	225	162	536	1657
Grand Total	51	622	608	1281	148	718	58	924	306	491	123	920	343	624	400	1367	4492
Apprch %	4	48.6	47.5		16	77.7	6.3		33.3	53.4	13.4		25.1	45.6	29.3		
Total %	1.1	13.8	13.5	28.5	3.3	16	1.3	20.6	6.8	10.9	2.7	20.5	7.6	13.9	8.9	30.4	

	Etiwanda Avenue Southbound				Miller Avenue Westbound				Etiwanda Avenue Northbound				Church Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	2	49	60	111	8	48	1	57	24	38	14	76	31	50	39	120	364
12:15 PM	5	58	55	118	10	62	6	78	26	46	6	78	37	52	46	135	409
12:30 PM	6	76	71	153	17	51	7	75	28	36	14	78	39	57	35	131	437
12:45 PM	1	74	75	150	7	62	0	69	24	49	5	78	42	66	42	150	447
Total Volume	14	257	261	532	42	223	14	279	102	169	39	310	149	225	162	536	1657
% App. Total	2.6	48.3	49.1		15.1	79.9	5		32.9	54.5	12.6		27.8	42	30.2		
PHF	.583	.845	.870	.869	.618	.899	.500	.894	.911	.862	.696	.994	.887	.852	.880	.893	.927

City of Rancho Cucamonga
N/S: Etiwanda Avenue
E/W: Hurst Street/Miller Avenue
Weather: Clear

File Name : 08_RNC_Etiwanda_Church_Miller MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 2



Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	12:00 PM				10:45 AM				10:30 AM				12:00 PM			
+0 mins.	2	49	60	111	3	52	3	58	22	54	13	89	31	50	39	120
+15 mins.	5	58	55	118	24	121	9	154	25	50	10	85	37	52	46	135
+30 mins.	6	76	71	153	17	114	12	143	36	42	14	92	39	57	35	131
+45 mins.	1	74	75	150	16	59	6	81	22	34	11	67	42	66	42	150
Total Volume	14	257	261	532	60	346	30	436	105	180	48	333	149	225	162	536
% App. Total	2.6	48.3	49.1		13.8	79.4	6.9		31.5	54.1	14.4		27.8	42	30.2	
PHF	.583	.845	.870	.869	.625	.715	.625	.708	.729	.833	.857	.905	.887	.852	.880	.893

City of Rancho Cucamonga
N/S: Etiwanda Avenue
E/W: Church Driveway
Weather: Clear

File Name : 09_RNC_Etiwanda_Church DW MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

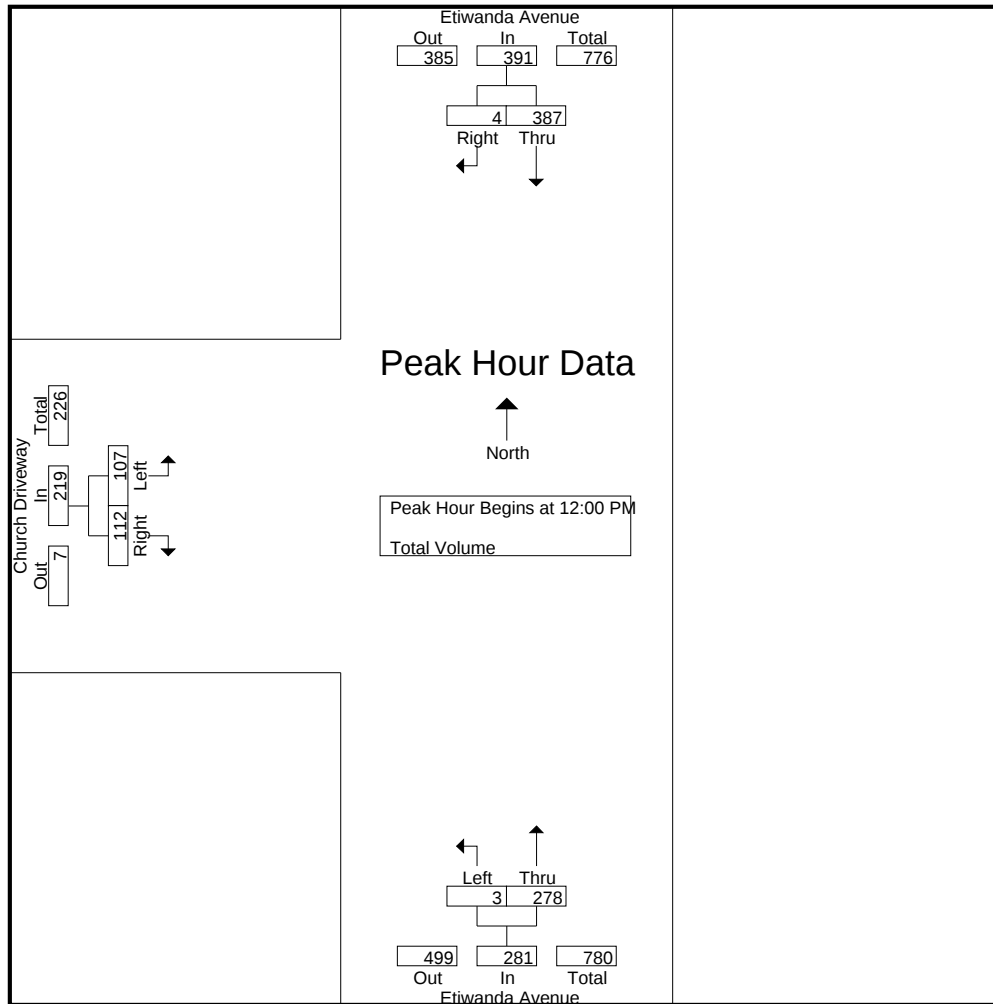
Groups Printed- Total Volume

	Etiwanda Avenue Southbound			Etiwanda Avenue Northbound			Church Driveway Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
10:00 AM	67	1	68	1	41	42	1	2	3	113
10:15 AM	94	4	98	1	43	44	22	10	32	174
10:30 AM	56	15	71	15	77	92	25	34	59	222
10:45 AM	71	55	126	30	62	92	12	14	26	244
Total	288	75	363	47	223	270	60	60	120	753
11:00 AM	86	34	120	13	57	70	9	7	16	206
11:15 AM	98	8	106	1	60	61	4	6	10	177
11:30 AM	89	0	89	2	83	85	1	1	2	176
11:45 AM	96	0	96	1	61	62	3	1	4	162
Total	369	42	411	17	261	278	17	15	32	721
12:00 PM	98	1	99	2	51	53	1	4	5	157
12:15 PM	95	0	95	1	96	97	19	13	32	224
12:30 PM	101	1	102	0	69	69	51	53	104	275
12:45 PM	93	2	95	0	62	62	36	42	78	235
Total	387	4	391	3	278	281	107	112	219	891
Grand Total	1044	121	1165	67	762	829	184	187	371	2365
Apprch %	89.6	10.4		8.1	91.9		49.6	50.4		
Total %	44.1	5.1	49.3	2.8	32.2	35.1	7.8	7.9	15.7	

	Etiwanda Avenue Southbound			Etiwanda Avenue Northbound			Church Driveway Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:00 PM										
12:00 PM	98	1	99	2	51	53	1	4	5	157
12:15 PM	95	0	95	1	96	97	19	13	32	224
12:30 PM	101	1	102	0	69	69	51	53	104	275
12:45 PM	93	2	95	0	62	62	36	42	78	235
Total Volume	387	4	391	3	278	281	107	112	219	891
% App. Total	99	1		1.1	98.9		48.9	51.1		
PHF	.958	.500	.958	.375	.724	.724	.525	.528	.526	.810

City of Rancho Cucamonga
N/S: Etiwanda Avenue
E/W: Church Driveway
Weather: Clear

File Name : 09_RNC_Etiwanda_Church DW MD
Site Code : 22118293
Start Date : 4/22/2018
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Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	10:45 AM			10:30 AM			12:00 PM		
+0 mins.	71	55	126	15	77	92	1	4	5
+15 mins.	86	34	120	30	62	92	19	13	32
+30 mins.	98	8	106	13	57	70	51	53	104
+45 mins.	89	0	89	1	60	61	36	42	78
Total Volume	344	97	441	59	256	315	107	112	219
% App. Total	78	22		18.7	81.3		48.9	51.1	
PHF	.878	.441	.875	.492	.831	.856	.525	.528	.526

City of Rancho Cucamonga
N/S: Etiwanda Avenue
E/W: Baseline Avenue
Weather: Clear

File Name : 10_RNC_Etiwanda_Baseline MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

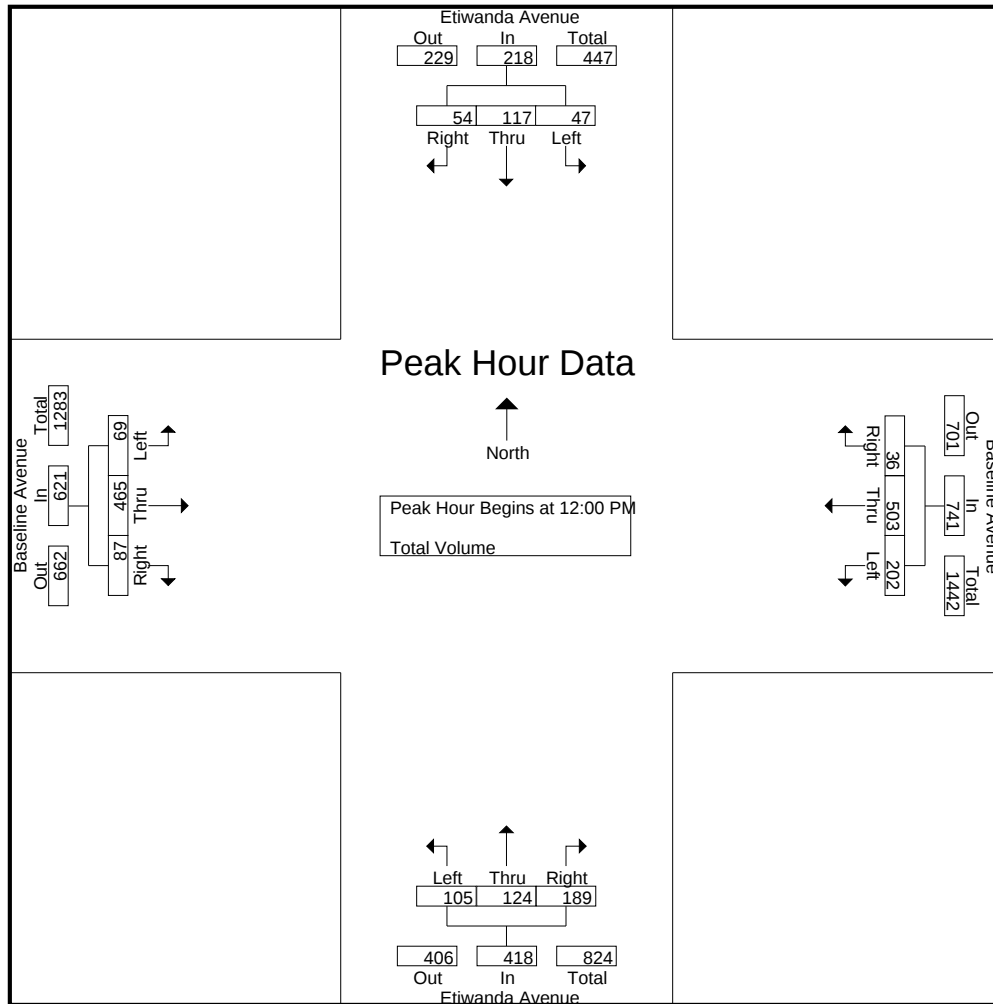
Groups Printed- Total Volume

	Etiwanda Avenue Southbound				Baseline Avenue Westbound				Etiwanda Avenue Northbound				Baseline Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
10:00 AM	9	15	5	29	29	77	4	110	16	15	10	41	5	69	16	90	270
10:15 AM	14	36	12	62	29	73	9	111	32	22	19	73	6	64	30	100	346
10:30 AM	10	19	11	40	38	98	13	149	26	32	34	92	3	81	13	97	378
10:45 AM	11	31	4	46	64	123	17	204	15	25	34	74	11	81	33	125	449
Total	44	101	32	177	160	371	43	574	89	94	97	280	25	295	92	412	1443
11:00 AM	18	35	17	70	47	125	9	181	15	32	23	70	10	86	20	116	437
11:15 AM	8	27	7	42	59	170	4	233	19	20	21	60	9	126	11	146	481
11:30 AM	14	31	11	56	41	120	10	171	12	22	39	73	9	112	12	133	433
11:45 AM	10	33	16	59	58	114	11	183	14	23	28	65	9	89	14	112	419
Total	50	126	51	227	205	529	34	768	60	97	111	268	37	413	57	507	1770
12:00 PM	10	34	14	58	41	134	13	188	16	19	32	67	12	106	21	139	452
12:15 PM	12	26	16	54	54	130	6	190	30	31	48	109	13	130	19	162	515
12:30 PM	18	22	10	50	47	129	8	184	28	41	60	129	16	115	29	160	523
12:45 PM	7	35	14	56	60	110	9	179	31	33	49	113	28	114	18	160	508
Total	47	117	54	218	202	503	36	741	105	124	189	418	69	465	87	621	1998
Grand Total	141	344	137	622	567	1403	113	2083	254	315	397	966	131	1173	236	1540	5211
Apprch %	22.7	55.3	22		27.2	67.4	5.4		26.3	32.6	41.1		8.5	76.2	15.3		
Total %	2.7	6.6	2.6	11.9	10.9	26.9	2.2	40	4.9	6	7.6	18.5	2.5	22.5	4.5	29.6	

	Etiwanda Avenue Southbound				Baseline Avenue Westbound				Etiwanda Avenue Northbound				Baseline Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	10	34	14	58	41	134	13	188	16	19	32	67	12	106	21	139	452
12:15 PM	12	26	16	54	54	130	6	190	30	31	48	109	13	130	19	162	515
12:30 PM	18	22	10	50	47	129	8	184	28	41	60	129	16	115	29	160	523
12:45 PM	7	35	14	56	60	110	9	179	31	33	49	113	28	114	18	160	508
Total Volume	47	117	54	218	202	503	36	741	105	124	189	418	69	465	87	621	1998
% App. Total	21.6	53.7	24.8		27.3	67.9	4.9		25.1	29.7	45.2		11.1	74.9	14		
PHF	.653	.836	.844	.940	.842	.938	.692	.975	.847	.756	.788	.810	.616	.894	.750	.958	.955

City of Rancho Cucamonga
N/S: Etiwanda Avenue
E/W: Baseline Avenue
Weather: Clear

File Name : 10_RNC_Etiwanda_Baseline MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 2



Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	11:00 AM				10:45 AM				12:00 PM				12:00 PM			
+0 mins.	18	35	17	70	64	123	17	204	16	19	32	67	12	106	21	139
+15 mins.	8	27	7	42	47	125	9	181	30	31	48	109	13	130	19	162
+30 mins.	14	31	11	56	59	170	4	233	28	41	60	129	16	115	29	160
+45 mins.	10	33	16	59	41	120	10	171	31	33	49	113	28	114	18	160
Total Volume	50	126	51	227	211	538	40	789	105	124	189	418	69	465	87	621
% App. Total	22	55.5	22.5		26.7	68.2	5.1		25.1	29.7	45.2		11.1	74.9	14	
PHF	.694	.900	.750	.811	.824	.791	.588	.847	.847	.756	.788	.810	.616	.894	.750	.958

City of Rancho Cucamonga
N/S: I-15 Southbound Ramps
E/W: Baseline Avenue
Weather: Clear

File Name : 11_RNC_15SB_Baseline MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

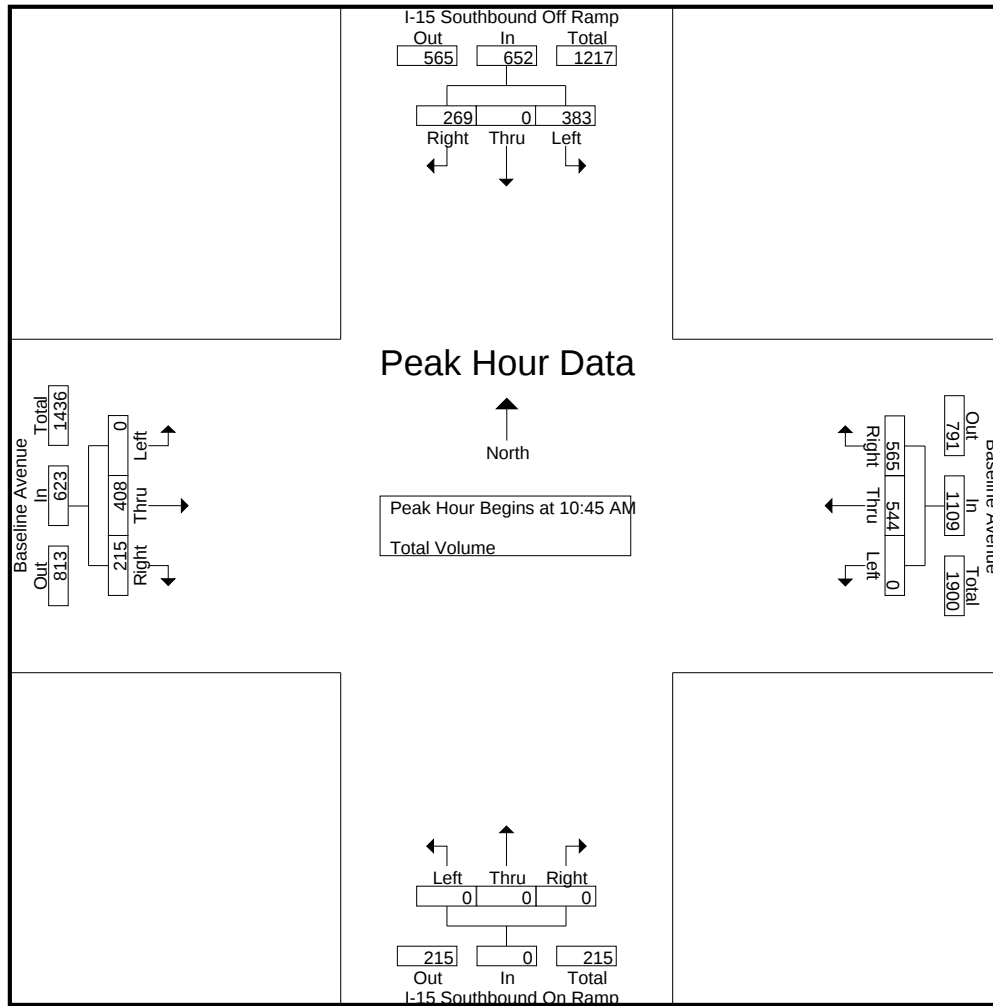
Groups Printed- Total Volume

	I-15 Southbound Off Ramp Southbound				Baseline Avenue Westbound				I-15 Southbound On Ramp Northbound				Baseline Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
10:00 AM	41	0	29	70	0	80	86	166	0	0	0	0	0	63	45	108	344
10:15 AM	32	0	39	71	0	78	135	213	0	0	0	0	0	57	41	98	382
10:30 AM	32	0	54	86	0	99	142	241	0	0	0	0	0	90	46	136	463
10:45 AM	66	0	94	160	0	103	138	241	0	0	0	0	0	77	57	134	535
Total	171	0	216	387	0	360	501	861	0	0	0	0	0	287	189	476	1724
11:00 AM	86	0	51	137	0	130	161	291	0	0	0	0	0	86	39	125	553
11:15 AM	117	0	66	183	0	171	130	301	0	0	0	0	0	114	52	166	650
11:30 AM	114	0	58	172	0	140	136	276	0	0	0	0	0	131	67	198	646
11:45 AM	57	0	49	106	0	121	120	241	0	0	0	0	0	87	40	127	474
Total	374	0	224	598	0	562	547	1109	0	0	0	0	0	418	198	616	2323
12:00 PM	53	0	83	136	0	112	127	239	0	0	0	0	0	93	53	146	521
12:15 PM	44	0	70	114	0	112	130	242	0	0	0	0	0	118	58	176	532
12:30 PM	59	0	71	130	0	129	97	226	0	0	0	0	0	130	76	206	562
12:45 PM	69	0	73	142	0	122	84	206	0	0	0	0	0	136	45	181	529
Total	225	0	297	522	0	475	438	913	0	0	0	0	0	477	232	709	2144
Grand Total	770	0	737	1507	0	1397	1486	2883	0	0	0	0	0	1182	619	1801	6191
Apprch %	51.1	0	48.9		0	48.5	51.5		0	0	0		0	65.6	34.4		
Total %	12.4	0	11.9	24.3	0	22.6	24	46.6	0	0	0	0	0	19.1	10	29.1	

	I-15 Southbound Off Ramp Southbound				Baseline Avenue Westbound				I-15 Southbound On Ramp Northbound				Baseline Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:45 AM																	
10:45 AM	66	0	94	160	0	103	138	241	0	0	0	0	0	77	57	134	535
11:00 AM	86	0	51	137	0	130	161	291	0	0	0	0	0	86	39	125	553
11:15 AM	117	0	66	183	0	171	130	301	0	0	0	0	0	114	52	166	650
11:30 AM	114	0	58	172	0	140	136	276	0	0	0	0	0	131	67	198	646
Total Volume	383	0	269	652	0	544	565	1109	0	0	0	0	0	408	215	623	2384
% App. Total	58.7	0	41.3		0	49.1	50.9		0	0	0		0	65.5	34.5		
PHF	.818	.000	.715	.891	.000	.795	.877	.921	.000	.000	.000	.000	.000	.779	.802	.787	.917

City of Rancho Cucamonga
N/S: I-15 Southbound Ramps
E/W: Baseline Avenue
Weather: Clear

File Name : 11_RNC_15SB_Baseline MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 2



Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	10:45 AM				10:45 AM				10:00 AM				12:00 PM			
+0 mins.	66	0	94	160	0	103	138	241	0	0	0	0	0	93	53	146
+15 mins.	86	0	51	137	0	130	161	291	0	0	0	0	0	118	58	176
+30 mins.	117	0	66	183	0	171	130	301	0	0	0	0	0	130	76	206
+45 mins.	114	0	58	172	0	140	136	276	0	0	0	0	0	136	45	181
Total Volume	383	0	269	652	0	544	565	1109	0	0	0	0	0	477	232	709
% App. Total	58.7	0	41.3		0	49.1	50.9		0	0	0		0	67.3	32.7	
PHF	.818	.000	.715	.891	.000	.795	.877	.921	.000	.000	.000	.000	.000	.877	.763	.860

City of Rancho Cucamonga
N/S: I-15 Northbound Ramps
E/W: Baseline Avenue
Weather: Clear

File Name : 12_RNC_15NB_Baseline MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 1

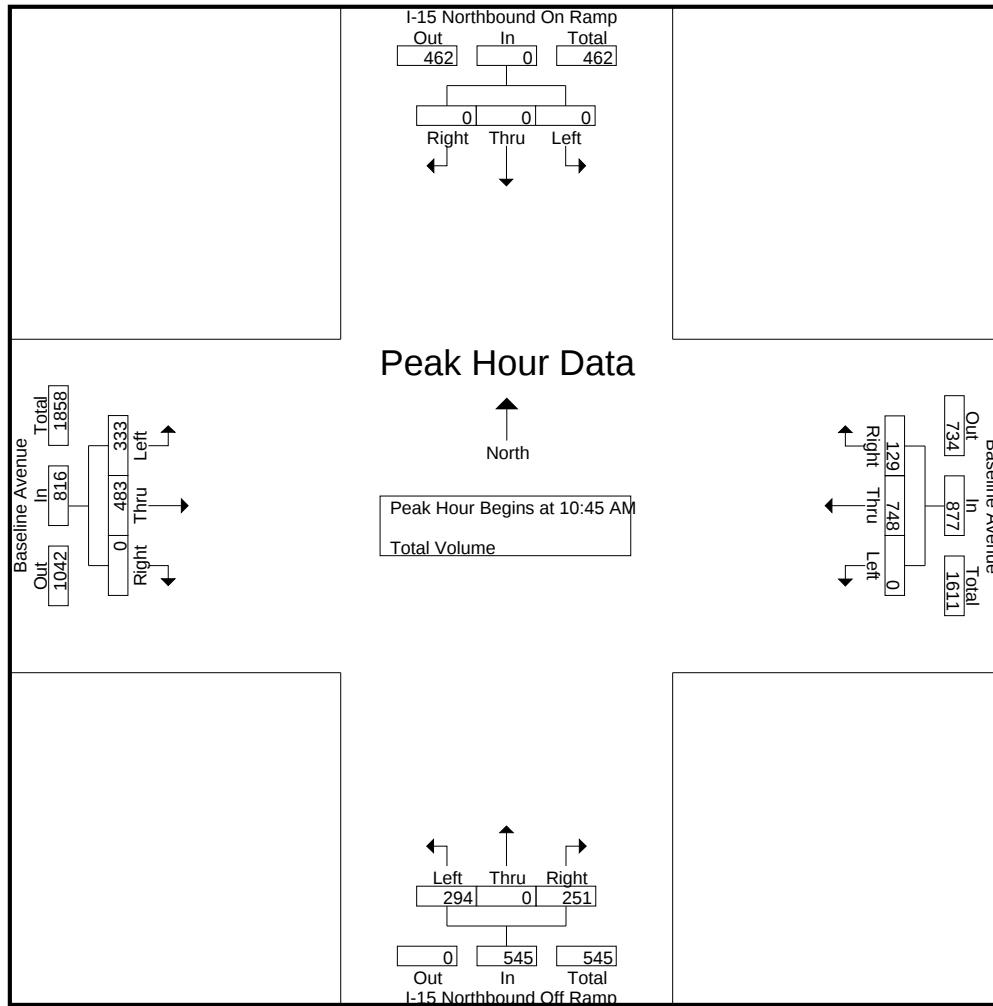
Groups Printed- Total Volume

Start Time	I-15 Northbound On Ramp Southbound				Baseline Avenue Westbound				I-15 Northbound Off Ramp Northbound				Baseline Avenue Eastbound				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
10:00 AM	0	0	0	0	0	142	34	176	39	0	72	111	32	79	0	111	398
10:15 AM	0	0	0	0	0	148	22	170	75	0	60	135	55	71	0	126	431
10:30 AM	0	0	0	0	0	148	33	181	59	0	50	109	60	92	0	152	442
10:45 AM	0	0	0	0	0	167	27	194	59	0	69	128	71	118	0	189	511
Total	0	0	0	0	0	605	116	721	232	0	251	483	218	360	0	578	1782
11:00 AM	0	0	0	0	0	187	46	233	79	0	53	132	101	152	0	253	618
11:15 AM	0	0	0	0	0	186	27	213	78	0	63	141	92	95	0	187	541
11:30 AM	0	0	0	0	0	208	29	237	78	0	66	144	69	118	0	187	568
11:45 AM	0	0	0	0	0	153	32	185	66	0	57	123	75	91	0	166	474
Total	0	0	0	0	0	734	134	868	301	0	239	540	337	456	0	793	2201
12:00 PM	0	0	0	0	0	157	35	192	56	0	79	135	82	128	0	210	537
12:15 PM	0	0	0	0	0	194	27	221	54	0	89	143	74	92	0	166	530
12:30 PM	0	0	0	0	0	182	25	207	72	0	74	146	94	98	0	192	545
12:45 PM	0	0	0	0	0	194	49	243	67	0	100	167	83	126	0	209	619
Total	0	0	0	0	0	727	136	863	249	0	342	591	333	444	0	777	2231
Grand Total	0	0	0	0	0	2066	386	2452	782	0	832	1614	888	1260	0	2148	6214
Apprch %	0	0	0		0	84.3	15.7		48.5	0	51.5		41.3	58.7	0		
Total %	0	0	0		0	33.2	6.2	39.5	12.6	0	13.4	26	14.3	20.3	0	34.6	

	I-15 Northbound On Ramp Southbound				Baseline Avenue Westbound				I-15 Northbound Off Ramp Northbound				Baseline Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 10:45 AM																	
10:45 AM	0	0	0	0	0	167	27	194	59	0	69	128	71	118	0	189	511
11:00 AM	0	0	0	0	0	187	46	233	79	0	53	132	101	152	0	253	618
11:15 AM	0	0	0	0	0	186	27	213	78	0	63	141	92	95	0	187	541
11:30 AM	0	0	0	0	0	208	29	237	78	0	66	144	69	118	0	187	568
Total Volume	0	0	0	0	0	748	129	877	294	0	251	545	333	483	0	816	2238
% App. Total	0	0	0		0	85.3	14.7		53.9	0	46.1		40.8	59.2	0		
PHF	.000	.000	.000	.000	.000	.899	.701	.925	.930	.000	.909	.946	.824	.794	.000	.806	.905

City of Rancho Cucamonga
N/S: I-15 Northbound Ramps
E/W: Baseline Avenue
Weather: Clear

File Name : 12_RNC_15NB_Baseline MD
Site Code : 22118293
Start Date : 4/22/2018
Page No : 2

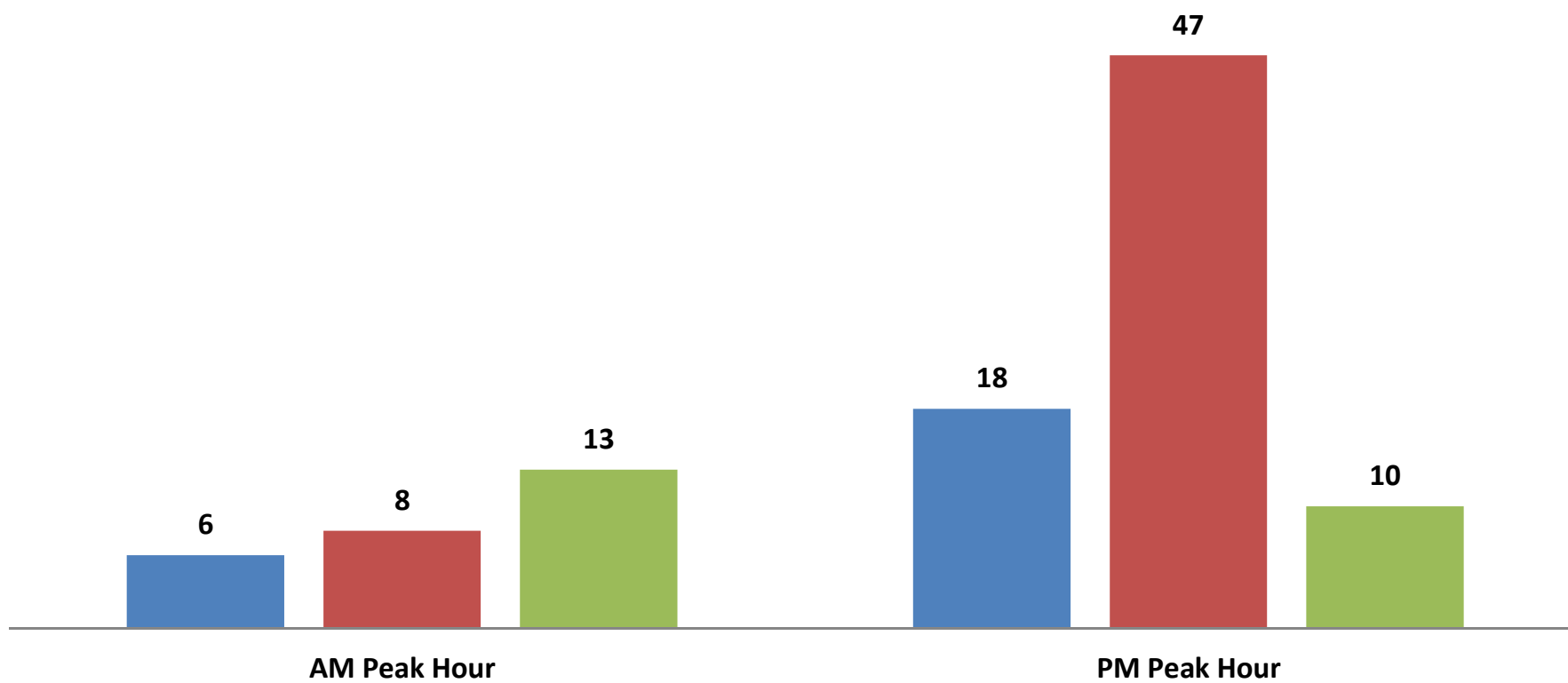


Peak Hour Analysis From 10:00 AM to 12:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

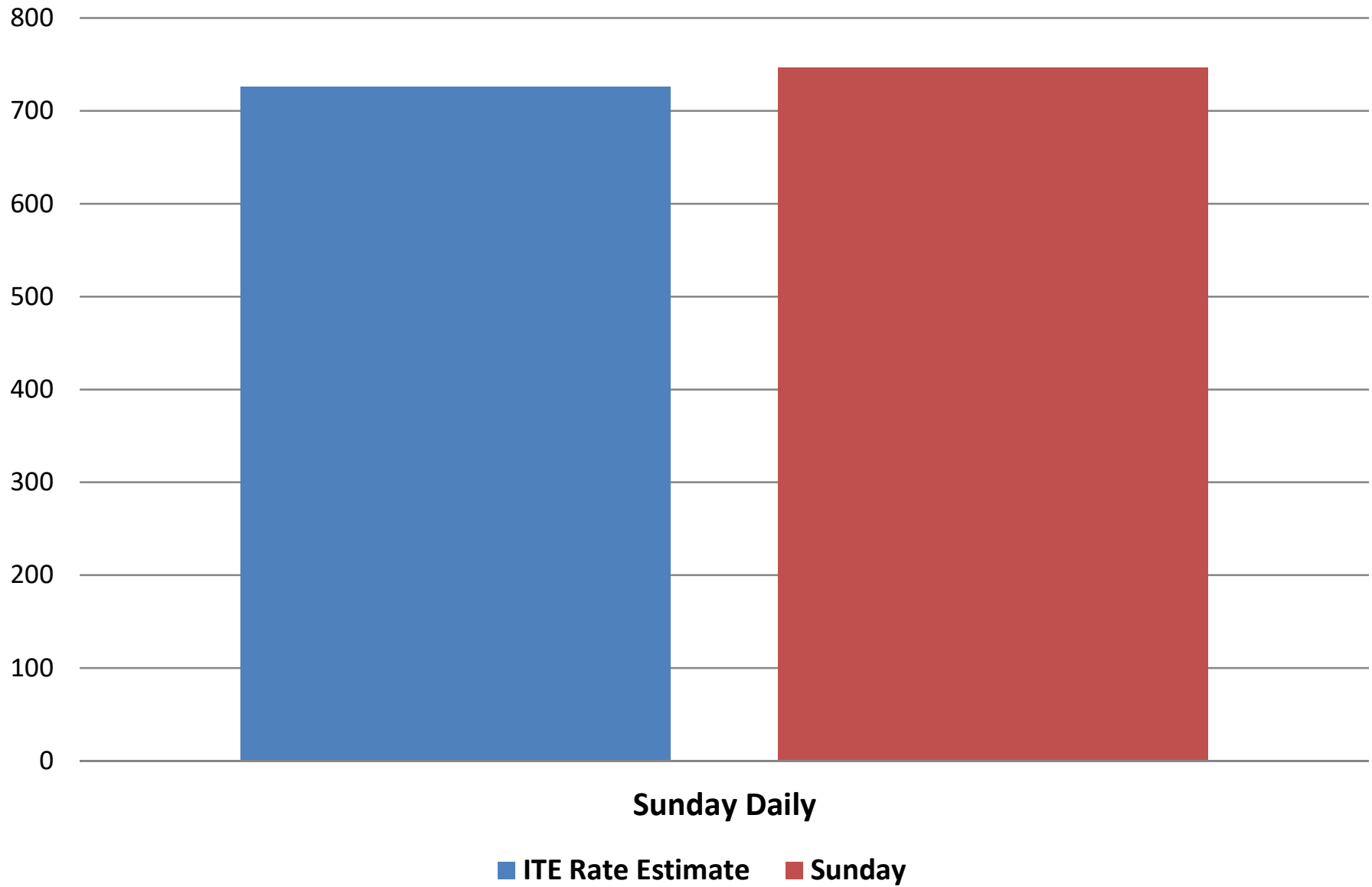
	10:00 AM				10:45 AM				12:00 PM				10:45 AM			
+0 mins.	0	0	0	0	0	167	27	194	56	0	79	135	71	118	0	189
+15 mins.	0	0	0	0	0	187	46	233	54	0	89	143	101	152	0	253
+30 mins.	0	0	0	0	0	186	27	213	72	0	74	146	92	95	0	187
+45 mins.	0	0	0	0	0	208	29	237	67	0	100	167	69	118	0	187
Total Volume	0	0	0	0	0	748	129	877	249	0	342	591	333	483	0	816
% App. Total	0	0	0	0	0	85.3	14.7		42.1	0	57.9		40.8	59.2	0	
PHF	.000	.000	.000	.000	.000	.899	.701	.925	.865	.000	.855	.885	.824	.794	.000	.806

Peak Hour Church Trips Comparison, Weekdays

■ ITE Rates Estimate ■ Wednesday Counts ■ Thursday Counts



Sunday Daily Comparison



Appendices

Appendix C. Intersection Volumes, Delay, and LOS Calculation Outputs, Existing Conditions

Appendices

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HCM 2010 Signalized Intersection Summary

1: Victoria Park Lane & Baseline Avenue

Existing
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	472	53	111	465	90	49	57	72	101	67	46
Future Volume (veh/h)	51	472	53	111	465	90	49	57	72	101	67	46
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1800	1569	1765	1800	1667	1765	1765	1667	1765	1765
Adj Flow Rate, veh/h	52	482	54	113	474	92	50	58	73	103	68	47
Adj No. of Lanes	2	3	0	2	3	0	1	2	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	1113	123	236	1109	210	94	1670	710	149	896	762
Arrive On Green	0.06	0.24	0.24	0.08	0.26	0.26	0.06	0.47	0.47	0.09	0.51	0.51
Sat Flow, veh/h	2988	4686	517	2988	4330	819	1587	3529	1500	1587	1765	1500
Grp Volume(v), veh/h	52	361	175	113	384	182	50	58	73	103	68	47
Grp Sat Flow(s),veh/h/ln	1494	1765	1674	1494	1765	1620	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	1.1	6.0	6.1	2.5	6.2	6.5	2.1	0.6	1.9	4.3	1.4	1.1
Cycle Q Clear(g_c), s	1.1	6.0	6.1	2.5	6.2	6.5	2.1	0.6	1.9	4.3	1.4	1.1
Prop In Lane	1.00		0.31	1.00		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	180	839	398	236	904	415	94	1670	710	149	896	762
V/C Ratio(X)	0.29	0.43	0.44	0.48	0.42	0.44	0.53	0.03	0.10	0.69	0.08	0.06
Avail Cap(c_a), veh/h	326	1464	694	326	1464	672	173	1670	710	196	896	762
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.9	22.2	22.3	30.3	21.3	21.4	31.4	9.7	10.0	30.2	8.7	8.6
Incr Delay (d2), s/veh	0.9	0.4	0.8	1.5	0.3	0.7	4.6	0.0	0.3	6.5	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.9	2.9	1.1	3.1	3.0	1.0	0.3	0.8	2.2	0.7	0.5
LnGrp Delay(d),s/veh	31.7	22.6	23.1	31.8	21.6	22.1	36.0	9.7	10.3	36.7	8.8	8.7
LnGrp LOS	C	C	C	C	C	C	D	A	B	D	A	A
Approach Vol, veh/h		588			679			181			218	
Approach Delay, s/veh		23.5			23.5			17.2			22.0	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	34.5	7.4	18.3	6.1	36.9	6.1	19.6				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	7.5	31.5	6.5	27.5	6.5	32.5	6.5	27.5				
Max Q Clear Time (g_c+I1), s	6.3	3.9	4.5	8.1	4.1	3.4	3.1	8.5				
Green Ext Time (p_c), s	0.0	1.1	0.1	7.2	0.0	1.1	0.0	7.2				
Intersection Summary												
HCM 2010 Ctrl Delay				22.6								
HCM 2010 LOS				C								

HCM 2010 TWSC
2: Victoria Park Lane & Wine Cellar Court

Existing
Sunday Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	165	5	0	226
Future Vol, veh/h	0	3	165	5	0	226
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	174	5	0	238
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	89	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	951	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	951	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.8	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT			
Capacity (veh/h)	-	- 951	-			
HCM Lane V/C Ratio	-	- 0.003	-			
HCM Control Delay (s)	-	- 8.8	-			
HCM Lane LOS	-	- A	-			
HCM 95th %tile Q(veh)	-	- 0	-			

HCM 2010 Signalized Intersection Summary

4: Victoria Park Lane & Long Meadow Drive/Wild Horse Way

Existing
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	0	15	3	2	19	9	134	3	10	201	15
Future Volume (veh/h)	16	0	15	3	2	19	9	134	3	10	201	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	16	0	15	3	2	19	9	135	3	10	203	15
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	0	63	133	11	108	1014	2405	53	1080	2276	167
Arrive On Green	0.09	0.00	0.09	0.09	0.09	0.09	0.04	0.70	0.70	0.04	0.70	0.70
Sat Flow, veh/h	763	0	716	194	130	1230	1587	3440	76	1587	3249	238
Grp Volume(v), veh/h	31	0	0	24	0	0	9	69	69	10	110	108
Grp Sat Flow(s),veh/h/ln	1479	0	0	1554	0	0	1587	1765	1751	1587	1765	1723
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.1	0.7	0.7
Cycle Q Clear(g_c), s	0.6	0.0	0.0	0.4	0.0	0.0	0.1	0.4	0.4	0.1	0.7	0.7
Prop In Lane	0.52		0.48	0.12		0.79	1.00		0.04	1.00		0.14
Lane Grp Cap(c), veh/h	285	0	0	252	0	0	1014	1234	1225	1080	1236	1207
V/C Ratio(X)	0.11	0.00	0.00	0.10	0.00	0.00	0.01	0.06	0.06	0.01	0.09	0.09
Avail Cap(c_a), veh/h	1247	0	0	1258	0	0	1312	1234	1225	1376	1236	1207
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	0.0	14.8	0.0	0.0	1.2	1.6	1.6	1.2	1.7	1.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.2	0.0	0.4	0.4
LnGrp Delay(d),s/veh	15.0	0.0	0.0	14.9	0.0	0.0	1.2	1.7	1.7	1.2	1.8	1.8
LnGrp LOS	B			B			A	A	A	A	A	A
Approach Vol, veh/h		31			24			147			228	
Approach Delay, s/veh		15.0			14.9			1.7			1.8	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.5	26.5		5.1	3.4	26.5		5.1				
Change Period (Y+Rc), s	3.0	3.0		3.0	3.0	3.0		3.0				
Max Green Setting (Gmax), s	7.0	23.5		25.5	7.0	23.5		25.5				
Max Q Clear Time (g_c+I1), s	2.1	2.4		2.6	2.1	2.7		2.4				
Green Ext Time (p_c), s	0.0	2.0		0.2	0.0	1.9		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			3.4									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

5: Victoria Park Lane & Church Street

Existing
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	331	56	168	382	15	55	83	166	38	94	76
Future Volume (veh/h)	46	331	56	168	382	15	55	83	166	38	94	76
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1569	1765	1800	1667	1765	1765	1667	1765	1765
Adj Flow Rate, veh/h	49	352	60	179	406	16	59	88	177	40	100	81
Adj No. of Lanes	1	2	1	2	2	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	717	305	303	825	32	103	1839	782	86	1802	766
Arrive On Green	0.06	0.20	0.20	0.10	0.24	0.24	0.06	0.52	0.52	0.05	0.51	0.51
Sat Flow, veh/h	1587	3529	1500	2988	3373	133	1587	3529	1500	1587	3529	1500
Grp Volume(v), veh/h	49	352	60	179	212	210	59	88	177	40	100	81
Grp Sat Flow(s),veh/h/ln	1587	1765	1500	1494	1765	1741	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	2.0	5.9	2.2	3.8	6.9	6.9	2.4	0.8	4.3	1.6	1.0	1.9
Cycle Q Clear(g_c), s	2.0	5.9	2.2	3.8	6.9	6.9	2.4	0.8	4.3	1.6	1.0	1.9
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	95	717	305	303	432	426	103	1839	782	86	1802	766
V/C Ratio(X)	0.52	0.49	0.20	0.59	0.49	0.49	0.57	0.05	0.23	0.46	0.06	0.11
Avail Cap(c_a), veh/h	191	1325	563	449	715	706	191	1839	782	179	1802	766
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.4	23.5	22.0	28.6	21.6	21.6	30.2	7.8	8.7	30.6	8.2	8.4
Incr Delay (d2), s/veh	4.3	0.5	0.3	1.8	0.9	0.9	4.9	0.0	0.1	3.9	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.9	0.9	1.6	3.5	3.4	1.2	0.4	1.8	0.8	0.5	0.8
LnGrp Delay(d),s/veh	34.7	24.0	22.3	30.4	22.5	22.5	35.2	7.8	8.8	34.4	8.3	8.7
LnGrp LOS	C	C	C	C	C	C	D	A	A	C	A	A
Approach Vol, veh/h		461			601			324			221	
Approach Delay, s/veh		24.9			24.8			13.3			13.2	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.6	36.7	8.8	15.5	6.3	36.0	6.0	18.3				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	33.5	9.0	24.0	7.0	33.0	7.0	26.0				
Max Q Clear Time (g_c+I1), s	3.6	6.3	5.8	7.9	4.4	3.9	4.0	8.9				
Green Ext Time (p_c), s	0.0	2.1	0.2	4.6	0.0	2.1	0.0	4.8				
Intersection Summary												
HCM 2010 Ctrl Delay				20.9								
HCM 2010 LOS				C								

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Signalized Intersection Summary

8: Etiwanda Avenue & E. Foothill Blvd

Existing
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	274	671	148	104	773	51	178	104	103	45	150	302
Future Volume (veh/h)	274	671	148	104	773	51	178	104	103	45	150	302
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1765	1569	1765	1765	1667	1765	1765	1667	1765	1800
Adj Flow Rate, veh/h	285	699	154	108	805	53	185	108	107	47	156	315
Adj No. of Lanes	2	2	1	2	2	1	1	1	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	356	1110	472	199	925	393	227	833	708	82	672	571
Arrive On Green	0.12	0.31	0.31	0.07	0.26	0.26	0.14	0.47	0.47	0.05	0.38	0.38
Sat Flow, veh/h	2988	3529	1500	2988	3529	1500	1587	1765	1500	1587	1765	1500
Grp Volume(v), veh/h	285	699	154	108	805	53	185	108	107	47	156	315
Grp Sat Flow(s),veh/h/ln	1494	1765	1500	1494	1765	1500	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	7.8	14.2	6.6	2.9	18.3	2.3	9.5	2.9	3.4	2.4	5.0	13.8
Cycle Q Clear(g_c), s	7.8	14.2	6.6	2.9	18.3	2.3	9.5	2.9	3.4	2.4	5.0	13.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	356	1110	472	199	925	393	227	833	708	82	672	571
V/C Ratio(X)	0.80	0.63	0.33	0.54	0.87	0.13	0.82	0.13	0.15	0.57	0.23	0.55
Avail Cap(c_a), veh/h	356	1110	472	267	966	411	227	833	708	142	672	571
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	24.6	22.0	38.0	29.6	23.7	34.9	12.5	12.6	38.9	17.7	20.4
Incr Delay (d2), s/veh	12.4	1.1	0.4	2.3	8.4	0.2	20.2	0.3	0.5	6.2	0.8	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	7.1	2.8	1.3	10.0	1.0	5.4	1.5	1.5	1.2	2.6	6.3
LnGrp Delay(d),s/veh	48.4	25.8	22.4	40.3	38.0	23.9	55.1	12.8	13.1	45.2	18.5	24.2
LnGrp LOS	D	C	C	D	D	C	E	B	B	D	B	C
Approach Vol, veh/h	1138				966				400			
Approach Delay, s/veh	31.0				37.5				32.4			
Approach LOS	C				D				C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.3	41.7	7.6	28.4	14.0	34.0	12.0	24.0				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	35.5	6.5	24.5	11.0	31.0	9.0	22.0				
Max Q Clear Time (g_c+I1), s	4.4	5.4	4.9	16.2	11.5	15.8	9.8	20.3				
Green Ext Time (p_c), s	0.0	4.4	0.0	6.0	0.0	3.6	0.0	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay	32.1											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

9: Etiwanda Avenue & Church Street/Miller Street

Existing
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	225	162	42	223	14	102	169	39	14	257	261
Future Volume (veh/h)	149	225	162	42	223	14	102	169	39	14	257	261
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	160	242	174	45	240	15	110	182	42	15	276	281
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	307	427	326	168	851	56	161	1403	316	55	1539	654
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.10	0.50	0.50	0.03	0.44	0.44
Sat Flow, veh/h	594	1169	892	252	2331	153	1587	2790	629	1587	3529	1500
Grp Volume(v), veh/h	293	0	283	145	0	155	110	114	110	15	276	281
Grp Sat Flow(s),veh/h/ln	1206	0	1448	1157	0	1579	1587	1765	1654	1587	1765	1500
Q Serve(g_s), s	9.6	0.0	9.5	0.6	0.0	4.3	4.1	2.1	2.2	0.6	2.9	8.0
Cycle Q Clear(g_c), s	13.9	0.0	9.5	10.1	0.0	4.3	4.1	2.1	2.2	0.6	2.9	8.0
Prop In Lane	0.55		0.62	0.31		0.10	1.00		0.38	1.00		1.00
Lane Grp Cap(c), veh/h	531	0	529	499	0	576	161	888	832	55	1539	654
V/C Ratio(X)	0.55	0.00	0.53	0.29	0.00	0.27	0.68	0.13	0.13	0.27	0.18	0.43
Avail Cap(c_a), veh/h	814	0	834	795	0	910	301	888	832	193	1539	654
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	0.0	15.4	13.8	0.0	13.8	26.7	8.1	8.2	29.0	10.6	12.1
Incr Delay (d2), s/veh	0.9	0.0	0.8	0.3	0.0	0.2	5.0	0.3	0.3	2.6	0.3	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	3.9	1.7	0.0	1.9	2.0	1.1	1.1	0.3	1.5	3.7
LnGrp Delay(d),s/veh	18.3	0.0	16.3	14.1	0.0	14.0	31.7	8.4	8.5	31.6	10.9	14.1
LnGrp LOS	B		B	B		B	C	A	A	C	B	B
Approach Vol, veh/h		576			300			334			572	
Approach Delay, s/veh		17.3			14.1			16.1			13.0	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.1	33.0		24.5	8.3	28.9		24.5				
Change Period (Y+Rc), s	3.0	3.0		3.0	3.0	3.0		3.0				
Max Green Setting (Gmax), s	6.5	30.0		34.5	10.7	25.8		34.5				
Max Q Clear Time (g_c+I1), s	2.6	4.2		15.9	6.1	10.0		12.1				
Green Ext Time (p_c), s	0.0	4.4		5.6	0.1	3.8		6.0				
Intersection Summary												
HCM 2010 Ctrl Delay				15.2								
HCM 2010 LOS				B								

HCM 2010 TWSC
10: Etiwanda Avenue & Existing Driveway

Existing
Sunday Peak Hour

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	107	112	3	278	387	4
Future Vol, veh/h	107	112	3	278	387	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	138	4	343	478	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	659	241	483	0	-	0
Stage 1	480	-	-	-	-	-
Stage 2	179	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	397	760	1076	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	834	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	396	760	1076	-	-	-
Mov Cap-2 Maneuver	396	-	-	-	-	-
Stage 1	588	-	-	-	-	-
Stage 2	831	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1076	-	524	-	-
HCM Lane V/C Ratio	0.003	-	0.516	-	-
HCM Control Delay (s)	8.4	-	19	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	2.9	-	-

HCM 2010 Signalized Intersection Summary

11: Etiwanda Avenue & Baseline Avenue

Existing
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	465	87	202	503	36	105	124	189	47	117	54
Future Volume (veh/h)	69	465	87	202	503	36	105	124	189	47	117	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1800	1569	1765	1800	1569	1765	1765	1667	1765	1800
Adj Flow Rate, veh/h	73	489	92	213	529	38	111	131	199	49	123	57
Adj No. of Lanes	2	3	0	2	3	0	2	1	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	888	163	340	951	68	251	830	876	134	1095	481
Arrive On Green	0.12	0.20	0.20	0.11	0.19	0.19	0.08	0.47	0.47	0.08	0.47	0.47
Sat Flow, veh/h	2988	4353	800	2988	4885	348	2988	1765	1500	1587	2326	1023
Grp Volume(v), veh/h	73	394	187	213	381	186	111	131	199	49	92	88
Grp Sat Flow(s),veh/h/ln	1494	1765	1624	1494	1765	1703	1494	1765	1500	1587	1765	1584
Q Serve(g_s), s	1.4	6.3	6.5	4.3	6.1	6.2	2.2	2.7	2.1	1.8	1.8	2.0
Cycle Q Clear(g_c), s	1.4	6.3	6.5	4.3	6.1	6.2	2.2	2.7	2.1	1.8	1.8	2.0
Prop In Lane	1.00		0.49	1.00		0.20	1.00		1.00	1.00		0.65
Lane Grp Cap(c), veh/h	367	720	331	340	687	332	251	830	876	134	830	745
V/C Ratio(X)	0.20	0.55	0.56	0.63	0.55	0.56	0.44	0.16	0.23	0.37	0.11	0.12
Avail Cap(c_a), veh/h	367	1267	583	357	1267	611	357	830	876	190	830	745
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	22.4	22.4	26.5	22.8	22.8	27.3	9.5	2.1	27.1	9.3	9.3
Incr Delay (d2), s/veh	0.3	0.7	1.5	3.2	0.7	1.5	1.2	0.4	0.6	1.7	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.1	3.0	1.9	3.0	3.0	1.0	1.4	1.2	0.9	0.9	0.9
LnGrp Delay(d),s/veh	25.0	23.0	24.0	29.7	23.5	24.3	28.5	9.9	2.7	28.8	9.5	9.6
LnGrp LOS	C	C	C	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		654			780			441			229	
Approach Delay, s/veh		23.5			25.4			11.3			13.7	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	31.5	9.1	14.8	7.3	31.5	9.7	14.2				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	28.5	6.5	21.5	6.5	28.5	6.5	21.5				
Max Q Clear Time (g_c+I1), s	3.8	4.7	6.3	8.5	4.2	4.0	3.4	8.2				
Green Ext Time (p_c), s	0.3	1.4	0.0	3.3	0.1	1.1	1.2	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay				20.6								
HCM 2010 LOS				C								

HCM 2010 Research does not support Non-NEMA phasing.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM Signalized Intersection Capacity Analysis

12: I-15 SB On/I-15 SB Off & Baseline Avenue

Existing
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑↑		↑↑
Traffic Volume (vph)	0	408	215	0	544	565	0	0	0	383	0	269
Future Volume (vph)	0	408	215	0	544	565	0	0	0	383	0	269
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1600	1800	1800
Total Lost time (s)		2.0	2.0		2.0					2.0		2.0
Lane Util. Factor		*1.00	1.00		*1.00					*1.00		*1.00
Frt		1.00	0.85		0.92					1.00		0.85
Flt Protected		1.00	1.00		1.00					0.95		1.00
Satd. Flow (prot)		5294	1500		4889					2980		3000
Flt Permitted		1.00	1.00		1.00					0.95		1.00
Satd. Flow (perm)		5294	1500		4889					2980		3000
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	443	234	0	591	614	0	0	0	416	0	292
RTOR Reduction (vph)	0	0	138	0	362	0	0	0	0	0	0	146
Lane Group Flow (vph)	0	443	96	0	843	0	0	0	0	416	0	146
Turn Type		NA	Perm		NA					Perm		Perm
Protected Phases		4			8							
Permitted Phases			4							6		6
Actuated Green, G (s)		17.3	17.3		17.3					21.3		21.3
Effective Green, g (s)		18.3	18.3		18.3					22.3		22.3
Actuated g/C Ratio		0.41	0.41		0.41					0.50		0.50
Clearance Time (s)		3.0	3.0		3.0					3.0		3.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0		3.0
Lane Grp Cap (vph)		2172	615		2006					1490		1500
v/s Ratio Prot		0.08			c0.17							
v/s Ratio Perm			0.06							c0.14		0.05
v/c Ratio		0.20	0.16		0.42					0.28		0.10
Uniform Delay, d1		8.5	8.3		9.4					6.5		5.9
Progression Factor		1.00	1.00		1.00					1.00		1.00
Incremental Delay, d2		0.0	0.1		0.1					0.5		0.1
Delay (s)		8.5	8.4		9.5					6.9		6.0
Level of Service		A	A		A					A		A
Approach Delay (s)		8.5			9.5			0.0			6.6	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			8.4			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.34									
Actuated Cycle Length (s)			44.6			Sum of lost time (s)				5.0		
Intersection Capacity Utilization			44.1%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: I-15 NB Off/I-15 NB On & Baseline Avenue

Existing
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	333	483	0	0	748	129	294	0	251	0	0	0
Future Volume (vph)	333	483	0	0	748	129	294	0	251	0	0	0
Ideal Flow (vphpl)	1600	1800	1800	1800	1800	1800	1600	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0			2.0	2.0	2.0	2.0	2.0			
Lane Util. Factor	*1.00	*1.00			*1.00	1.00	*1.00	*1.00	*1.00			
Frt	1.00	1.00			1.00	0.85	1.00	0.94	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (prot)	2980	5294			7059	1500	1490	1606	1500			
Flt Permitted	0.34	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (perm)	1069	5294			7059	1500	1490	1606	1500			
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	366	531	0	0	822	142	323	0	276	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	73	0	48	109	0	0	0
Lane Group Flow (vph)	366	531	0	0	822	69	207	154	81	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases	4					8	2		2			
Actuated Green, G (s)	19.9	19.9			19.9	19.9	17.4	17.4	17.4			
Effective Green, g (s)	20.9	20.9			20.9	20.9	18.4	18.4	18.4			
Actuated g/C Ratio	0.48	0.48			0.48	0.48	0.42	0.42	0.42			
Clearance Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	515	2555			3407	724	633	682	637			
v/s Ratio Prot		0.10			0.12							
v/s Ratio Perm	c0.34					0.05	c0.14	0.10	0.05			
v/c Ratio	0.71	0.21			0.24	0.09	0.33	0.23	0.13			
Uniform Delay, d1	8.8	6.4			6.6	6.1	8.3	7.9	7.6			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	4.6	0.0			0.0	0.1	1.4	0.8	0.4			
Delay (s)	13.4	6.5			6.6	6.1	9.7	8.7	8.0			
Level of Service	B	A			A	A	A	A	A			
Approach Delay (s)		9.3			6.5			8.8			0.0	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay		8.1			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		43.3			Sum of lost time (s)			4.0				
Intersection Capacity Utilization		44.0%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: I-15 SB On/I-15 SB Off & E. Foothill Blvd

Existing
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑↓	↑
Traffic Volume (vph)	0	1054	921	0	2207	0	0	0	0	222	0	723
Future Volume (vph)	0	1054	921	0	2207	0	0	0	0	222	0	723
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800	1800	1800	1600	1800	1800
Total Lost time (s)		2.0	2.0		2.0					2.0	2.0	2.0
Lane Util. Factor		*1.00	1.00		*1.00					*1.00	*1.00	*1.00
Frt		1.00	0.85		1.00					1.00	0.86	0.85
Flt Protected		1.00	1.00		1.00					0.95	1.00	1.00
Satd. Flow (prot)		5294	1500		5294					1490	1511	1500
Flt Permitted		1.00	1.00		1.00					0.95	1.00	1.00
Satd. Flow (perm)		5294	1500		5294					1490	1511	1500
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1076	940	0	2252	0	0	0	0	227	0	738
RTOR Reduction (vph)	0	0	392	0	0	0	0	0	0	0	3	3
Lane Group Flow (vph)	0	1076	548	0	2252	0	0	0	0	204	382	373
Turn Type		NA	Perm		NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		32.2	32.2		32.2					18.7	18.7	18.7
Effective Green, g (s)		33.2	33.2		33.2					19.7	19.7	19.7
Actuated g/C Ratio		0.58	0.58		0.58					0.35	0.35	0.35
Clearance Time (s)		3.0	3.0		3.0					3.0	3.0	3.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		3088	875		3088					515	523	519
v/s Ratio Prot		0.20			c0.43							
v/s Ratio Perm			0.37							0.14	0.25	0.25
v/c Ratio		0.35	0.63		0.73					0.40	0.73	0.72
Uniform Delay, d1		6.2	7.8		8.6					14.1	16.3	16.2
Progression Factor		1.00	1.00		1.00					1.00	1.00	1.00
Incremental Delay, d2		0.1	1.4		0.9					0.5	5.2	4.7
Delay (s)		6.3	9.2		9.5					14.6	21.5	20.9
Level of Service		A	A		A					B	C	C
Approach Delay (s)		7.6			9.5			0.0			19.8	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			10.7			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			56.9			Sum of lost time (s)				4.0		
Intersection Capacity Utilization			83.2%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

7: I-15 NB Off/I-15 NB On & E. Foothill Blvd

Existing
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑	↑	↑			
Traffic Volume (vph)	0	962	303	0	1435	252	1362	0	539	0	0	0
Future Volume (vph)	0	962	303	0	1435	252	1362	0	539	0	0	0
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1600	1800	1800	1700	1800	1800
Total Lost time (s)		2.0	2.0		2.0	2.0	2.0	2.0	2.0			
Lane Util. Factor		*1.00	1.00		*1.00	1.00	*1.00	*1.00	*1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.99	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		5294	1500		5294	1500	1490	1668	1500			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		5294	1500		5294	1500	1490	1668	1500			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1002	316	0	1495	262	1419	0	561	0	0	0
RTOR Reduction (vph)	0	0	172	0	0	143	0	4	33	0	0	0
Lane Group Flow (vph)	0	1002	144	0	1495	120	738	733	472	0	0	0
Turn Type		NA	Perm		NA	Perm	Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases			4			8	2		2			
Actuated Green, G (s)		36.2	36.2		36.2	36.2	39.6	39.6	39.6			
Effective Green, g (s)		37.2	37.2		37.2	37.2	40.6	40.6	40.6			
Actuated g/C Ratio		0.45	0.45		0.45	0.45	0.50	0.50	0.50			
Clearance Time (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0			
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		2407	682		2407	682	739	827	744			
v/s Ratio Prot		0.19			c0.28							
v/s Ratio Perm			0.10			0.08	c0.50	0.44	0.31			
v/c Ratio		0.42	0.21		0.62	0.18	1.00	0.89	0.63			
Uniform Delay, d1		15.0	13.4		16.9	13.2	20.6	18.5	15.1			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.1	0.2		0.5	0.1	32.8	13.5	4.1			
Delay (s)		15.1	13.6		17.4	13.3	53.4	32.0	19.2			
Level of Service		B	B		B	B	D	C	B			
Approach Delay (s)		14.8			16.8			36.7			0.0	
Approach LOS		B			B			D			A	
Intersection Summary												
HCM 2000 Control Delay			24.1									
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			81.8									
Intersection Capacity Utilization			81.5%									
Analysis Period (min)			15									
c Critical Lane Group												

Appendices

Appendix D. Intersection Volumes, Delay, and LOS Calculation Outputs, Existing Plus Project Conditions

Appendices

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HCM 2010 Signalized Intersection Summary

1: Victoria Park Lane & Baseline Avenue

E+P
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	504	53	111	465	90	82	65	72	109	67	46
Future Volume (veh/h)	51	504	53	111	465	90	82	65	72	109	67	46
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1800	1569	1765	1800	1667	1765	1765	1667	1765	1765
Adj Flow Rate, veh/h	52	514	54	113	474	92	84	66	73	111	68	47
Adj No. of Lanes	2	3	0	2	3	0	1	2	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	1137	118	231	1121	212	125	1654	703	158	863	734
Arrive On Green	0.06	0.24	0.24	0.08	0.26	0.26	0.08	0.47	0.47	0.10	0.49	0.49
Sat Flow, veh/h	2988	4719	489	2988	4330	819	1587	3529	1500	1587	1765	1500
Grp Volume(v), veh/h	52	383	185	113	384	182	84	66	73	111	68	47
Grp Sat Flow(s),veh/h/ln	1494	1765	1678	1494	1765	1620	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	1.2	6.5	6.6	2.6	6.4	6.6	3.6	0.7	1.9	4.8	1.4	1.2
Cycle Q Clear(g_c), s	1.2	6.5	6.6	2.6	6.4	6.6	3.6	0.7	1.9	4.8	1.4	1.2
Prop In Lane	1.00		0.29	1.00		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	178	851	405	231	914	420	125	1654	703	158	863	734
V/C Ratio(X)	0.29	0.45	0.46	0.49	0.42	0.43	0.67	0.04	0.10	0.70	0.08	0.06
Avail Cap(c_a), veh/h	318	1428	679	318	1428	656	169	1654	703	180	863	734
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	22.8	22.8	31.2	21.7	21.8	31.6	10.1	10.5	30.7	9.6	9.5
Incr Delay (d2), s/veh	0.9	0.4	0.8	1.6	0.3	0.7	6.1	0.0	0.3	10.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.2	3.2	1.1	3.1	3.0	1.8	0.4	0.8	2.5	0.7	0.5
LnGrp Delay(d),s/veh	32.6	23.1	23.6	32.7	22.0	22.5	37.7	10.2	10.8	40.7	9.7	9.7
LnGrp LOS	C	C	C	C	C	C	D	B	B	D	A	A
Approach Vol, veh/h		620			679			223			226	
Approach Delay, s/veh		24.1			23.9			20.7			24.9	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	35.0	7.5	19.0	7.5	36.5	6.2	20.2				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	7.0	32.0	6.5	27.5	6.5	32.5	6.5	27.5				
Max Q Clear Time (g_c+I1), s	6.8	3.9	4.6	8.6	5.6	3.4	3.2	8.6				
Green Ext Time (p_c), s	0.0	1.2	0.1	7.3	0.0	1.2	0.0	7.3				
Intersection Summary												
HCM 2010 Ctrl Delay				23.7								
HCM 2010 LOS				C								

HCM 2010 TWSC
2: Victoria Park Lane & Wine Cellar Court

E+P
Sunday Peak Hour

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	206	5	0	226
Future Vol, veh/h	0	3	206	5	0	226
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	217	5	0	238
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	111	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	921	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	921	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.9	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT			
Capacity (veh/h)	-	- 921	-			
HCM Lane V/C Ratio	-	- 0.003	-			
HCM Control Delay (s)	-	- 8.9	-			
HCM Lane LOS	-	- A	-			
HCM 95th %tile Q(veh)	-	- 0	-			

HCM 2010 TWSC

3: Victoria Park Lane & Proposed Driveway

E+P
Sunday Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	41	170	24	0	226
Future Vol, veh/h	0	41	170	24	0	226
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	179	25	0	238
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	102	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	933	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	933	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT			
Capacity (veh/h)	-	- 933	-			
HCM Lane V/C Ratio	-	- 0.046	-			
HCM Control Delay (s)	-	- 9	-			
HCM Lane LOS	-	- A	-			
HCM 95th %tile Q(veh)	-	- 0.1	-			

HCM 2010 Signalized Intersection Summary

E+P

4: Victoria Park Lane & Long Meadow Drive/Wild Horse Way

Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	0	15	3	2	19	9	158	3	10	201	15
Future Volume (veh/h)	16	0	15	3	2	19	9	158	3	10	201	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	16	0	15	3	2	19	9	160	3	10	203	15
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	0	63	133	11	108	1014	2415	45	1059	2276	167
Arrive On Green	0.09	0.00	0.09	0.09	0.09	0.09	0.04	0.70	0.70	0.04	0.70	0.70
Sat Flow, veh/h	763	0	716	194	130	1230	1587	3453	65	1587	3249	238
Grp Volume(v), veh/h	31	0	0	24	0	0	9	82	81	10	110	108
Grp Sat Flow(s),veh/h/ln	1479	0	0	1554	0	0	1587	1765	1753	1587	1765	1723
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.5	0.1	0.7	0.7
Cycle Q Clear(g_c), s	0.6	0.0	0.0	0.4	0.0	0.0	0.1	0.5	0.5	0.1	0.7	0.7
Prop In Lane	0.52		0.48	0.12		0.79	1.00		0.04	1.00		0.14
Lane Grp Cap(c), veh/h	285	0	0	252	0	0	1014	1234	1226	1059	1236	1207
V/C Ratio(X)	0.11	0.00	0.00	0.10	0.00	0.00	0.01	0.07	0.07	0.01	0.09	0.09
Avail Cap(c_a), veh/h	1247	0	0	1258	0	0	1312	1234	1226	1355	1236	1207
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	0.0	14.8	0.0	0.0	1.2	1.7	1.7	1.2	1.7	1.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.3	0.0	0.4	0.4
LnGrp Delay(d),s/veh	15.0	0.0	0.0	14.9	0.0	0.0	1.2	1.8	1.8	1.2	1.8	1.8
LnGrp LOS	B			B			A	A	A	A	A	A
Approach Vol, veh/h	31				24		172				228	
Approach Delay, s/veh	15.0				14.9		1.7				1.8	
Approach LOS	B				B		A				A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2			4	5	6	8				
Phs Duration (G+Y+Rc), s	3.5	26.5			5.1	3.4	26.5	5.1				
Change Period (Y+Rc), s	3.0	3.0			3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	7.0	23.5			25.5	7.0	23.5	25.5				
Max Q Clear Time (g_c+I1), s	2.1	2.5			2.6	2.1	2.7	2.4				
Green Ext Time (p_c), s	0.0	2.1			0.2	0.0	2.1	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			3.4									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

5: Victoria Park Lane & Church Street

E+P
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	331	56	176	399	15	55	91	166	38	94	76
Future Volume (veh/h)	62	331	56	176	399	15	55	91	166	38	94	76
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1569	1569	1800	1667	1765	1765	1667	1765	1765
Adj Flow Rate, veh/h	66	352	60	187	424	16	59	97	177	40	100	81
Adj No. of Lanes	1	2	1	2	2	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	109	731	311	314	732	28	104	1806	768	87	1769	752
Arrive On Green	0.07	0.21	0.21	0.10	0.24	0.24	0.07	0.51	0.51	0.05	0.50	0.50
Sat Flow, veh/h	1587	3529	1500	2988	3004	113	1587	3529	1500	1587	3529	1500
Grp Volume(v), veh/h	66	352	60	187	221	219	59	97	177	40	100	81
Grp Sat Flow(s),veh/h/ln	1587	1765	1500	1494	1569	1549	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	2.7	5.8	2.2	3.9	8.2	8.2	2.4	0.9	4.3	1.6	1.0	1.9
Cycle Q Clear(g_c), s	2.7	5.8	2.2	3.9	8.2	8.2	2.4	0.9	4.3	1.6	1.0	1.9
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	109	731	311	314	382	377	104	1806	768	87	1769	752
V/C Ratio(X)	0.61	0.48	0.19	0.60	0.58	0.58	0.57	0.05	0.23	0.46	0.06	0.11
Avail Cap(c_a), veh/h	241	1383	588	463	619	611	193	1806	768	181	1769	752
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.8	23.0	21.6	28.1	21.9	21.9	29.9	8.1	8.9	30.2	8.4	8.7
Incr Delay (d2), s/veh	5.4	0.5	0.3	1.8	1.4	1.4	4.8	0.0	0.2	3.8	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.8	0.9	1.7	3.6	3.6	1.2	0.4	1.8	0.8	0.5	0.8
LnGrp Delay(d),s/veh	35.2	23.5	21.9	30.0	23.3	23.3	34.7	8.1	9.0	34.0	8.5	9.0
LnGrp LOS	D	C	C	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		478			627			333			221	
Approach Delay, s/veh		24.9			25.3			13.3			13.3	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.6	35.7	8.9	15.6	6.3	35.0	6.5	18.1				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	32.5	9.2	24.8	7.0	32.0	9.0	25.0				
Max Q Clear Time (g_c+I1), s	3.6	6.3	5.9	7.8	4.4	3.9	4.7	10.2				
Green Ext Time (p_c), s	0.0	2.1	0.2	4.9	0.0	2.2	0.0	4.6				
Intersection Summary												
HCM 2010 Ctrl Delay				21.2								
HCM 2010 LOS				C								

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Signalized Intersection Summary

8: Etiwanda Avenue & E. Foothill Blvd

E+P
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	322	671	148	104	773	67	178	104	103	62	150	319
Future Volume (veh/h)	322	671	148	104	773	67	178	104	103	62	150	319
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1765	1569	1765	1765	1667	1765	1765	1667	1765	1800
Adj Flow Rate, veh/h	335	699	154	108	805	70	185	108	107	65	156	332
Adj No. of Lanes	2	2	1	2	2	1	1	1	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	389	1142	485	198	916	389	226	800	680	98	659	560
Arrive On Green	0.13	0.32	0.32	0.07	0.26	0.26	0.14	0.45	0.45	0.06	0.37	0.37
Sat Flow, veh/h	2988	3529	1500	2988	3529	1500	1587	1765	1500	1587	1765	1500
Grp Volume(v), veh/h	335	699	154	108	805	70	185	108	107	65	156	332
Grp Sat Flow(s),veh/h/ln	1494	1765	1500	1494	1765	1500	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	9.3	14.1	6.5	3.0	18.5	3.1	9.6	3.0	3.5	3.4	5.1	15.0
Cycle Q Clear(g_c), s	9.3	14.1	6.5	3.0	18.5	3.1	9.6	3.0	3.5	3.4	5.1	15.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	389	1142	485	198	916	389	226	800	680	98	659	560
V/C Ratio(X)	0.86	0.61	0.32	0.54	0.88	0.18	0.82	0.13	0.16	0.66	0.24	0.59
Avail Cap(c_a), veh/h	389	1142	485	265	941	400	226	800	680	141	659	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	24.1	21.5	38.2	30.0	24.3	35.2	13.4	13.6	38.7	18.2	21.3
Incr Delay (d2), s/veh	17.4	1.0	0.4	2.3	9.4	0.2	20.7	0.4	0.5	7.4	0.8	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	7.0	2.7	1.3	10.1	1.3	5.5	1.5	1.6	1.7	2.7	6.9
LnGrp Delay(d),s/veh	53.4	25.1	21.9	40.5	39.4	24.5	55.9	13.8	14.1	46.2	19.0	25.9
LnGrp LOS	D	C	C	D	D	C	E	B	B	D	B	C
Approach Vol, veh/h	1188				983				400			
Approach Delay, s/veh	32.6				38.4				33.3			
Approach LOS	C				D				C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.2	40.3	7.6	29.3	14.0	33.5	13.0	23.9				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	35.0	6.5	25.0	11.0	30.5	10.0	21.5				
Max Q Clear Time (g_c+I1), s	5.4	5.5	5.0	16.1	11.6	17.0	11.3	20.5				
Green Ext Time (p_c), s	0.0	4.6	0.0	6.4	0.0	3.5	0.0	0.4				
Intersection Summary												
HCM 2010 Ctrl Delay	33.4											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

9: Etiwanda Avenue & Church Street/Miller Street

E+P
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	225	162	42	223	22	102	233	39	22	290	276
Future Volume (veh/h)	149	225	162	42	223	22	102	233	39	22	290	276
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	160	242	174	45	240	24	110	251	42	24	312	297
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	304	426	326	165	827	87	161	1462	241	69	1540	654
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.10	0.49	0.49	0.04	0.44	0.44
Sat Flow, veh/h	588	1161	889	245	2256	237	1587	2956	488	1587	3529	1500
Grp Volume(v), veh/h	292	0	284	150	0	159	110	148	145	24	312	297
Grp Sat Flow(s),veh/h/ln	1189	0	1449	1173	0	1564	1587	1765	1679	1587	1765	1500
Q Serve(g_s), s	9.9	0.0	9.7	0.6	0.0	4.5	4.2	2.9	3.0	0.9	3.4	8.7
Cycle Q Clear(g_c), s	14.3	0.0	9.7	10.3	0.0	4.5	4.2	2.9	3.0	0.9	3.4	8.7
Prop In Lane	0.55		0.61	0.30		0.15	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	525	0	531	505	0	573	161	873	830	69	1540	654
V/C Ratio(X)	0.56	0.00	0.53	0.30	0.00	0.28	0.68	0.17	0.17	0.35	0.20	0.45
Avail Cap(c_a), veh/h	791	0	821	787	0	886	296	873	830	190	1540	654
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.8	0.0	15.6	14.0	0.0	14.0	27.2	8.7	8.8	29.1	10.9	12.4
Incr Delay (d2), s/veh	0.9	0.0	0.8	0.3	0.0	0.3	5.0	0.4	0.5	3.0	0.3	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	4.0	1.8	0.0	2.0	2.1	1.5	1.5	0.5	1.7	4.0
LnGrp Delay(d),s/veh	18.7	0.0	16.5	14.3	0.0	14.3	32.2	9.2	9.2	32.2	11.2	14.7
LnGrp LOS	B		B	B		B	C	A	A	C	B	B
Approach Vol, veh/h		576			309			403			633	
Approach Delay, s/veh		17.6			14.3			15.5			13.6	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	33.0		25.0	8.4	29.3		25.0				
Change Period (Y+Rc), s	3.0	3.0		3.0	3.0	3.0		3.0				
Max Green Setting (Gmax), s	6.5	30.0		34.5	10.7	25.8		34.5				
Max Q Clear Time (g_c+I1), s	2.9	5.0		16.3	6.2	10.7		12.3				
Green Ext Time (p_c), s	0.0	5.2		5.6	0.1	4.4		6.1				
Intersection Summary												
HCM 2010 Ctrl Delay				15.3								
HCM 2010 LOS				B								

HCM 2010 TWSC
10: Etiwanda Avenue & Existing Driveway

E+P
Sunday Peak Hour

Intersection							
Int Delay, s/veh	10.3						
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Vol, veh/h	165	178	75	278	387	68	
Future Vol, veh/h	165	178	75	278	387	68	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	None	-	None	-	None	
Storage Length	0	0	110	-	-	-	
Veh in Median Storage, #	0	-	-	0	0	-	
Grade, %	0	-	-	0	0	-	
Peak Hour Factor	81	81	81	81	81	81	
Heavy Vehicles, %	2	2	2	2	2	2	
Mvmt Flow	204	220	93	343	478	84	
Major/Minor	Minor2	Major1		Major2			
Conflicting Flow All	877	281	562	0	-	0	
Stage 1	520	-	-	-	-	-	
Stage 2	357	-	-	-	-	-	
Critical Hdwy	6.84	6.94	4.14	-	-	-	
Critical Hdwy Stg 1	5.84	-	-	-	-	-	
Critical Hdwy Stg 2	5.84	-	-	-	-	-	
Follow-up Hdwy	3.52	3.32	2.22	-	-	-	
Pot Cap-1 Maneuver	288	716	1005	-	-	-	
Stage 1	561	-	-	-	-	-	
Stage 2	679	-	-	-	-	-	
Platoon blocked, %				-	-	-	
Mov Cap-1 Maneuver	261	716	1005	-	-	-	
Mov Cap-2 Maneuver	261	-	-	-	-	-	
Stage 1	561	-	-	-	-	-	
Stage 2	616	-	-	-	-	-	
Approach	EB	NB		SB			
HCM Control Delay, s	32.6	1.9		0			
HCM LOS	D						
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR	
Capacity (veh/h)	1005	-	261	716	-	-	
HCM Lane V/C Ratio	0.092	-	0.78	0.307	-	-	
HCM Control Delay (s)	8.9	-	54.7	12.2	-	-	
HCM Lane LOS	A	-	F	B	-	-	
HCM 95th %tile Q(veh)	0.3	-	5.9	1.3	-	-	

HCM 2010 Signalized Intersection Summary

11: Etiwanda Avenue & Baseline Avenue

E+P
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	465	127	218	503	36	105	132	239	47	125	54
Future Volume (veh/h)	69	465	127	218	503	36	105	132	239	47	125	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1800	1569	1765	1800	1569	1765	1765	1667	1765	1800
Adj Flow Rate, veh/h	73	489	134	229	529	38	111	139	252	49	132	57
Adj No. of Lanes	2	3	0	2	3	0	2	1	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	211	986	262	336	1398	100	240	818	864	95	1053	433
Arrive On Green	0.07	0.24	0.24	0.11	0.29	0.29	0.08	0.46	0.46	0.06	0.44	0.44
Sat Flow, veh/h	2988	4034	1071	2988	4885	348	2988	1765	1500	1587	2378	979
Grp Volume(v), veh/h	73	426	197	229	381	186	111	139	252	49	96	93
Grp Sat Flow(s),veh/h/ln	1494	1765	1576	1494	1765	1703	1494	1765	1500	1587	1765	1592
Q Serve(g_s), s	1.6	6.9	7.2	4.9	5.8	5.8	2.4	3.1	5.7	2.0	2.1	2.3
Cycle Q Clear(g_c), s	1.6	6.9	7.2	4.9	5.8	5.8	2.4	3.1	5.7	2.0	2.1	2.3
Prop In Lane	1.00		0.68	1.00		0.20	1.00		1.00	1.00		0.61
Lane Grp Cap(c), veh/h	211	862	385	336	1010	488	240	818	864	95	781	705
V/C Ratio(X)	0.35	0.49	0.51	0.68	0.38	0.38	0.46	0.17	0.29	0.52	0.12	0.13
Avail Cap(c_a), veh/h	336	1192	532	336	1192	575	336	818	864	179	781	705
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.5	21.6	21.7	28.4	19.0	19.1	29.3	10.4	7.2	30.4	10.9	11.0
Incr Delay (d2), s/veh	1.0	0.4	1.1	5.5	0.2	0.5	1.4	0.5	0.9	4.3	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.4	3.2	2.3	2.8	2.8	1.0	1.6	2.5	1.0	1.1	1.1
LnGrp Delay(d),s/veh	30.5	22.1	22.8	33.9	19.3	19.5	30.6	10.9	8.1	34.7	11.3	11.4
LnGrp LOS	C	C	C	C	B	B	C	B	A	C	B	B
Approach Vol, veh/h		696			796			502			238	
Approach Delay, s/veh		23.2			23.5			13.8			16.1	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.0	32.9	9.5	18.3	7.4	31.5	6.7	21.1				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	28.5	6.5	21.5	6.5	28.5	6.5	21.5				
Max Q Clear Time (g_c+I1), s	4.0	7.7	6.9	9.2	4.4	4.3	3.6	7.8				
Green Ext Time (p_c), s	0.0	2.8	0.0	6.1	0.1	2.8	0.0	6.5				
Intersection Summary												
HCM 2010 Ctrl Delay			20.5									
HCM 2010 LOS			C									

HCM 2010 Research does not support Non-NEMA phasing.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

Appendices

Appendix E. Cumulative Projects

Appendices

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Table A1 Trip Generation Rates for Cumulative Projects

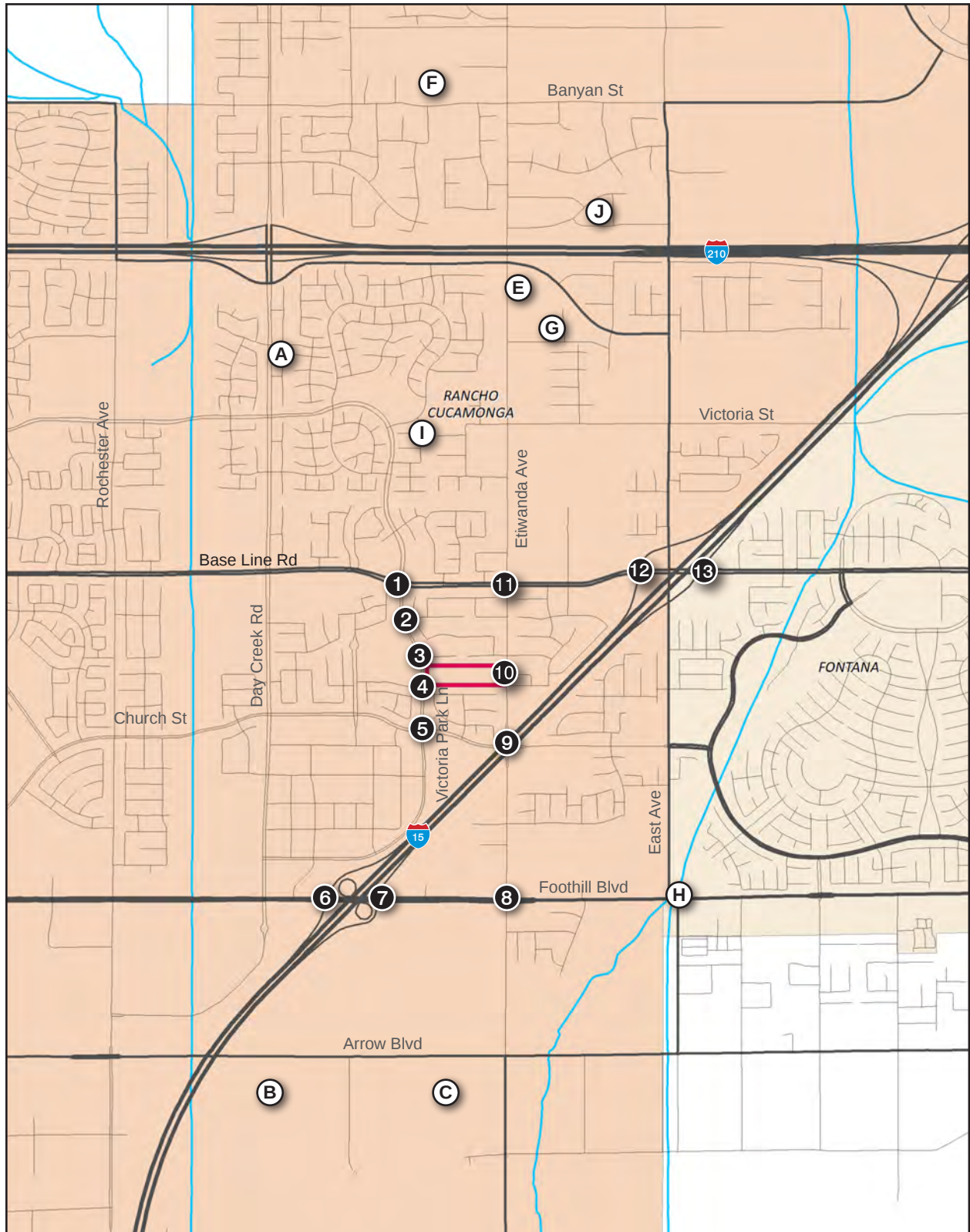
Land Use	ITE Code	Unit	Trip Generation ¹			
			Sunday Daily	Sunday Peak Hour of Generator		
				In	Out	Total
Manufacturing	140	TSF	5.09	-	-	0.75
Warehousing	150	TSF	0.06	0.02	0.02	0.04
Single-Family Detached Housing	210	Dwelling Units	8.55	0.45	0.40	0.85
Multifamily Housing (Low-Rise)	220	Dwelling Units	6.28	0.33	0.34	0.67
Hotel	310	Rooms	5.95	0.26	0.30	0.56
General Office Building	710	TSF	0.7	0.12	0.09	0.21
Restaurant	820	TSF	142.64	14.21	11.62	25.83

¹ Trip generation rates per the ITE Trip Generation Manual 10th Edition.

Table A2 Cumulative Projects Trip Generation

Project Name	Project ID	Project Type	Land Use	ITE Code	Unit Amount	Unit	Trip Generation ¹			
							Daily	Sunday Peak Hour of Generator		
								In	Out	Total
DRC2015-00797	A	Industrial	Warehousing	150	339	TSF	20	7	7	14
DRC2017-00084	B	Industrial	Warehousing	150	57	TSF	3	1	1	2
DRC2017-00141 (Industry bulding + acces support building)	C	Industrial	Warehousing	150	48	TSF	3	1	1	2
SUBTT00021	D	Residential	Single-Family Detached Housing	210	14	Dwelling Units	120	6	6	12
SUBTT18012	E	Residential	Single-Family Detached Housing	210	9	Dwelling Units	77	4	4	8
SUBTT18936	F	Residential	Single-Family Detached Housing	210	16	Dwelling Units	137	7	7	14
SUBTT19945	G	Residential	Multifamily Housing (Low Rise)	220	193	Dwelling Units	1,212	65	64	129
SUBTT19995	H	Residential	Single-Family Detached Housing	210	16	Dwelling Units	137	7	7	14
SUBTT20151	I	Residential	Single-Family Detached Housing	210	4	Dwelling Units	34	2	1	3
Design Review No. 15-007	J	Industrial	Warehousing	150	2669	TSF	160	53	54	107
Design Review No. 17-002	K	Residential	Multifamily Housing (Low Rise)	220	136	Dwelling Units	854	45	46	91
Total Trip Generation of projects included in TIA:							2,757	199	198	397

Figure XX - Cumulative Developments Location Map



Note: Unincorporated county areas are shown in white.

— Project Boundary



Study Intersections (13)



Development Locations (9)

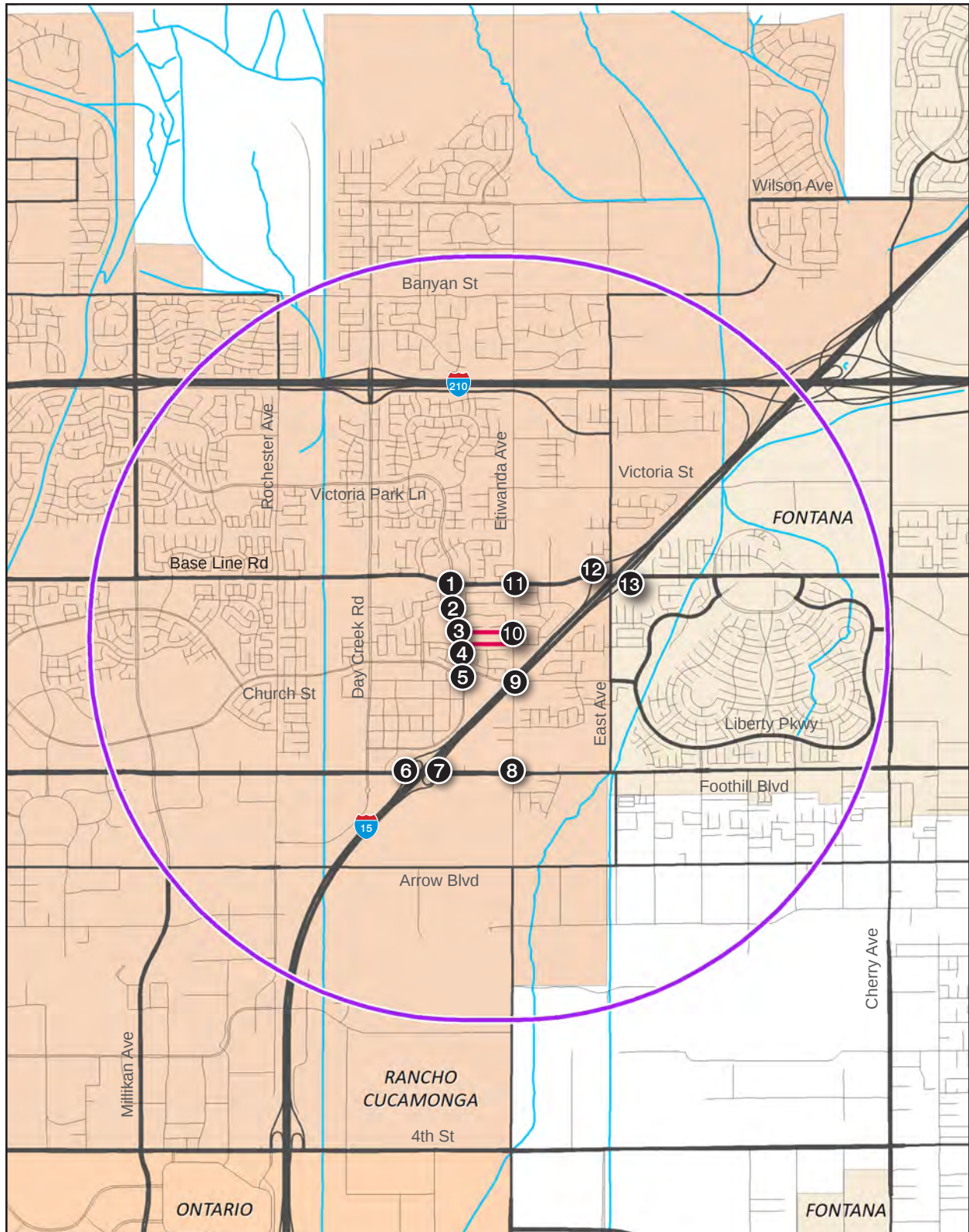
0 2,000
Scale (Feet)



Source: ESRI, 2018

PlaceWorks

Figure XX - 2-Mile Radius



Note: Unincorporated county areas are shown in white.

— Project Boundary



Study Intersections (13)

— 2-Mile Radius

0 1
Scale (Miles)



Source: ESRI, 2018

Appendices

Appendix F. Intersection Volumes, Delay, and LOS Calculation Outputs, 2021 No Project Conditions

Appendices

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HCM 2010 Signalized Intersection Summary

1: Victoria Park Lane & Baseline Avenue

2021 NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	478	54	112	471	91	50	58	73	102	68	46
Future Volume (veh/h)	52	478	54	112	471	91	50	58	73	102	68	46
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1800	1569	1765	1800	1667	1765	1765	1667	1765	1765
Adj Flow Rate, veh/h	53	488	55	114	481	93	51	59	74	104	69	47
Adj No. of Lanes	2	3	0	2	3	0	1	2	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	1121	124	236	1116	210	95	1663	707	150	893	759
Arrive On Green	0.06	0.24	0.24	0.08	0.26	0.26	0.06	0.47	0.47	0.09	0.51	0.51
Sat Flow, veh/h	2988	4683	520	2988	4333	817	1587	3529	1500	1587	1765	1500
Grp Volume(v), veh/h	53	366	177	114	390	184	51	59	74	104	69	47
Grp Sat Flow(s),veh/h/ln	1494	1765	1673	1494	1765	1620	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	1.2	6.1	6.2	2.5	6.4	6.6	2.2	0.6	1.9	4.4	1.4	1.1
Cycle Q Clear(g_c), s	1.2	6.1	6.2	2.5	6.4	6.6	2.2	0.6	1.9	4.4	1.4	1.1
Prop In Lane	1.00		0.31	1.00		0.50	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	181	845	400	236	909	417	95	1663	707	150	893	759
V/C Ratio(X)	0.29	0.43	0.44	0.48	0.43	0.44	0.54	0.04	0.10	0.69	0.08	0.06
Avail Cap(c_a), veh/h	325	1458	691	325	1458	670	173	1663	707	196	893	759
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	22.3	22.3	30.4	21.4	21.5	31.5	9.8	10.1	30.3	8.8	8.7
Incr Delay (d2), s/veh	0.9	0.4	0.8	1.5	0.3	0.7	4.7	0.0	0.3	6.8	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.0	2.9	1.1	3.1	3.0	1.1	0.3	0.8	2.2	0.7	0.5
LnGrp Delay(d),s/veh	31.9	22.6	23.1	32.0	21.7	22.2	36.2	9.8	10.4	37.1	8.9	8.8
LnGrp LOS	C	C	C	C	C	C	D	A	B	D	A	A
Approach Vol, veh/h		596			688			184			220	
Approach Delay, s/veh		23.6			23.5			17.4			22.2	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	34.5	7.4	18.5	6.1	36.9	6.2	19.8				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	7.5	31.5	6.5	27.5	6.5	32.5	6.5	27.5				
Max Q Clear Time (g_c+l1), s	6.4	3.9	4.5	8.2	4.2	3.4	3.2	8.6				
Green Ext Time (p_c), s	0.0	1.1	0.1	7.3	0.0	1.1	0.0	7.2				
Intersection Summary												
HCM 2010 Ctrl Delay				22.7								
HCM 2010 LOS				C								

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	167	5	0	228
Future Vol, veh/h	0	3	167	5	0	228
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	176	5	0	240
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	91	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	949	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	949	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.8	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT			
Capacity (veh/h)	-	- 949	-			
HCM Lane V/C Ratio	-	- 0.003	-			
HCM Control Delay (s)	-	- 8.8	-			
HCM Lane LOS	-	- A	-			
HCM 95th %tile Q(veh)	-	- 0	-			

HCM 2010 Signalized Intersection Summary

4: Victoria Park Lane & Long Meadow Drive/Wild Horse Way

2021 NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	0	15	3	2	19	9	135	3	10	203	15
Future Volume (veh/h)	16	0	15	3	2	19	9	135	3	10	203	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	16	0	15	3	2	19	9	136	3	10	205	15
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	0	63	133	11	108	1013	2406	53	1079	2278	165
Arrive On Green	0.09	0.00	0.09	0.09	0.09	0.09	0.04	0.70	0.70	0.04	0.70	0.70
Sat Flow, veh/h	763	0	716	194	130	1230	1587	3440	76	1587	3252	236
Grp Volume(v), veh/h	31	0	0	24	0	0	9	70	69	10	111	109
Grp Sat Flow(s),veh/h/ln	1479	0	0	1554	0	0	1587	1765	1751	1587	1765	1723
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.1	0.7	0.7
Cycle Q Clear(g_c), s	0.6	0.0	0.0	0.4	0.0	0.0	0.1	0.4	0.4	0.1	0.7	0.7
Prop In Lane	0.52		0.48	0.12		0.79	1.00		0.04	1.00		0.14
Lane Grp Cap(c), veh/h	285	0	0	252	0	0	1013	1234	1225	1079	1236	1207
V/C Ratio(X)	0.11	0.00	0.00	0.10	0.00	0.00	0.01	0.06	0.06	0.01	0.09	0.09
Avail Cap(c_a), veh/h	1247	0	0	1258	0	0	1311	1234	1225	1375	1236	1207
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	0.0	14.8	0.0	0.0	1.2	1.6	1.6	1.2	1.7	1.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.2	0.0	0.4	0.4
LnGrp Delay(d),s/veh	15.0	0.0	0.0	14.9	0.0	0.0	1.2	1.7	1.7	1.2	1.8	1.8
LnGrp LOS	B			B			A	A	A	A	A	A
Approach Vol, veh/h		31			24			148			230	
Approach Delay, s/veh		15.0			14.9			1.7			1.8	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.5	26.5		5.1	3.4	26.5		5.1				
Change Period (Y+Rc), s	3.0	3.0		3.0	3.0	3.0		3.0				
Max Green Setting (Gmax), s	7.0	23.5		25.5	7.0	23.5		25.5				
Max Q Clear Time (g_c+I1), s	2.1	2.4		2.6	2.1	2.7		2.4				
Green Ext Time (p_c), s	0.0	2.0		0.2	0.0	2.0		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			3.4									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

5: Victoria Park Lane & Church Street

2021 NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	46	335	57	170	386	15	56	84	168	38	95	77
Future Volume (veh/h)	46	335	57	170	386	15	56	84	168	38	95	77
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1569	1765	1800	1667	1765	1765	1667	1765	1765
Adj Flow Rate, veh/h	49	356	61	181	411	16	60	89	179	40	101	82
Adj No. of Lanes	1	2	1	2	2	0	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	721	306	305	833	32	104	1834	780	86	1795	763
Arrive On Green	0.06	0.20	0.20	0.10	0.25	0.25	0.07	0.52	0.52	0.05	0.51	0.51
Sat Flow, veh/h	1587	3529	1500	2988	3375	131	1587	3529	1500	1587	3529	1500
Grp Volume(v), veh/h	49	356	61	181	214	213	60	89	179	40	101	82
Grp Sat Flow(s),veh/h/ln	1587	1765	1500	1494	1765	1742	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	2.0	6.0	2.3	3.9	7.0	7.0	2.5	0.8	4.3	1.6	1.0	1.9
Cycle Q Clear(g_c), s	2.0	6.0	2.3	3.9	7.0	7.0	2.5	0.8	4.3	1.6	1.0	1.9
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	95	721	306	305	435	430	104	1834	780	86	1795	763
V/C Ratio(X)	0.52	0.49	0.20	0.59	0.49	0.49	0.58	0.05	0.23	0.47	0.06	0.11
Avail Cap(c_a), veh/h	178	1320	561	447	726	717	190	1834	780	178	1795	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.5	23.5	22.1	28.7	21.6	21.6	30.3	7.9	8.8	30.7	8.3	8.5
Incr Delay (d2), s/veh	4.3	0.5	0.3	1.8	0.9	0.9	5.0	0.0	0.1	3.9	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	3.0	1.0	1.7	3.5	3.5	1.2	0.4	1.8	0.8	0.5	0.8
LnGrp Delay(d),s/veh	34.8	24.1	22.4	30.5	22.4	22.5	35.4	7.9	8.9	34.5	8.4	8.8
LnGrp LOS	C	C	C	C	C	C	D	A	A	C	A	A
Approach Vol, veh/h		466			608			328			223	
Approach Delay, s/veh		25.0			24.9			13.5			13.2	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.6	36.7	8.8	15.7	6.4	36.0	6.0	18.5				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	33.5	9.0	24.0	7.0	33.0	6.5	26.5				
Max Q Clear Time (g_c+I1), s	3.6	6.3	5.9	8.0	4.5	3.9	4.0	9.0				
Green Ext Time (p_c), s	0.0	2.1	0.2	4.7	0.0	2.1	0.0	4.9				
Intersection Summary												
HCM 2010 Ctrl Delay			21.0									
HCM 2010 LOS			C									

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Signalized Intersection Summary

8: Etiwanda Avenue & E. Foothill Blvd

2021 NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	277	714	151	111	816	61	181	106	110	56	153	305
Future Volume (veh/h)	277	714	151	111	816	61	181	106	110	56	153	305
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1765	1569	1765	1765	1667	1765	1765	1667	1765	1800
Adj Flow Rate, veh/h	289	744	157	116	850	64	189	110	115	58	159	318
Adj No. of Lanes	2	2	1	2	2	1	1	1	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	352	1121	476	207	949	404	225	816	694	89	666	566
Arrive On Green	0.12	0.32	0.32	0.07	0.27	0.27	0.14	0.46	0.46	0.06	0.38	0.38
Sat Flow, veh/h	2988	3529	1500	2988	3529	1500	1587	1765	1500	1587	1765	1500
Grp Volume(v), veh/h	289	744	157	116	850	64	189	110	115	58	159	318
Grp Sat Flow(s),veh/h/ln	1494	1765	1500	1494	1765	1500	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	8.0	15.5	6.8	3.2	19.7	2.8	9.8	3.0	3.8	3.0	5.2	14.2
Cycle Q Clear(g_c), s	8.0	15.5	6.8	3.2	19.7	2.8	9.8	3.0	3.8	3.0	5.2	14.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	352	1121	476	207	949	404	225	816	694	89	666	566
V/C Ratio(X)	0.82	0.66	0.33	0.56	0.90	0.16	0.84	0.13	0.17	0.65	0.24	0.56
Avail Cap(c_a), veh/h	352	1121	476	264	957	407	225	816	694	146	666	566
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.5	25.0	22.1	38.2	29.8	23.7	35.5	13.1	13.3	39.2	18.1	20.9
Incr Delay (d2), s/veh	14.3	1.5	0.4	2.4	10.9	0.2	24.0	0.3	0.5	7.8	0.8	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	7.8	2.8	1.4	11.0	1.2	5.8	1.5	1.7	1.5	2.7	6.5
LnGrp Delay(d),s/veh	50.8	26.5	22.5	40.6	40.7	23.9	59.4	13.4	13.8	47.0	18.9	24.9
LnGrp LOS	D	C	C	D	D	C	E	B	B	D	B	C
Approach Vol, veh/h	1190				1030				414			
Approach Delay, s/veh	31.9				39.6				34.5			
Approach LOS	C				D				C			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	41.2	7.9	28.9	14.0	34.0	12.0	24.8				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.8	35.2	6.5	24.5	11.0	31.0	9.0	22.0				
Max Q Clear Time (g_c+I1), s	5.0	5.8	5.2	17.5	11.8	16.2	10.0	21.7				
Green Ext Time (p_c), s	0.0	4.5	0.0	5.4	0.0	3.6	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	33.7											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

9: Etiwanda Avenue & Church Street/Miller Street

2021 NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	152	227	164	42	225	14	103	182	39	14	271	255
Future Volume (veh/h)	152	227	164	42	225	14	103	182	39	14	271	255
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	163	244	176	45	242	15	111	196	42	15	291	274
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	310	428	328	168	859	56	163	1416	297	55	1526	648
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.10	0.50	0.50	0.03	0.43	0.43
Sat Flow, veh/h	598	1160	890	250	2330	152	1587	2831	594	1587	3529	1500
Grp Volume(v), veh/h	296	0	287	146	0	156	111	121	117	15	291	274
Grp Sat Flow(s),veh/h/ln	1199	0	1449	1153	0	1579	1587	1765	1660	1587	1765	1500
Q Serve(g_s), s	9.9	0.0	9.7	0.6	0.0	4.3	4.2	2.3	2.4	0.6	3.2	7.9
Cycle Q Clear(g_c), s	14.2	0.0	9.7	10.3	0.0	4.3	4.2	2.3	2.4	0.6	3.2	7.9
Prop In Lane	0.55		0.61	0.31		0.10	1.00		0.36	1.00		1.00
Lane Grp Cap(c), veh/h	532	0	534	501	0	582	163	883	830	55	1526	648
V/C Ratio(X)	0.56	0.00	0.54	0.29	0.00	0.27	0.68	0.14	0.14	0.27	0.19	0.42
Avail Cap(c_a), veh/h	805	0	830	787	0	904	300	883	830	192	1526	648
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.5	0.0	15.4	13.7	0.0	13.7	26.9	8.3	8.3	29.2	10.9	12.2
Incr Delay (d2), s/veh	0.9	0.0	0.8	0.3	0.0	0.2	5.0	0.3	0.4	2.7	0.3	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.0	3.9	1.7	0.0	1.9	2.0	1.2	1.2	0.3	1.6	3.6
LnGrp Delay(d),s/veh	18.4	0.0	16.2	14.0	0.0	14.0	31.8	8.6	8.7	31.8	11.2	14.2
LnGrp LOS	B		B	B		B	C	A	A	C	B	B
Approach Vol, veh/h		583			302			349			580	
Approach Delay, s/veh		17.4			14.0			16.0			13.2	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.1	33.0		24.9	8.3	28.8		24.9				
Change Period (Y+Rc), s	3.0	3.0		3.0	3.0	3.0		3.0				
Max Green Setting (Gmax), s	6.5	30.0		34.5	10.7	25.8		34.5				
Max Q Clear Time (g_c+I1), s	2.6	4.4		16.2	6.2	9.9		12.3				
Green Ext Time (p_c), s	0.0	4.5		5.7	0.1	3.9		6.1				
Intersection Summary												
HCM 2010 Ctrl Delay			15.2									
HCM 2010 LOS			B									

HCM 2010 TWSC
10: Etiwanda Avenue & Existing Driveway

2021 NP
Sunday Peak Hour

Intersection						
Int Delay, s/veh	5.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	107	112	3	293	403	4
Future Vol, veh/h	107	112	3	293	403	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	138	4	362	498	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	688	251	502	0	-	0
Stage 1	500	-	-	-	-	-
Stage 2	188	-	-	-	-	-
Critical Hdwy	7.54	6.94	4.14	-	-	-
Critical Hdwy Stg 1	6.54	-	-	-	-	-
Critical Hdwy Stg 2	6.54	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	333	749	1059	-	-	-
Stage 1	521	-	-	-	-	-
Stage 2	796	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	332	749	1059	-	-	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	793	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	23	0.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1059	-	464	-	-	
HCM Lane V/C Ratio	0.003	-	0.583	-	-	
HCM Control Delay (s)	8.4	-	23	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0	-	3.6	-	-	

HCM 2010 Signalized Intersection Summary

11: Etiwanda Avenue & Baseline Avenue

2021 NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	470	88	204	508	39	106	127	191	50	120	56
Future Volume (veh/h)	71	470	88	204	508	39	106	127	191	50	120	56
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1800	1569	1765	1800	1569	1765	1765	1667	1765	1800
Adj Flow Rate, veh/h	75	495	93	215	535	41	112	134	201	53	126	59
Adj No. of Lanes	2	3	0	2	3	0	2	1	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	214	1038	190	336	1356	103	243	822	867	99	1036	460
Arrive On Green	0.07	0.24	0.24	0.11	0.28	0.28	0.08	0.47	0.47	0.06	0.45	0.45
Sat Flow, veh/h	2988	4354	799	2988	4860	369	2988	1765	1500	1587	2318	1030
Grp Volume(v), veh/h	75	399	189	215	387	189	112	134	201	53	94	91
Grp Sat Flow(s),veh/h/ln	1494	1765	1624	1494	1765	1700	1494	1765	1500	1587	1765	1583
Q Serve(g_s), s	1.6	6.4	6.6	4.5	5.9	6.0	2.4	2.9	4.3	2.1	2.1	2.2
Cycle Q Clear(g_c), s	1.6	6.4	6.6	4.5	5.9	6.0	2.4	2.9	4.3	2.1	2.1	2.2
Prop In Lane	1.00		0.49	1.00		0.22	1.00		1.00	1.00		0.65
Lane Grp Cap(c), veh/h	214	841	387	336	985	474	243	822	867	99	789	707
V/C Ratio(X)	0.35	0.47	0.49	0.64	0.39	0.40	0.46	0.16	0.23	0.54	0.12	0.13
Avail Cap(c_a), veh/h	339	1203	553	339	1203	579	339	822	867	180	789	707
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.2	21.6	21.7	28.0	19.3	19.3	28.9	10.2	6.8	30.0	10.7	10.7
Incr Delay (d2), s/veh	1.0	0.4	1.0	4.0	0.3	0.5	1.4	0.4	0.6	4.5	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.2	3.0	2.1	2.9	2.9	1.0	1.5	1.9	1.1	1.1	1.0
LnGrp Delay(d),s/veh	30.1	22.0	22.6	32.0	19.5	19.8	30.3	10.6	7.4	34.5	11.0	11.1
LnGrp LOS	C	C	C	C	B	B	C	B	A	C	B	B
Approach Vol, veh/h		663			791			447			238	
Approach Delay, s/veh		23.1			23.0			14.1			16.3	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	32.8	9.4	17.7	7.4	31.5	6.7	20.4				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	28.5	6.5	21.5	6.5	28.5	6.5	21.5				
Max Q Clear Time (g_c+I1), s	4.1	6.3	6.5	8.6	4.4	4.2	3.6	8.0				
Green Ext Time (p_c), s	0.0	2.5	0.0	6.1	0.1	2.6	0.0	6.3				
Intersection Summary												
HCM 2010 Ctrl Delay				20.4								
HCM 2010 LOS				C								

HCM 2010 Research does not support Non-NEMA phasing.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM Signalized Intersection Capacity Analysis

12: I-15 SB On/I-15 SB Off & Baseline Avenue

2021 NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑↑		↑↑
Traffic Volume (vph)	0	414	218	0	552	571	0	0	0	400	0	273
Future Volume (vph)	0	414	218	0	552	571	0	0	0	400	0	273
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1600	1800	1800
Total Lost time (s)		2.0	2.0		2.0					2.0		2.0
Lane Util. Factor		*1.00	1.00		*1.00					*1.00		*1.00
Frt		1.00	0.85		0.92					1.00		0.85
Flt Protected		1.00	1.00		1.00					0.95		1.00
Satd. Flow (prot)		5294	1500		4890					2980		3000
Flt Permitted		1.00	1.00		1.00					0.95		1.00
Satd. Flow (perm)		5294	1500		4890					2980		3000
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	450	237	0	600	621	0	0	0	435	0	297
RTOR Reduction (vph)	0	0	139	0	364	0	0	0	0	0	0	149
Lane Group Flow (vph)	0	450	98	0	857	0	0	0	0	435	0	148
Turn Type		NA	Perm		NA					Perm		Perm
Protected Phases		4			8							
Permitted Phases			4							6		6
Actuated Green, G (s)		17.6	17.6		17.6					21.4		21.4
Effective Green, g (s)		18.6	18.6		18.6					22.4		22.4
Actuated g/C Ratio		0.41	0.41		0.41					0.50		0.50
Clearance Time (s)		3.0	3.0		3.0					3.0		3.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0		3.0
Lane Grp Cap (vph)		2188	620		2021					1483		1493
v/s Ratio Prot		0.09			c0.18							
v/s Ratio Perm			0.07							c0.15		0.05
v/c Ratio		0.21	0.16		0.42					0.29		0.10
Uniform Delay, d1		8.5	8.3		9.4					6.6		6.0
Progression Factor		1.00	1.00		1.00					1.00		1.00
Incremental Delay, d2		0.0	0.1		0.1					0.5		0.1
Delay (s)		8.5	8.4		9.5					7.1		6.1
Level of Service		A	A		A					A		A
Approach Delay (s)		8.5			9.5			0.0			6.7	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			8.5			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			45.0			Sum of lost time (s)				5.0		
Intersection Capacity Utilization			45.0%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: I-15 NB Off/I-15 NB On & Baseline Avenue

2021 NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	351	492	0	0	760	130	298	0	254	0	0	0
Future Volume (vph)	351	492	0	0	760	130	298	0	254	0	0	0
Ideal Flow (vphpl)	1600	1800	1800	1800	1800	1800	1600	1800	1800	1800	1800	1800
Total Lost time (s)	2.0	2.0			2.0	2.0	2.0	2.0	2.0			
Lane Util. Factor	*1.00	*1.00			*1.00	1.00	*1.00	*1.00	*1.00			
Frt	1.00	1.00			1.00	0.85	1.00	0.94	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (prot)	2980	5294			7059	1500	1490	1607	1500			
Flt Permitted	0.34	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (perm)	1055	5294			7059	1500	1490	1607	1500			
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	386	541	0	0	835	143	327	0	279	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	73	0	48	112	0	0	0
Lane Group Flow (vph)	386	541	0	0	835	70	209	156	81	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases	4					8	2		2			
Actuated Green, G (s)	20.5	20.5			20.5	20.5	17.4	17.4	17.4			
Effective Green, g (s)	21.5	21.5			21.5	21.5	18.4	18.4	18.4			
Actuated g/C Ratio	0.49	0.49			0.49	0.49	0.42	0.42	0.42			
Clearance Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	516	2592			3457	734	624	673	628			
v/s Ratio Prot		0.10			0.12							
v/s Ratio Perm	c0.37					0.05	c0.14	0.10	0.05			
v/c Ratio	0.75	0.21			0.24	0.10	0.33	0.23	0.13			
Uniform Delay, d1	9.0	6.4			6.5	6.0	8.6	8.2	7.8			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	5.9	0.0			0.0	0.1	1.4	0.8	0.4			
Delay (s)	14.9	6.4			6.5	6.1	10.1	9.0	8.3			
Level of Service	B	A			A	A	B	A	A			
Approach Delay (s)		9.9			6.4			9.1			0.0	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay			8.4									
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			43.9									
Intersection Capacity Utilization			45.0%									
Analysis Period (min)			15									
c Critical Lane Group												

Appendices

Appendix G. Intersection Volumes, Delay, and LOS Calculation Outputs, 2021 With Project Conditions

Appendices

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HCM 2010 Signalized Intersection Summary

1: Victoria Park Lane & Baseline Avenue

2021 WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	510	54	112	471	91	83	66	73	110	68	46
Future Volume (veh/h)	52	510	54	112	471	91	83	66	73	110	68	46
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1800	1569	1765	1800	1667	1765	1765	1667	1765	1765
Adj Flow Rate, veh/h	53	520	55	114	481	93	85	67	74	112	69	47
Adj No. of Lanes	2	3	0	2	3	0	1	2	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	179	1145	119	231	1127	213	126	1647	700	159	860	731
Arrive On Green	0.06	0.24	0.24	0.08	0.26	0.26	0.08	0.47	0.47	0.10	0.49	0.49
Sat Flow, veh/h	2988	4715	492	2988	4333	817	1587	3529	1500	1587	1765	1500
Grp Volume(v), veh/h	53	387	188	114	390	184	85	67	74	112	69	47
Grp Sat Flow(s),veh/h/ln	1494	1765	1678	1494	1765	1620	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	1.2	6.6	6.7	2.6	6.5	6.7	3.7	0.7	2.0	4.8	1.5	1.2
Cycle Q Clear(g_c), s	1.2	6.6	6.7	2.6	6.5	6.7	3.7	0.7	2.0	4.8	1.5	1.2
Prop In Lane	1.00		0.29	1.00		0.50	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	179	857	407	231	918	422	126	1647	700	159	860	731
V/C Ratio(X)	0.30	0.45	0.46	0.49	0.42	0.44	0.67	0.04	0.11	0.70	0.08	0.06
Avail Cap(c_a), veh/h	317	1423	676	317	1423	653	168	1647	700	180	860	731
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	22.8	22.8	31.3	21.8	21.8	31.7	10.3	10.6	30.8	9.7	9.6
Incr Delay (d2), s/veh	0.9	0.4	0.8	1.6	0.3	0.7	6.3	0.0	0.3	10.3	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.3	3.2	1.1	3.2	3.1	1.8	0.4	0.9	2.6	0.8	0.5
LnGrp Delay(d),s/veh	32.7	23.1	23.6	32.9	22.1	22.6	38.0	10.3	10.9	41.1	9.9	9.8
LnGrp LOS	C	C	C	C	C	C	D	B	B	D	A	A
Approach Vol, veh/h		628			688			226			228	
Approach Delay, s/veh		24.1			24.0			20.9			25.2	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	35.0	7.5	19.2	7.6	36.5	6.2	20.4				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	7.0	32.0	6.5	27.5	6.5	32.5	6.5	27.5				
Max Q Clear Time (g_c+I1), s	6.8	4.0	4.6	8.7	5.7	3.5	3.2	8.7				
Green Ext Time (p_c), s	0.0	1.2	0.1	7.4	0.0	1.2	0.0	7.4				
Intersection Summary												
HCM 2010 Ctrl Delay				23.8								
HCM 2010 LOS				C								

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	3	208	5	0	228
Future Vol, veh/h	0	3	208	5	0	228
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	3	219	5	0	240

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	112	0 0
Stage 1	-	-	- -
Stage 2	-	-	- -
Critical Hdwy	-	6.94	- -
Critical Hdwy Stg 1	-	-	- -
Critical Hdwy Stg 2	-	-	- -
Follow-up Hdwy	-	3.32	- -
Pot Cap-1 Maneuver	0	920	0 -
Stage 1	0	-	0 -
Stage 2	0	-	0 -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	-	920	- -
Mov Cap-2 Maneuver	-	-	- -
Stage 1	-	-	- -
Stage 2	-	-	- -

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	- 920	-
HCM Lane V/C Ratio	-	- 0.003	-
HCM Control Delay (s)	-	- 8.9	-
HCM Lane LOS	-	- A	-
HCM 95th %tile Q(veh)	-	- 0	-

HCM 2010 TWSC
3: Victoria Park Lane & Proposed Driveway

2021 WP
Sunday Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	41	172	24	0	228
Future Vol, veh/h	0	41	172	24	0	228
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	43	181	25	0	240
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	103	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	932	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	-	932	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.1	0		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT			
Capacity (veh/h)	-	- 932	-			
HCM Lane V/C Ratio	-	- 0.046	-			
HCM Control Delay (s)	-	- 9.1	-			
HCM Lane LOS	-	- A	-			
HCM 95th %tile Q(veh)	-	- 0.1	-			

HCM 2010 Signalized Intersection Summary

4: Victoria Park Lane & Long Meadow Drive/Wild Horse Way

2021 WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	0	15	3	2	19	9	159	3	10	203	15
Future Volume (veh/h)	16	0	15	3	2	19	9	159	3	10	203	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1800
Adj Flow Rate, veh/h	16	0	15	3	2	19	9	161	3	10	205	15
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	0	63	133	11	108	1013	2415	45	1059	2278	165
Arrive On Green	0.09	0.00	0.09	0.09	0.09	0.09	0.04	0.70	0.70	0.04	0.70	0.70
Sat Flow, veh/h	763	0	716	194	130	1230	1587	3454	64	1587	3252	236
Grp Volume(v), veh/h	31	0	0	24	0	0	9	82	82	10	111	109
Grp Sat Flow(s),veh/h/ln	1479	0	0	1554	0	0	1587	1765	1753	1587	1765	1723
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.5	0.1	0.7	0.7
Cycle Q Clear(g_c), s	0.6	0.0	0.0	0.4	0.0	0.0	0.1	0.5	0.5	0.1	0.7	0.7
Prop In Lane	0.52		0.48	0.12		0.79	1.00		0.04	1.00		0.14
Lane Grp Cap(c), veh/h	285	0	0	252	0	0	1013	1234	1226	1059	1236	1207
V/C Ratio(X)	0.11	0.00	0.00	0.10	0.00	0.00	0.01	0.07	0.07	0.01	0.09	0.09
Avail Cap(c_a), veh/h	1247	0	0	1258	0	0	1311	1234	1226	1355	1236	1207
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	0.0	14.8	0.0	0.0	1.2	1.7	1.7	1.2	1.7	1.7
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.3	0.0	0.4	0.4
LnGrp Delay(d),s/veh	15.0	0.0	0.0	14.9	0.0	0.0	1.2	1.8	1.8	1.2	1.8	1.8
LnGrp LOS	B			B			A	A	A	A	A	A
Approach Vol, veh/h		31			24			173			230	
Approach Delay, s/veh		15.0			14.9			1.7			1.8	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.5	26.5		5.1	3.4	26.5		5.1				
Change Period (Y+Rc), s	3.0	3.0		3.0	3.0	3.0		3.0				
Max Green Setting (Gmax), s	7.0	23.5		25.5	7.0	23.5		25.5				
Max Q Clear Time (g_c+I1), s	2.1	2.5		2.6	2.1	2.7		2.4				
Green Ext Time (p_c), s	0.0	2.1		0.2	0.0	2.1		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			3.4									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

5: Victoria Park Lane & Church Street

2021 WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	335	57	178	403	15	56	92	168	38	95	77
Future Volume (veh/h)	62	335	57	178	403	15	56	92	168	38	95	77
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1765	1765	1569	1765	1800	1667	1765	1765	1667	1765	1765
Adj Flow Rate, veh/h	63	338	58	180	407	15	57	93	170	38	96	78
Adj No. of Lanes	1	2	1	2	2	0	1	2	1	1	2	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	106	703	299	305	793	29	102	1852	787	84	1813	771
Arrive On Green	0.07	0.20	0.20	0.10	0.23	0.23	0.06	0.52	0.52	0.05	0.51	0.51
Sat Flow, veh/h	1587	3529	1500	2988	3383	124	1587	3529	1500	1587	3529	1500
Grp Volume(v), veh/h	63	338	58	180	212	210	57	93	170	38	96	78
Grp Sat Flow(s),veh/h/ln	1587	1765	1500	1494	1765	1743	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	2.6	5.6	2.1	3.8	6.9	6.9	2.3	0.9	4.0	1.5	0.9	1.8
Cycle Q Clear(g_c), s	2.6	5.6	2.1	3.8	6.9	6.9	2.3	0.9	4.0	1.5	0.9	1.8
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	106	703	299	305	414	408	102	1852	787	84	1813	771
V/C Ratio(X)	0.59	0.48	0.19	0.59	0.51	0.51	0.56	0.05	0.22	0.45	0.05	0.10
Avail Cap(c_a), veh/h	192	1333	567	451	720	711	192	1852	787	192	1813	771
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.0	23.5	22.1	28.4	22.0	22.1	30.1	7.7	8.4	30.4	8.0	8.3
Incr Delay (d2), s/veh	5.2	0.5	0.3	1.8	1.0	1.0	4.7	0.0	0.1	3.7	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.8	0.9	1.7	3.5	3.4	1.1	0.4	1.7	0.8	0.5	0.8
LnGrp Delay(d),s/veh	35.2	24.0	22.4	30.2	23.0	23.1	34.8	7.7	8.6	34.1	8.1	8.5
LnGrp LOS	D	C	C	C	C	C	C	A	A	C	A	A
Approach Vol, veh/h		459			602			320			212	
Approach Delay, s/veh		25.3			25.2			13.0			12.9	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.5	36.7	8.8	15.2	6.2	36.0	6.4	17.5				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	7.0	33.0	9.0	24.0	7.0	33.0	7.0	26.0				
Max Q Clear Time (g_c+I1), s	3.5	6.0	5.8	7.6	4.3	3.8	4.6	8.9				
Green Ext Time (p_c), s	0.0	2.1	0.2	4.6	0.0	2.1	0.0	4.7				
Intersection Summary												
HCM 2010 Ctrl Delay				21.1								
HCM 2010 LOS				C								

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Signalized Intersection Summary

8: Etiwanda Avenue & E. Foothill Blvd

2021 WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	325	714	151	111	816	77	181	106	110	73	153	322
Future Volume (veh/h)	325	714	151	111	816	77	181	106	110	73	153	322
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1765	1569	1765	1765	1667	1765	1765	1667	1765	1800
Adj Flow Rate, veh/h	339	744	157	116	850	80	189	110	115	76	159	335
Adj No. of Lanes	2	2	1	2	2	1	1	1	1	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	387	1162	494	207	949	404	225	770	655	112	645	548
Arrive On Green	0.13	0.33	0.33	0.07	0.27	0.27	0.14	0.44	0.44	0.07	0.37	0.37
Sat Flow, veh/h	2988	3529	1500	2988	3529	1500	1587	1765	1500	1587	1765	1500
Grp Volume(v), veh/h	339	744	157	116	850	80	189	110	115	76	159	335
Grp Sat Flow(s),veh/h/ln	1494	1765	1500	1494	1765	1500	1587	1765	1500	1587	1765	1500
Q Serve(g_s), s	9.4	15.2	6.7	3.2	19.7	3.5	9.8	3.2	4.0	4.0	5.3	15.5
Cycle Q Clear(g_c), s	9.4	15.2	6.7	3.2	19.7	3.5	9.8	3.2	4.0	4.0	5.3	15.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	387	1162	494	207	949	404	225	770	655	112	645	548
V/C Ratio(X)	0.87	0.64	0.32	0.56	0.90	0.20	0.84	0.14	0.18	0.68	0.25	0.61
Avail Cap(c_a), veh/h	387	1162	494	268	957	407	225	770	655	140	645	548
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	24.2	21.3	38.2	29.8	23.9	35.5	14.4	14.6	38.5	18.8	22.0
Incr Delay (d2), s/veh	19.4	1.2	0.4	2.4	10.9	0.2	24.0	0.4	0.6	9.0	0.9	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	7.5	2.8	1.4	11.0	1.5	5.8	1.6	1.7	2.0	2.8	7.2
LnGrp Delay(d),s/veh	55.6	25.4	21.7	40.6	40.7	24.2	59.4	14.7	15.2	47.5	19.7	27.0
LnGrp LOS	E	C	C	D	D	C	E	B	B	D	B	C
Approach Vol, veh/h	1240				1046				414			
Approach Delay, s/veh	33.2				39.4				35.3			
Approach LOS	C				D				D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.0	39.0	7.9	29.9	14.0	33.0	13.0	24.8				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	34.5	6.6	25.4	11.0	30.0	10.0	22.0				
Max Q Clear Time (g_c+I1), s	6.0	6.0	5.2	17.2	11.8	17.5	11.4	21.7				
Green Ext Time (p_c), s	0.0	4.6	0.0	6.2	0.0	3.5	0.0	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay	34.5											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary

9: Etiwanda Avenue & Church Street/Miller Street

2021 WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	152	227	164	42	225	22	103	246	39	22	304	280
Future Volume (veh/h)	152	227	164	42	225	22	103	246	39	22	304	280
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1700	1765	1800	1700	1765	1800	1667	1765	1800	1667	1765	1765
Adj Flow Rate, veh/h	163	244	176	45	242	24	111	265	42	24	327	301
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	308	426	328	164	835	87	162	1465	229	68	1527	649
Arrive On Green	0.37	0.37	0.37	0.37	0.37	0.37	0.10	0.49	0.49	0.04	0.43	0.43
Sat Flow, veh/h	592	1152	887	244	2255	235	1587	2981	466	1587	3529	1500
Grp Volume(v), veh/h	295	0	288	151	0	160	111	155	152	24	327	301
Grp Sat Flow(s),veh/h/ln	1182	0	1449	1169	0	1564	1587	1765	1682	1587	1765	1500
Q Serve(g_s), s	10.2	0.0	9.8	0.6	0.0	4.5	4.3	3.1	3.2	0.9	3.7	9.0
Cycle Q Clear(g_c), s	14.7	0.0	9.8	10.5	0.0	4.5	4.3	3.1	3.2	0.9	3.7	9.0
Prop In Lane	0.55		0.61	0.30		0.15	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	526	0	537	507	0	579	162	868	827	68	1527	649
V/C Ratio(X)	0.56	0.00	0.54	0.30	0.00	0.28	0.68	0.18	0.18	0.35	0.21	0.46
Avail Cap(c_a), veh/h	782	0	816	780	0	881	295	868	827	189	1527	649
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.9	0.0	15.6	13.9	0.0	13.9	27.3	8.9	9.0	29.3	11.2	12.7
Incr Delay (d2), s/veh	0.9	0.0	0.8	0.3	0.0	0.3	5.0	0.5	0.5	3.0	0.3	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.6	0.0	4.0	1.9	0.0	2.0	2.1	1.6	1.6	0.5	1.8	4.1
LnGrp Delay(d),s/veh	18.8	0.0	16.4	14.2	0.0	14.2	32.4	9.4	9.4	32.4	11.5	15.1
LnGrp LOS	B		B	B		B	C	A	A	C	B	B
Approach Vol, veh/h		583			311			418			652	
Approach Delay, s/veh		17.6			14.2			15.5			13.9	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	33.0		25.3	8.4	29.3		25.3				
Change Period (Y+Rc), s	3.0	3.0		3.0	3.0	3.0		3.0				
Max Green Setting (Gmax), s	6.5	30.0		34.5	10.7	25.8		34.5				
Max Q Clear Time (g_c+I1), s	2.9	5.2		16.7	6.3	11.0		12.5				
Green Ext Time (p_c), s	0.0	5.4		5.7	0.1	4.5		6.2				
Intersection Summary												
HCM 2010 Ctrl Delay			15.4									
HCM 2010 LOS			B									

HCM 2010 TWSC
10: Etiwanda Avenue & Existing Driveway

2021 WP
Sunday Peak Hour

Intersection

Int Delay, s/veh 11

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	165	178	75	293	403	68
Future Vol, veh/h	165	178	75	293	403	68
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	204	220	93	362	498	84

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	906	291	581	0	-	0
Stage 1	540	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	276	706	989	-	-	-
Stage 1	548	-	-	-	-	-
Stage 2	672	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	250	706	989	-	-	-
Mov Cap-2 Maneuver	250	-	-	-	-	-
Stage 1	548	-	-	-	-	-
Stage 2	609	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	36	1.8	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	989	-	250	706	-	-
HCM Lane V/C Ratio	0.094	-	0.815	0.311	-	-
HCM Control Delay (s)	9	-	61.5	12.4	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.3	-	6.3	1.3	-	-

HCM 2010 Signalized Intersection Summary

11: Etiwanda Avenue & Baseline Avenue

2021 WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	470	128	220	508	39	106	135	241	50	128	56
Future Volume (veh/h)	71	470	128	220	508	39	106	135	241	50	128	56
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1765	1800	1569	1765	1800	1569	1765	1765	1667	1765	1800
Adj Flow Rate, veh/h	75	495	135	232	535	41	112	142	254	53	135	59
Adj No. of Lanes	2	3	0	2	3	0	2	1	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	213	993	263	335	1394	106	240	812	859	98	1046	436
Arrive On Green	0.07	0.25	0.25	0.11	0.29	0.29	0.08	0.46	0.46	0.06	0.44	0.44
Sat Flow, veh/h	2988	4038	1068	2988	4860	369	2988	1765	1500	1587	2369	987
Grp Volume(v), veh/h	75	431	199	232	387	189	112	142	254	53	99	95
Grp Sat Flow(s),veh/h/ln	1494	1765	1576	1494	1765	1700	1494	1765	1500	1587	1765	1591
Q Serve(g_s), s	1.6	7.0	7.3	5.0	5.9	6.0	2.4	3.2	5.8	2.2	2.2	2.4
Cycle Q Clear(g_c), s	1.6	7.0	7.3	5.0	5.9	6.0	2.4	3.2	5.8	2.2	2.2	2.4
Prop In Lane	1.00		0.68	1.00		0.22	1.00		1.00	1.00		0.62
Lane Grp Cap(c), veh/h	213	868	387	335	1013	488	240	812	859	98	779	703
V/C Ratio(X)	0.35	0.50	0.51	0.69	0.38	0.39	0.47	0.17	0.30	0.54	0.13	0.14
Avail Cap(c_a), veh/h	335	1189	531	335	1189	573	335	812	859	178	779	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.6	21.6	21.7	28.5	19.1	19.1	29.3	10.6	7.3	30.4	11.0	11.1
Incr Delay (d2), s/veh	1.0	0.4	1.1	6.0	0.2	0.5	1.4	0.5	0.9	4.6	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.5	3.3	2.3	2.9	2.8	1.0	1.6	2.6	1.1	1.1	1.1
LnGrp Delay(d),s/veh	30.5	22.1	22.8	34.5	19.3	19.6	30.7	11.0	8.2	35.0	11.4	11.5
LnGrp LOS	C	C	C	C	B	B	C	B	A	C	B	B
Approach Vol, veh/h		705			808			508			247	
Approach Delay, s/veh		23.2			23.7			14.0			16.5	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.1	32.7	9.5	18.4	7.4	31.5	6.8	21.2				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	28.5	6.5	21.5	6.5	28.5	6.5	21.5				
Max Q Clear Time (g_c+I1), s	4.2	7.8	7.0	9.3	4.4	4.4	3.6	8.0				
Green Ext Time (p_c), s	0.0	2.8	0.0	6.1	0.1	2.9	0.0	6.5				
Intersection Summary												
HCM 2010 Ctrl Delay				20.6								
HCM 2010 LOS				C								

HCM 2010 Research does not support Non-NEMA phasing.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM Signalized Intersection Capacity Analysis

12: I-15 SB On/I-15 SB Off & Baseline Avenue

2021 WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	431	251	0	560	571	0	0	0	400	0	281
Future Volume (vph)	0	431	251	0	560	571	0	0	0	400	0	281
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1600	1800	1800
Total Lost time (s)		2.0	2.0		2.0					2.0		2.0
Lane Util. Factor		*1.00	1.00		*1.00					*1.00		*1.00
Frt		1.00	0.85		0.92					1.00		0.85
Flt Protected		1.00	1.00		1.00					0.95		1.00
Satd. Flow (prot)		5294	1500		4893					2980		3000
Flt Permitted		1.00	1.00		1.00					0.95		1.00
Satd. Flow (perm)		5294	1500		4893					2980		3000
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	468	273	0	609	621	0	0	0	435	0	305
RTOR Reduction (vph)	0	0	159	0	362	0	0	0	0	0	0	154
Lane Group Flow (vph)	0	468	114	0	868	0	0	0	0	435	0	151
Turn Type		NA	Perm		NA					Perm		Perm
Protected Phases		4			8							
Permitted Phases			4							6		6
Actuated Green, G (s)		17.9	17.9		17.9					21.4		21.4
Effective Green, g (s)		18.9	18.9		18.9					22.4		22.4
Actuated g/C Ratio		0.42	0.42		0.42					0.49		0.49
Clearance Time (s)		3.0	3.0		3.0					3.0		3.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0		3.0
Lane Grp Cap (vph)		2208	625		2041					1473		1483
v/s Ratio Prot		0.09			c0.18							
v/s Ratio Perm			0.08							c0.15		0.05
v/c Ratio		0.21	0.18		0.43					0.30		0.10
Uniform Delay, d1		8.4	8.3		9.4					6.8		6.1
Progression Factor		1.00	1.00		1.00					1.00		1.00
Incremental Delay, d2		0.0	0.1		0.1					0.5		0.1
Delay (s)		8.5	8.5		9.5					7.3		6.2
Level of Service		A	A		A					A		A
Approach Delay (s)		8.5			9.5			0.0			6.9	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay		8.5			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.35										
Actuated Cycle Length (s)		45.3			Sum of lost time (s)			5.0				
Intersection Capacity Utilization		45.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: I-15 NB Off/I-15 NB On & Baseline Avenue

2021 WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	359	500	0	0	768	130	298	0	254	0	0	0
Future Volume (vph)	359	500	0	0	768	130	298	0	254	0	0	0
Ideal Flow (vphpl)	1600	1800	1800	1800	1800	1800	1600	1800	1800	1800	1800	1800
Total Lost time (s)	2.0	2.0			2.0	2.0	2.0	2.0	2.0			
Lane Util. Factor	*1.00	*1.00			*1.00	1.00	*1.00	*1.00	*1.00			
Frt	1.00	1.00			1.00	0.85	1.00	0.94	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (prot)	2980	5294			7059	1500	1490	1607	1500			
Flt Permitted	0.33	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (perm)	1047	5294			7059	1500	1490	1607	1500			
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	395	549	0	0	844	143	327	0	279	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	71	0	48	114	0	0	0
Lane Group Flow (vph)	395	549	0	0	844	72	209	156	79	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases	4					8	2		2			
Actuated Green, G (s)	21.4	21.4			21.4	21.4	17.3	17.3	17.3			
Effective Green, g (s)	22.4	22.4			22.4	22.4	18.3	18.3	18.3			
Actuated g/C Ratio	0.50	0.50			0.50	0.50	0.41	0.41	0.41			
Clearance Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	524	2652			3537	751	610	657	614			
v/s Ratio Prot		0.10			0.12							
v/s Ratio Perm	c0.38					0.05	c0.14	0.10	0.05			
v/c Ratio	0.75	0.21			0.24	0.10	0.34	0.24	0.13			
Uniform Delay, d1	8.9	6.2			6.3	5.8	9.1	8.6	8.2			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	6.1	0.0			0.0	0.1	1.5	0.8	0.4			
Delay (s)	15.0	6.2			6.4	5.9	10.6	9.5	8.7			
Level of Service	B	A			A	A	B	A	A			
Approach Delay (s)		9.9			6.3			9.6			0.0	
Approach LOS		A			A			A			A	
Intersection Summary												
HCM 2000 Control Delay		8.4			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.55										
Actuated Cycle Length (s)		44.7			Sum of lost time (s)			4.0				
Intersection Capacity Utilization		45.3%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: I-15 SB On/I-15 SB Off & E. Foothill Blvd

2021 WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1089	931	0	2255	0	0	0	0	238	23	731
Future Volume (vph)	0	1089	931	0	2255	0	0	0	0	238	23	731
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1600	1800	1800
Total Lost time (s)		2.0	2.0		2.0					2.0	2.0	2.0
Lane Util. Factor		*1.00	1.00		*1.00					*1.00	*1.00	*1.00
Frt		1.00	0.85		1.00					1.00	0.87	0.85
Flt Protected		1.00	1.00		1.00					0.95	1.00	1.00
Satd. Flow (prot)		5294	1500		5294					1490	1527	1500
Flt Permitted		1.00	1.00		1.00					0.95	1.00	1.00
Satd. Flow (perm)		5294	1500		5294					1490	1527	1500
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1111	950	0	2301	0	0	0	0	243	23	746
RTOR Reduction (vph)	0	0	403	0	0	0	0	0	0	0	2	2
Lane Group Flow (vph)	0	1111	547	0	2301	0	0	0	0	219	396	393
Turn Type		NA	Perm		NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		32.1	32.1		32.1					19.4	19.4	19.4
Effective Green, g (s)		33.1	33.1		33.1					20.4	20.4	20.4
Actuated g/C Ratio		0.58	0.58		0.58					0.35	0.35	0.35
Clearance Time (s)		3.0	3.0		3.0					3.0	3.0	3.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		3047	863		3047					528	541	532
v/s Ratio Prot		0.21			c0.43							
v/s Ratio Perm			0.36							0.15	0.26	c0.26
v/c Ratio		0.36	0.63		0.76					0.41	0.73	0.74
Uniform Delay, d1		6.6	8.2		9.2					14.0	16.2	16.2
Progression Factor		1.00	1.00		1.00					1.00	1.00	1.00
Incremental Delay, d2		0.1	1.5		1.1					0.5	5.1	5.3
Delay (s)		6.6	9.7		10.3					14.6	21.2	21.6
Level of Service		A	A		B					B	C	C
Approach Delay (s)		8.0			10.3			0.0			19.9	
Approach LOS		A			B			A			B	
Intersection Summary												
HCM 2000 Control Delay			11.2		HCM 2000 Level of Service					B		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			57.5		Sum of lost time (s)					4.0		
Intersection Capacity Utilization			84.5%		ICU Level of Service					E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

7: I-15 NB Off/I-15 NB On & E. Foothill Blvd

2021 WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑	↑↓	↑			
Traffic Volume (vph)	0	1011	306	0	1498	269	1376	0	600	0	0	0
Future Volume (vph)	0	1011	306	0	1498	269	1376	0	600	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1600	1800	1800	1800	1800	1800
Total Lost time (s)		2.0	2.0		2.0	2.0	2.0	2.0	2.0			
Lane Util. Factor		*1.00	1.00		*1.00	1.00	*1.00	*1.00	*1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.99	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		5294	1500		5294	1500	1490	1666	1500			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		5294	1500		5294	1500	1490	1666	1500			
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	1053	319	0	1560	280	1433	0	625	0	0	0
RTOR Reduction (vph)	0	0	172	0	0	151	0	4	29	0	0	0
Lane Group Flow (vph)	0	1053	147	0	1560	129	745	747	533	0	0	0
Turn Type		NA	Perm		NA	Perm	Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases			4			8	2		2			
Actuated Green, G (s)		37.2	37.2		37.2	37.2	39.6	39.6	39.6			
Effective Green, g (s)		38.2	38.2		38.2	38.2	40.6	40.6	40.6			
Actuated g/C Ratio		0.46	0.46		0.46	0.46	0.49	0.49	0.49			
Clearance Time (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0			
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		2442	692		2442	692	730	816	735			
v/s Ratio Prot		0.20			c0.29							
v/s Ratio Perm			0.10			0.09	c0.50	0.45	0.36			
v/c Ratio		0.43	0.21		0.64	0.19	1.02	0.92	0.73			
Uniform Delay, d1		15.0	13.3		17.0	13.1	21.1	19.5	16.7			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.1	0.2		0.6	0.1	38.6	16.7	6.2			
Delay (s)		15.1	13.5		17.6	13.3	59.7	36.2	22.8			
Level of Service		B	B		B	B	E	D	C			
Approach Delay (s)		14.7			16.9			41.1			0.0	
Approach LOS		B			B			D			A	
Intersection Summary												
HCM 2000 Control Delay			25.8				HCM 2000 Level of Service		C			
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			82.8				Sum of lost time (s)		4.0			
Intersection Capacity Utilization			83.9%				ICU Level of Service		E			
Analysis Period (min)			15									
c Critical Lane Group												

Appendices

Appendix H. Intersection Volumes, Delay, and LOS Calculation Outputs, Horizon Year No Project Conditions

Appendices

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HCM 2010 Signalized Intersection Summary

1: Victoria Park Lane & Baseline Avenue

Horizon Year NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	662	74	155	652	126	69	80	101	141	94	64
Future Volume (veh/h)	71	662	74	155	652	126	69	80	101	141	94	64
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1863	1900	1667	1863	1900	1765	1863	1863	1765	1863	1863
Adj Flow Rate, veh/h	75	697	78	163	686	133	73	84	106	148	99	67
Adj No. of Lanes	2	3	0	2	3	0	1	2	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	1390	154	274	1381	264	113	1563	664	184	861	732
Arrive On Green	0.06	0.28	0.28	0.09	0.30	0.30	0.07	0.42	0.42	0.11	0.46	0.46
Sat Flow, veh/h	3175	4943	548	3175	4561	873	1681	3725	1583	1681	1863	1583
Grp Volume(v), veh/h	75	524	251	163	559	260	73	84	106	148	99	67
Grp Sat Flow(s),veh/h/ln	1587	1863	1766	1587	1863	1709	1681	1863	1583	1681	1863	1583
Q Serve(g_s), s	1.8	9.1	9.2	3.8	9.5	9.7	3.3	1.0	3.2	6.7	2.3	1.8
Cycle Q Clear(g_c), s	1.8	9.1	9.2	3.8	9.5	9.7	3.3	1.0	3.2	6.7	2.3	1.8
Prop In Lane	1.00		0.31	1.00		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	1047	496	274	1128	517	113	1563	664	184	861	732
V/C Ratio(X)	0.37	0.50	0.51	0.59	0.50	0.50	0.65	0.05	0.16	0.80	0.11	0.09
Avail Cap(c_a), veh/h	307	1371	650	307	1371	629	163	1563	664	184	861	732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.7	23.3	23.3	34.1	22.1	22.2	35.2	13.4	14.0	33.7	11.8	11.7
Incr Delay (d2), s/veh	1.1	0.4	0.8	2.5	0.3	0.8	6.1	0.1	0.5	22.0	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	4.7	4.6	1.8	4.9	4.7	1.7	0.6	1.5	4.2	1.2	0.8
LnGrp Delay(d),s/veh	35.8	23.7	24.1	36.6	22.5	23.0	41.4	13.4	14.5	55.6	12.1	11.9
LnGrp LOS	D	C	C	D	C	C	D	B	B	E	B	B
Approach Vol, veh/h		850			982			263			314	
Approach Delay, s/veh		24.9			25.0			21.6			32.6	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.5	34.5	8.7	23.8	7.2	37.8	7.0	25.5				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	7.5	31.5	6.5	27.5	6.5	32.5	6.5	27.5				
Max Q Clear Time (g_c+I1), s	8.7	5.2	5.8	11.2	5.3	4.3	3.8	11.7				
Green Ext Time (p_c), s	0.0	1.7	0.0	9.5	0.0	1.7	0.0	9.4				
Intersection Summary												
HCM 2010 Ctrl Delay				25.6								
HCM 2010 LOS				C								

HCM 2010 TWSC
2: Victoria Park Lane & Wine Cellar Court

Horizon Year NP
Sunday Peak Hour

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	4	231	7	0	316
Future Vol, veh/h	0	4	231	7	0	316
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	243	7	0	333

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	125	0 0
Stage 1	-	-	- -
Stage 2	-	-	- -
Critical Hdwy	-	6.94	- -
Critical Hdwy Stg 1	-	-	- -
Critical Hdwy Stg 2	-	-	- -
Follow-up Hdwy	-	3.32	- -
Pot Cap-1 Maneuver	0	902	0 -
Stage 1	0	-	0 -
Stage 2	0	-	0 -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	-	902	- -
Mov Cap-2 Maneuver	-	-	- -
Stage 1	-	-	- -
Stage 2	-	-	- -

Approach	WB	NB	SB
HCM Control Delay, s	9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	- 902	-
HCM Lane V/C Ratio	-	- 0.005	-
HCM Control Delay (s)	-	- 9	-
HCM Lane LOS	-	- A	-
HCM 95th %tile Q(veh)	-	- 0	-

HCM 2010 Signalized Intersection Summary

4: Victoria Park Lane & Long Meadow Drive/Wild Horse Way

Horizon Year NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	0	21	4	3	27	13	188	4	14	281	21
Future Volume (veh/h)	22	0	21	4	3	27	13	188	4	14	281	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1800	1863	1900	1800	1863	1900	1765	1863	1900	1765	1863	1900
Adj Flow Rate, veh/h	23	0	22	4	3	28	14	198	4	15	296	22
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	233	0	78	128	17	135	931	2480	50	1018	2340	173
Arrive On Green	0.10	0.00	0.10	0.10	0.10	0.10	0.05	0.68	0.68	0.05	0.68	0.68
Sat Flow, veh/h	782	0	748	162	161	1291	1681	3639	73	1681	3428	253
Grp Volume(v), veh/h	45	0	0	35	0	0	14	101	101	15	160	158
Grp Sat Flow(s),veh/h/ln	1531	0	0	1613	0	0	1681	1863	1850	1681	1863	1818
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.7	0.1	1.1	1.1
Cycle Q Clear(g_c), s	0.9	0.0	0.0	0.7	0.0	0.0	0.1	0.7	0.7	0.1	1.1	1.1
Prop In Lane	0.51		0.49	0.11		0.80	1.00		0.04	1.00		0.14
Lane Grp Cap(c), veh/h	311	0	0	280	0	0	931	1270	1261	1018	1272	1241
V/C Ratio(X)	0.14	0.00	0.00	0.13	0.00	0.00	0.02	0.08	0.08	0.01	0.13	0.13
Avail Cap(c_a), veh/h	1240	0	0	1278	0	0	1228	1270	1261	1313	1272	1241
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.8	0.0	0.0	14.7	0.0	0.0	1.4	1.9	1.9	1.3	2.0	2.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.3	0.0	0.0	0.0	0.4	0.4	0.0	0.6	0.6
LnGrp Delay(d),s/veh	15.0	0.0	0.0	14.9	0.0	0.0	1.4	2.0	2.1	1.3	2.2	2.2
LnGrp LOS	B			B			A	A	A	A	A	A
Approach Vol, veh/h		45			35			216			333	
Approach Delay, s/veh		15.0			14.9			2.0			2.1	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.7	26.5		5.8	3.7	26.5		5.8				
Change Period (Y+Rc), s	3.0	3.0		3.0	3.0	3.0		3.0				
Max Green Setting (Gmax), s	7.0	23.5		25.5	7.0	23.5		25.5				
Max Q Clear Time (g_c+I1), s	2.1	2.7		2.9	2.1	3.1		2.7				
Green Ext Time (p_c), s	0.0	3.0		0.4	0.0	3.0		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			3.7									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

5: Victoria Park Lane & Church Street

Horizon Year NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	463	78	235	535	21	77	116	232	53	132	106
Future Volume (veh/h)	64	463	78	235	535	21	77	116	232	53	132	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1765	1863	1863	1667	1863	1900	1765	1863	1863	1765	1863	1863
Adj Flow Rate, veh/h	67	487	82	247	563	22	81	122	244	56	139	112
Adj No. of Lanes	1	2	1	2	2	0	1	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	109	893	380	372	1040	41	125	1756	746	102	1706	725
Arrive On Green	0.07	0.24	0.24	0.12	0.29	0.29	0.07	0.47	0.47	0.06	0.46	0.46
Sat Flow, veh/h	1681	3725	1583	3175	3562	139	1681	3725	1583	1681	3725	1583
Grp Volume(v), veh/h	67	487	82	247	294	291	81	122	244	56	139	112
Grp Sat Flow(s),veh/h/ln	1681	1863	1583	1587	1863	1838	1681	1863	1583	1681	1863	1583
Q Serve(g_s), s	2.8	8.2	3.0	5.4	9.6	9.6	3.4	1.3	6.9	2.3	1.5	3.0
Cycle Q Clear(g_c), s	2.8	8.2	3.0	5.4	9.6	9.6	3.4	1.3	6.9	2.3	1.5	3.0
Prop In Lane	1.00		1.00	1.00		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	109	893	380	372	544	537	125	1756	746	102	1706	725
V/C Ratio(X)	0.61	0.55	0.22	0.66	0.54	0.54	0.65	0.07	0.33	0.55	0.08	0.15
Avail Cap(c_a), veh/h	191	1292	549	440	693	683	210	1783	758	175	1706	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.8	24.0	22.0	30.5	21.5	21.5	32.5	10.4	11.9	32.9	11.0	11.4
Incr Delay (d2), s/veh	5.4	0.5	0.3	2.9	0.8	0.9	5.6	0.0	0.3	4.6	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	4.3	1.3	2.5	5.0	5.0	1.8	0.7	3.0	1.2	0.8	1.4
LnGrp Delay(d),s/veh	38.3	24.5	22.3	33.4	22.3	22.3	38.1	10.4	12.2	37.5	11.1	11.9
LnGrp LOS	D	C	C	C	C	C	D	B	B	D	B	B
Approach Vol, veh/h		636			832			447			307	
Approach Delay, s/veh		25.6			25.6			16.4			16.2	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.4	36.0	10.5	19.3	7.3	35.0	6.7	23.0				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	33.5	9.0	24.0	8.0	32.0	7.2	25.8				
Max Q Clear Time (g_c+I1), s	4.3	8.9	7.4	10.2	5.4	5.0	4.8	11.6				
Green Ext Time (p_c), s	0.0	2.9	0.1	6.0	0.0	3.0	0.0	6.2				
Intersection Summary												
HCM 2010 Ctrl Delay				22.5								
HCM 2010 LOS				C								

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Signalized Intersection Summary

8: Etiwanda Avenue & E. Foothill Blvd

Horizon Year NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	384	976	208	152	1117	80	250	147	150	74	211	423
Future Volume (veh/h)	384	976	208	152	1117	80	250	147	150	74	211	423
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1863	1863	1667	1863	1863	1765	1863	1863	1765	1863	1900
Adj Flow Rate, veh/h	404	1027	219	160	1176	84	263	155	158	78	222	445
Adj No. of Lanes	2	2	1	2	2	1	1	1	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	401	1314	558	251	1137	483	265	774	658	116	608	517
Arrive On Green	0.13	0.35	0.35	0.08	0.31	0.31	0.16	0.42	0.42	0.07	0.33	0.33
Sat Flow, veh/h	3175	3725	1583	3175	3725	1583	1681	1863	1583	1681	1863	1583
Grp Volume(v), veh/h	404	1027	219	160	1176	84	263	155	158	78	222	445
Grp Sat Flow(s),veh/h/ln	1587	1863	1583	1587	1863	1583	1681	1863	1583	1681	1863	1583
Q Serve(g_s), s	12.0	23.4	9.9	4.6	29.0	3.7	14.8	5.0	6.2	4.3	8.7	25.0
Cycle Q Clear(g_c), s	12.0	23.4	9.9	4.6	29.0	3.7	14.8	5.0	6.2	4.3	8.7	25.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	401	1314	558	251	1137	483	265	774	658	116	608	517
V/C Ratio(X)	1.01	0.78	0.39	0.64	1.03	0.17	0.99	0.20	0.24	0.68	0.37	0.86
Avail Cap(c_a), veh/h	401	1314	558	251	1137	483	265	774	658	180	608	517
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.5	27.5	23.1	42.4	33.0	24.2	39.9	17.7	18.0	43.2	24.5	30.0
Incr Delay (d2), s/veh	46.8	3.1	0.4	5.3	35.9	0.2	52.6	0.6	0.9	6.7	1.7	17.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	12.6	4.4	2.2	20.5	1.6	10.7	2.7	2.9	2.2	4.7	13.3
LnGrp Delay(d),s/veh	88.4	30.6	23.6	47.8	68.9	24.4	92.6	18.3	18.9	49.9	26.2	47.0
LnGrp LOS	F	C	C	D	F	C	F	B	B	D	C	D
Approach Vol, veh/h	1650			1420			576			745		
Approach Delay, s/veh	43.8			63.9			52.4			41.1		
Approach LOS	D			E			D			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.5	41.5	9.5	35.5	17.0	33.0	14.0	31.0				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	9.2	34.8	6.5	32.5	14.0	30.0	11.0	28.0				
Max Q Clear Time (g_c+I1), s	6.3	8.2	6.6	25.4	16.8	27.0	14.0	31.0				
Green Ext Time (p_c), s	0.0	6.6	0.0	6.4	0.0	1.6	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	51.0											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary

9: Etiwanda Avenue & Church Street/Miller Street

Horizon Year NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	315	227	59	312	20	143	248	55	20	371	352
Future Volume (veh/h)	210	315	227	59	312	20	143	248	55	20	371	352
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1800	1863	1900	1800	1863	1900	1765	1863	1900	1765	1863	1863
Adj Flow Rate, veh/h	221	332	239	62	328	21	151	261	58	21	391	371
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	342	483	388	167	975	69	207	1305	285	62	1321	561
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.12	0.44	0.44	0.04	0.35	0.35
Sat Flow, veh/h	599	1091	877	233	2204	156	1681	2964	647	1681	3725	1583
Grp Volume(v), veh/h	372	0	420	186	0	225	151	162	157	21	391	371
Grp Sat Flow(s),veh/h/ln	1028	0	1540	924	0	1668	1681	1863	1749	1681	1863	1583
Q Serve(g_s), s	19.6	0.0	15.6	2.8	0.0	6.5	6.5	4.0	4.1	0.9	5.7	14.8
Cycle Q Clear(g_c), s	26.1	0.0	15.6	18.4	0.0	6.5	6.5	4.0	4.1	0.9	5.7	14.8
Prop In Lane	0.59		0.57	0.33		0.09	1.00		0.37	1.00		1.00
Lane Grp Cap(c), veh/h	531	0	681	473	0	738	207	820	770	62	1321	561
V/C Ratio(X)	0.70	0.00	0.62	0.39	0.00	0.30	0.73	0.20	0.20	0.34	0.30	0.66
Avail Cap(c_a), veh/h	572	0	731	516	0	792	270	820	770	169	1321	561
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	0.0	16.0	15.0	0.0	13.4	31.6	12.8	12.9	35.1	17.4	20.3
Incr Delay (d2), s/veh	3.5	0.0	1.4	0.5	0.0	0.2	6.9	0.5	0.6	3.2	0.6	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	0.0	6.8	3.1	0.0	3.0	3.4	2.2	2.1	0.5	3.0	7.3
LnGrp Delay(d),s/veh	25.0	0.0	17.4	15.5	0.0	13.7	38.5	13.4	13.5	38.3	18.0	26.4
LnGrp LOS	C		B	B		B	D	B	B	D	B	C
Approach Vol, veh/h		792			411			470			783	
Approach Delay, s/veh		21.0			14.5			21.5			22.5	
Approach LOS		C			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.8	34.9		35.1	11.2	28.5		35.1				
Change Period (Y+Rc), s	3.0	3.0		3.0	3.0	3.0		3.0				
Max Green Setting (Gmax), s	6.5	30.0		34.5	11.0	25.5		34.5				
Max Q Clear Time (g_c+I1), s	2.9	6.1		28.1	8.5	16.8		20.4				
Green Ext Time (p_c), s	0.0	6.3		3.9	0.1	3.9		7.0				
Intersection Summary												
HCM 2010 Ctrl Delay				20.5								
HCM 2010 LOS				C								

HCM 2010 TWSC
10: Etiwanda Avenue & Existing Driveway

Horizon Year NP
Sunday Peak Hour

Intersection

Int Delay, s/veh 4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	107	112	3	401	554	4
Future Vol, veh/h	107	112	3	401	554	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	113	118	3	422	583	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	802	294	587	0	-	0
Stage 1	585	-	-	-	-	-
Stage 2	217	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	322	702	984	-	-	-
Stage 1	520	-	-	-	-	-
Stage 2	798	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	321	702	984	-	-	-
Mov Cap-2 Maneuver	321	-	-	-	-	-
Stage 1	520	-	-	-	-	-
Stage 2	796	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.5	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	984	-	444	-	-
HCM Lane V/C Ratio	0.003	-	0.519	-	-
HCM Control Delay (s)	8.7	-	21.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	2.9	-	-

HCM 2010 Signalized Intersection Summary

11: Etiwanda Avenue & Baseline Avenue

Horizon Year NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	651	122	283	704	53	147	176	265	69	166	77
Future Volume (veh/h)	98	651	122	283	704	53	147	176	265	69	166	77
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1863	1900	1667	1863	1900	1667	1863	1863	1765	1863	1900
Adj Flow Rate, veh/h	103	685	128	298	741	56	155	185	279	73	175	81
Adj No. of Lanes	2	3	0	2	3	0	2	1	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	1248	230	339	1555	117	275	818	864	115	1030	456
Arrive On Green	0.08	0.27	0.27	0.11	0.30	0.30	0.09	0.44	0.44	0.07	0.42	0.42
Sat Flow, veh/h	3175	4592	847	3175	5134	386	3175	1863	1583	1681	2449	1085
Grp Volume(v), veh/h	103	554	259	298	537	260	155	185	279	73	131	125
Grp Sat Flow(s),veh/h/ln	1587	1863	1713	1587	1863	1795	1587	1863	1583	1681	1863	1671
Q Serve(g_s), s	2.2	8.9	9.1	6.5	8.2	8.3	3.3	4.3	6.8	3.0	3.1	3.3
Cycle Q Clear(g_c), s	2.2	8.9	9.1	6.5	8.2	8.3	3.3	4.3	6.8	3.0	3.1	3.3
Prop In Lane	1.00		0.49	1.00		0.22	1.00		1.00	1.00		0.65
Lane Grp Cap(c), veh/h	241	1013	466	339	1128	543	275	818	864	115	783	703
V/C Ratio(X)	0.43	0.55	0.56	0.88	0.48	0.48	0.56	0.23	0.32	0.64	0.17	0.18
Avail Cap(c_a), veh/h	339	1195	550	339	1195	576	339	818	864	180	783	703
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.0	21.8	21.9	30.9	19.9	19.9	30.8	12.3	8.8	31.8	12.7	12.7
Incr Delay (d2), s/veh	1.2	0.5	1.0	22.0	0.3	0.7	1.8	0.6	1.0	5.7	0.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	4.6	4.4	3.9	4.3	4.2	1.5	2.4	3.2	1.6	1.7	1.6
LnGrp Delay(d),s/veh	32.2	22.3	22.9	52.9	20.2	20.6	32.6	12.9	9.8	37.5	13.1	13.3
LnGrp LOS	C	C	C	D	C	C	C	B	A	D	B	B
Approach Vol, veh/h		916			1095			619			329	
Approach Delay, s/veh		23.6			29.2			16.4			18.6	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	32.8	9.5	21.1	8.1	31.5	7.3	23.2				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	28.5	6.5	21.5	6.5	28.5	6.5	21.5				
Max Q Clear Time (g_c+I1), s	5.0	8.8	8.5	11.1	5.3	5.3	4.2	10.3				
Green Ext Time (p_c), s	0.0	3.5	0.0	7.0	0.1	3.7	0.1	7.4				
Intersection Summary												
HCM 2010 Ctrl Delay				23.6								
HCM 2010 LOS				C								

HCM 2010 Research does not support Non-NEMA phasing.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM Signalized Intersection Capacity Analysis

12: I-15 SB On/I-15 SB Off & Baseline Avenue

Horizon Year NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑↑		↑↑
Traffic Volume (vph)	0	573	302	0	764	791	0	0	0	549	0	378
Future Volume (vph)	0	573	302	0	764	791	0	0	0	549	0	378
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1700	1900	1900
Total Lost time (s)		2.0	2.0		2.0					2.0		2.0
Lane Util. Factor		*1.00	1.00		*1.00					*1.00		*1.00
Frt		1.00	0.85		0.92					1.00		0.85
Flt Protected		1.00	1.00		1.00					0.95		1.00
Satd. Flow (prot)		5588	1583		5162					3167		3167
Flt Permitted		1.00	1.00		1.00					0.95		1.00
Satd. Flow (perm)		5588	1583		5162					3167		3167
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	603	318	0	804	833	0	0	0	578	0	398
RTOR Reduction (vph)	0	0	156	0	354	0	0	0	0	0	0	198
Lane Group Flow (vph)	0	603	162	0	1283	0	0	0	0	578	0	200
Turn Type		NA	Perm		NA					Perm		Perm
Protected Phases		4			8							
Permitted Phases			4							6		6
Actuated Green, G (s)		26.2	26.2		26.2					21.3		21.3
Effective Green, g (s)		27.2	27.2		27.2					22.3		22.3
Actuated g/C Ratio		0.51	0.51		0.51					0.42		0.42
Clearance Time (s)		3.0	3.0		3.0					3.0		3.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0		3.0
Lane Grp Cap (vph)		2841	804		2624					1320		1320
v/s Ratio Prot		0.11			c0.25							
v/s Ratio Perm			0.10							c0.18		0.06
v/c Ratio		0.21	0.20		0.49					0.44		0.15
Uniform Delay, d1		7.2	7.2		8.6					11.1		9.7
Progression Factor		1.00	1.00		1.00					1.00		1.00
Incremental Delay, d2		0.0	0.1		0.1					1.1		0.2
Delay (s)		7.3	7.3		8.7					12.2		10.0
Level of Service		A	A		A					B		A
Approach Delay (s)		7.3			8.7			0.0			11.3	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			9.1			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			53.5			Sum of lost time (s)				5.0		
Intersection Capacity Utilization			56.7%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: I-15 NB Off/I-15 NB On & Baseline Avenue

Horizon Year NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↑			↑↑↑	↔	↔	↔	↔			
Traffic Volume (vph)	480	680	0	0	1051	181	413	0	351	0	0	0
Future Volume (vph)	480	680	0	0	1051	181	413	0	351	0	0	0
Ideal Flow (vphpl)	1700	1900	1900	1800	1900	1900	1700	1900	1900	1800	1900	1900
Total Lost time (s)	2.0	2.0			2.0	2.0	2.0	2.0	2.0			
Lane Util. Factor	*1.00	*1.00			*1.00	1.00	*1.00	*1.00	*1.00			
Frt	1.00	1.00			1.00	0.85	1.00	0.94	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (prot)	3167	5588			7451	1583	1583	1696	1583			
Flt Permitted	0.26	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (perm)	862	5588			7451	1583	1583	1696	1583			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	505	716	0	0	1106	191	435	0	369	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	69	0	40	180	0	0	0
Lane Group Flow (vph)	505	716	0	0	1106	122	278	231	75	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases	4					8	2		2			
Actuated Green, G (s)	38.6	38.6			38.6	38.6	17.2	17.2	17.2			
Effective Green, g (s)	39.6	39.6			39.6	39.6	18.2	18.2	18.2			
Actuated g/C Ratio	0.64	0.64			0.64	0.64	0.29	0.29	0.29			
Clearance Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	552	3580			4774	1014	466	499	466			
v/s Ratio Prot		0.13			0.15							
v/s Ratio Perm	c0.59					0.08	c0.18	0.14	0.05			
v/c Ratio	0.91	0.20			0.23	0.12	0.60	0.46	0.16			
Uniform Delay, d1	9.6	4.6			4.7	4.3	18.7	17.8	16.1			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	19.8	0.0			0.0	0.1	5.5	3.1	0.7			
Delay (s)	29.4	4.6			4.7	4.4	24.2	20.9	16.9			
Level of Service	C	A			A	A	C	C	B			
Approach Delay (s)		14.9			4.7			20.8			0.0	
Approach LOS		B			A			C			A	
Intersection Summary												
HCM 2000 Control Delay		12.3			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.80										
Actuated Cycle Length (s)		61.8			Sum of lost time (s)			4.0				
Intersection Capacity Utilization		55.5%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: I-15 SB On/I-15 SB Off & E. Foothill Blvd

Horizon Year NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑					↑	↑↓	↑
Traffic Volume (vph)	0	1484	1290	0	3098	0	0	0	0	325	23	1012
Future Volume (vph)	0	1484	1290	0	3098	0	0	0	0	325	23	1012
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1700	1900	1900
Total Lost time (s)		2.0	2.0		2.0					2.0	2.0	2.0
Lane Util. Factor		*1.00	1.00		*1.00					*1.00	*1.00	*1.00
Frt		1.00	0.85		1.00					1.00	0.87	0.85
Flt Protected		1.00	1.00		1.00					0.95	1.00	1.00
Satd. Flow (prot)		5588	1583		5588					1583	1607	1583
Flt Permitted		1.00	1.00		1.00					0.95	1.00	1.00
Satd. Flow (perm)		5588	1583		5588					1583	1607	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1562	1358	0	3261	0	0	0	0	342	24	1065
RTOR Reduction (vph)	0	0	429	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	1562	929	0	3261	0	0	0	0	308	569	554
Turn Type		NA	Perm		NA					Perm	NA	Perm
Protected Phases		4			8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		42.0	42.0		42.0					27.0	27.0	27.0
Effective Green, g (s)		43.0	43.0		43.0					28.0	28.0	28.0
Actuated g/C Ratio		0.57	0.57		0.57					0.37	0.37	0.37
Clearance Time (s)		3.0	3.0		3.0					3.0	3.0	3.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		3203	907		3203					590	599	590
v/s Ratio Prot		0.28			0.58							
v/s Ratio Perm			c0.59							0.19	0.35	0.35
v/c Ratio		0.49	1.02		1.02					0.52	0.95	0.94
Uniform Delay, d1		9.5	16.0		16.0					18.3	22.8	22.7
Progression Factor		1.00	1.00		1.00					1.00	1.00	1.00
Incremental Delay, d2		0.1	36.1		20.6					0.8	24.6	22.8
Delay (s)		9.6	52.1		36.6					19.1	47.4	45.5
Level of Service		A	D		D					B	D	D
Approach Delay (s)		29.4			36.6			0.0			40.6	
Approach LOS		C			D			A			D	
Intersection Summary												
HCM 2000 Control Delay			34.6									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			75.0									Sum of lost time (s) 4.0
Intersection Capacity Utilization			108.3%									ICU Level of Service G
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

7: I-15 NB Off/I-15 NB On & E. Foothill Blvd

Horizon Year NP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑	↑↓	↑			
Traffic Volume (vph)	0	1370	424	0	2040	367	1907	0	778	0	0	0
Future Volume (vph)	0	1370	424	0	2040	367	1907	0	778	0	0	0
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1700	1900	1900	1800	1900	1900
Total Lost time (s)		2.0	2.0		2.0	2.0	2.0	2.0	2.0			
Lane Util. Factor		*1.00	1.00		*1.00	1.00	*1.00	*1.00	*1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.99	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		5588	1583		5588	1583	1583	1760	1583			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		5588	1583		5588	1583	1583	1760	1583			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1442	446	0	2147	386	2007	0	819	0	0	0
RTOR Reduction (vph)	0	0	274	0	0	233	0	3	3	0	0	0
Lane Group Flow (vph)	0	1442	172	0	2147	153	1044	1042	734	0	0	0
Turn Type		NA	Perm		NA	Perm	Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases			4			8	2		2			
Actuated Green, G (s)		39.5	39.5		39.5	39.5	59.5	59.5	59.5			
Effective Green, g (s)		40.5	40.5		40.5	40.5	60.5	60.5	60.5			
Actuated g/C Ratio		0.39	0.39		0.39	0.39	0.58	0.58	0.58			
Clearance Time (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0			
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		2155	610		2155	610	912	1014	912			
v/s Ratio Prot		0.26			c0.38							
v/s Ratio Perm			0.11			0.10	c0.66	0.59	0.46			
v/c Ratio		0.67	0.28		1.00	0.25	1.14	1.03	0.81			
Uniform Delay, d1		26.7	22.2		32.2	21.9	22.2	22.2	17.6			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.8	0.3		18.4	0.2	78.1	35.7	7.5			
Delay (s)		27.5	22.5		50.6	22.2	100.4	57.9	25.1			
Level of Service		C	C		D	C	F	E	C			
Approach Delay (s)		26.3			46.2			65.1			0.0	
Approach LOS		C			D			E			A	
Intersection Summary												
HCM 2000 Control Delay			48.4				HCM 2000 Level of Service		D			
HCM 2000 Volume to Capacity ratio			1.07									
Actuated Cycle Length (s)			105.0				Sum of lost time (s)		4.0			
Intersection Capacity Utilization			106.8%				ICU Level of Service		G			
Analysis Period (min)			15									
c Critical Lane Group												

Appendices

Appendix I. Intersection Volumes, Delay, and LOS Calculation Outputs, Horizon Year With Project Conditions

Appendices

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HCM 2010 Signalized Intersection Summary

1: Victoria Park Lane & Baseline Avenue

Horizon Year WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	71	694	74	155	652	126	102	88	101	149	94	64
Future Volume (veh/h)	71	694	74	155	652	126	102	88	101	149	94	64
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1863	1900	1667	1863	1900	1765	1863	1863	1765	1863	1863
Adj Flow Rate, veh/h	75	731	78	163	686	133	107	93	106	157	99	67
Adj No. of Lanes	2	3	0	2	3	0	1	2	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	204	1417	150	273	1401	268	154	1563	664	179	809	688
Arrive On Green	0.06	0.29	0.29	0.09	0.31	0.31	0.09	0.42	0.42	0.11	0.43	0.43
Sat Flow, veh/h	3175	4969	526	3175	4561	873	1681	3725	1583	1681	1863	1583
Grp Volume(v), veh/h	75	547	262	163	559	260	107	93	106	157	99	67
Grp Sat Flow(s),veh/h/ln	1587	1863	1770	1587	1863	1709	1681	1863	1583	1681	1863	1583
Q Serve(g_s), s	1.8	9.6	9.7	3.9	9.5	9.7	4.8	1.2	3.2	7.2	2.5	1.9
Cycle Q Clear(g_c), s	1.8	9.6	9.7	3.9	9.5	9.7	4.8	1.2	3.2	7.2	2.5	1.9
Prop In Lane	1.00		0.30	1.00		0.51	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	204	1063	505	273	1144	525	154	1563	664	179	809	688
V/C Ratio(X)	0.37	0.51	0.52	0.60	0.49	0.50	0.69	0.06	0.16	0.88	0.12	0.10
Avail Cap(c_a), veh/h	305	1362	647	305	1362	625	168	1563	664	179	809	688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	23.3	23.4	34.3	22.0	22.1	34.3	13.5	14.1	34.3	13.2	13.0
Incr Delay (d2), s/veh	1.1	0.4	0.8	2.6	0.3	0.7	10.6	0.1	0.5	35.4	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.0	4.9	1.8	4.9	4.7	2.7	0.6	1.5	5.1	1.3	0.9
LnGrp Delay(d),s/veh	36.0	23.7	24.2	36.9	22.3	22.8	45.0	13.5	14.6	69.7	13.5	13.3
LnGrp LOS	D	C	C	D	C	C	D	B	B	E	B	B
Approach Vol, veh/h		884			982			306			323	
Approach Delay, s/veh		24.9			24.9			24.9			40.8	
Approach LOS		C			C			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.3	34.7	8.7	24.2	9.1	35.9	7.0	25.9				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	7.3	31.7	6.5	27.5	6.8	32.2	6.5	27.5				
Max Q Clear Time (g_c+I1), s	9.2	5.2	5.9	11.7	6.8	4.5	3.8	11.7				
Green Ext Time (p_c), s	0.0	1.7	0.0	9.5	0.0	1.7	0.0	9.5				
Intersection Summary												
HCM 2010 Ctrl Delay				27.0								
HCM 2010 LOS				C								

HCM Unsignalized Intersection Capacity Analysis

2: Victoria Park Lane & Wine Cellar Court

Horizon Year WP
Sunday Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	4	272	7	0	316
Future Volume (Veh/h)	0	4	272	7	0	316
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	4	286	7	0	333
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)			1167			494
pX, platoon unblocked						
vC, conflicting volume	456	146			293	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	456	146			293	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	533	874			1265	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	4	191	102	166	166	
Volume Left	0	0	0	0	0	
Volume Right	4	0	7	0	0	
cSH	874	1700	1700	1700	1700	
Volume to Capacity	0.00	0.11	0.06	0.10	0.10	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	9.1	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	9.1	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			17.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Victoria Park Lane & Proposed Driveway

Horizon Year WP
Sunday Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	41	238	24	0	316
Future Volume (Veh/h)	0	41	238	24	0	316
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	43	251	25	0	333
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)			557			1104
pX, platoon unblocked						
vC, conflicting volume	430	138			276	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	138			276	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	95			100	
cM capacity (veh/h)	553	885			1284	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	43	167	109	166	166	
Volume Left	0	0	0	0	0	
Volume Right	43	0	25	0	0	
cSH	885	1700	1700	1700	1700	
Volume to Capacity	0.05	0.10	0.06	0.10	0.10	
Queue Length 95th (ft)	4	0	0	0	0	
Control Delay (s)	9.3	0.0	0.0	0.0	0.0	
Lane LOS	A					
Approach Delay (s)	9.3	0.0		0.0		
Approach LOS	A					
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			17.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM 2010 Signalized Intersection Summary

4: Victoria Park Lane & Long Meadow Drive/Wild Horse Way

Horizon Year WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	0	21	4	3	27	13	212	4	14	281	21
Future Volume (veh/h)	22	0	21	4	3	27	13	212	4	14	281	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1800	1863	1900	1800	1863	1900	1765	1863	1900	1765	1863	1900
Adj Flow Rate, veh/h	23	0	22	4	3	28	14	223	4	15	296	22
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	233	0	78	128	17	135	931	2487	45	999	2340	173
Arrive On Green	0.10	0.00	0.10	0.10	0.10	0.10	0.05	0.68	0.68	0.05	0.68	0.68
Sat Flow, veh/h	782	0	748	162	161	1291	1681	3649	65	1681	3428	253
Grp Volume(v), veh/h	45	0	0	35	0	0	14	114	113	15	160	158
Grp Sat Flow(s),veh/h/ln	1531	0	0	1613	0	0	1681	1863	1851	1681	1863	1818
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.7	0.1	1.1	1.1
Cycle Q Clear(g_c), s	0.9	0.0	0.0	0.7	0.0	0.0	0.1	0.7	0.7	0.1	1.1	1.1
Prop In Lane	0.51		0.49	0.11		0.80	1.00		0.04	1.00		0.14
Lane Grp Cap(c), veh/h	311	0	0	280	0	0	931	1270	1262	999	1272	1241
V/C Ratio(X)	0.14	0.00	0.00	0.13	0.00	0.00	0.02	0.09	0.09	0.02	0.13	0.13
Avail Cap(c_a), veh/h	1240	0	0	1278	0	0	1228	1270	1262	1294	1272	1241
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.8	0.0	0.0	14.7	0.0	0.0	1.4	1.9	1.9	1.3	2.0	2.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.3	0.0	0.0	0.0	0.4	0.4	0.0	0.6	0.6
LnGrp Delay(d),s/veh	15.0	0.0	0.0	14.9	0.0	0.0	1.4	2.1	2.1	1.3	2.2	2.2
LnGrp LOS	B			B			A	A	A	A	A	A
Approach Vol, veh/h		45			35			241			333	
Approach Delay, s/veh		15.0			14.9			2.0			2.1	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	3.7	26.5		5.8	3.7	26.5		5.8				
Change Period (Y+Rc), s	3.0	3.0		3.0	3.0	3.0		3.0				
Max Green Setting (Gmax), s	7.0	23.5		25.5	7.0	23.5		25.5				
Max Q Clear Time (g_c+I1), s	2.1	2.7		2.9	2.1	3.1		2.7				
Green Ext Time (p_c), s	0.0	3.1		0.4	0.0	3.1		0.4				
Intersection Summary												
HCM 2010 Ctrl Delay			3.7									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary

5: Victoria Park Lane & Church Street

Horizon Year WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	80	463	78	243	552	21	77	124	232	53	132	106
Future Volume (veh/h)	80	463	78	243	552	21	77	124	232	53	132	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1765	1863	1863	1667	1863	1900	1765	1863	1863	1765	1863	1863
Adj Flow Rate, veh/h	84	487	82	256	581	22	81	131	244	56	139	112
Adj No. of Lanes	1	2	1	2	2	0	1	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	128	894	380	383	1014	38	124	1745	742	102	1695	720
Arrive On Green	0.08	0.24	0.24	0.12	0.28	0.28	0.07	0.47	0.47	0.06	0.45	0.45
Sat Flow, veh/h	1681	3725	1583	3175	3567	135	1681	3725	1583	1681	3725	1583
Grp Volume(v), veh/h	84	487	82	256	303	300	81	131	244	56	139	112
Grp Sat Flow(s),veh/h/ln	1681	1863	1583	1587	1863	1839	1681	1863	1583	1681	1863	1583
Q Serve(g_s), s	3.5	8.3	3.0	5.6	10.1	10.1	3.4	1.4	7.0	2.3	1.5	3.0
Cycle Q Clear(g_c), s	3.5	8.3	3.0	5.6	10.1	10.1	3.4	1.4	7.0	2.3	1.5	3.0
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	128	894	380	383	530	523	124	1745	742	102	1695	720
V/C Ratio(X)	0.65	0.54	0.22	0.67	0.57	0.57	0.65	0.08	0.33	0.55	0.08	0.16
Avail Cap(c_a), veh/h	232	1284	546	481	668	659	185	1745	742	174	1695	720
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.6	24.1	22.1	30.5	22.2	22.2	32.7	10.6	12.1	33.1	11.2	11.6
Incr Delay (d2), s/veh	5.5	0.5	0.3	2.5	1.0	1.0	5.7	0.0	0.3	4.6	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.3	1.3	2.6	5.3	5.2	1.8	0.7	3.1	1.2	0.8	1.4
LnGrp Delay(d),s/veh	38.1	24.6	22.4	33.0	23.2	23.2	38.3	10.6	12.4	37.7	11.3	12.1
LnGrp LOS	D	C	C	C	C	C	D	B	B	D	B	B
Approach Vol, veh/h		653			859			456			307	
Approach Delay, s/veh		26.1			26.1			16.5			16.4	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.4	36.0	10.8	19.4	7.4	35.0	7.5	22.6				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	32.5	10.0	24.0	7.0	32.0	9.0	25.0				
Max Q Clear Time (g_c+I1), s	4.3	9.0	7.6	10.3	5.4	5.0	5.5	12.1				
Green Ext Time (p_c), s	0.0	3.0	0.2	6.1	0.0	3.0	0.0	5.9				
Intersection Summary												
HCM 2010 Ctrl Delay				22.8								
HCM 2010 LOS				C								

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM 2010 Signalized Intersection Summary

8: Etiwanda Avenue & E. Foothill Blvd

Horizon Year WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	432	976	208	152	1117	96	250	147	150	91	211	440
Future Volume (veh/h)	432	976	208	152	1117	96	250	147	150	91	211	440
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1863	1863	1667	1863	1863	1765	1863	1863	1765	1863	1900
Adj Flow Rate, veh/h	455	1027	219	160	1176	101	263	155	158	96	222	463
Adj No. of Lanes	2	2	1	2	2	1	1	1	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	463	1437	611	236	1171	498	272	699	594	149	562	478
Arrive On Green	0.15	0.39	0.39	0.07	0.31	0.31	0.16	0.38	0.38	0.09	0.30	0.30
Sat Flow, veh/h	3175	3725	1583	3175	3725	1583	1681	1863	1583	1681	1863	1583
Grp Volume(v), veh/h	455	1027	219	160	1176	101	263	155	158	96	222	463
Grp Sat Flow(s),veh/h/ln	1587	1863	1583	1587	1863	1583	1681	1863	1583	1681	1863	1583
Q Serve(g_s), s	15.0	24.5	10.4	5.2	33.0	4.9	16.3	6.0	7.3	5.8	9.9	30.3
Cycle Q Clear(g_c), s	15.0	24.5	10.4	5.2	33.0	4.9	16.3	6.0	7.3	5.8	9.9	30.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	463	1437	611	236	1171	498	272	699	594	149	562	478
V/C Ratio(X)	0.98	0.71	0.36	0.68	1.00	0.20	0.97	0.22	0.27	0.64	0.39	0.97
Avail Cap(c_a), veh/h	463	1437	611	236	1171	498	272	699	594	205	562	478
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.7	27.4	23.0	47.4	36.0	26.4	43.7	22.4	22.8	46.2	29.0	36.2
Incr Delay (d2), s/veh	37.4	1.7	0.4	7.6	27.4	0.2	45.2	0.7	1.1	4.6	2.1	34.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.0	12.9	4.6	2.5	21.4	2.2	11.0	3.2	3.4	2.9	5.4	17.8
LnGrp Delay(d),s/veh	82.2	29.1	23.3	55.0	63.4	26.6	88.9	23.1	23.9	50.8	31.1	70.2
LnGrp LOS	F	C	C	D	F	C	F	C	C	D	C	E
Approach Vol, veh/h	1701				1437				576			
Approach Delay, s/veh	42.5				59.8				53.4			
Approach LOS	D				E				D			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.3	41.4	9.8	42.5	19.0	33.7	17.3	35.0				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	11.8	34.9	6.8	39.5	16.0	30.7	14.3	32.0				
Max Q Clear Time (g_c+I1), s	8.8	10.3	8.2	27.5	19.3	33.3	18.0	36.0				
Green Ext Time (p_c), s	0.1	6.6	0.0	10.3	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	51.9											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary
9: Etiwanda Avenue & Church Street/Miller Street

Horizon Year WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	210	315	227	59	312	28	143	312	55	28	404	377
Future Volume (veh/h)	210	315	227	59	312	28	143	312	55	28	404	377
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1800	1863	1900	1800	1863	1900	1765	1863	1900	1765	1863	1863
Adj Flow Rate, veh/h	221	332	239	62	328	29	151	328	58	29	425	397
Adj No. of Lanes	0	2	0	0	2	0	1	2	0	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	340	482	388	165	956	94	206	1337	234	73	1317	560
Arrive On Green	0.44	0.44	0.44	0.44	0.44	0.44	0.12	0.43	0.43	0.04	0.35	0.35
Sat Flow, veh/h	595	1087	875	229	2156	211	1681	3090	540	1681	3725	1583
Grp Volume(v), veh/h	371	0	421	191	0	228	151	196	190	29	425	397
Grp Sat Flow(s),veh/h/ln	1017	0	1541	938	0	1658	1681	1863	1767	1681	1863	1583
Q Serve(g_s), s	19.8	0.0	15.7	2.8	0.0	6.6	6.5	5.0	5.1	1.3	6.2	16.2
Cycle Q Clear(g_c), s	26.4	0.0	15.7	18.5	0.0	6.6	6.5	5.0	5.1	1.3	6.2	16.2
Prop In Lane	0.60		0.57	0.32		0.13	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	527	0	683	479	0	735	206	806	765	73	1317	560
V/C Ratio(X)	0.70	0.00	0.62	0.40	0.00	0.31	0.73	0.24	0.25	0.40	0.32	0.71
Avail Cap(c_a), veh/h	565	0	730	520	0	785	269	806	765	168	1317	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.6	0.0	16.0	14.9	0.0	13.5	31.7	13.5	13.5	34.9	17.7	20.9
Incr Delay (d2), s/veh	3.6	0.0	1.4	0.5	0.0	0.2	7.0	0.7	0.8	3.4	0.6	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	0.0	6.9	3.3	0.0	3.1	3.4	2.7	2.6	0.6	3.3	8.2
LnGrp Delay(d),s/veh	25.3	0.0	17.4	15.5	0.0	13.7	38.7	14.2	14.3	38.3	18.3	28.3
LnGrp LOS	C		B	B		B	D	B	B	D	B	C
Approach Vol, veh/h		792			419			537			851	
Approach Delay, s/veh		21.1			14.5			21.1			23.7	
Approach LOS		C			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	34.4		35.2	11.2	28.5		35.2				
Change Period (Y+Rc), s	3.0	3.0		3.0	3.0	3.0		3.0				
Max Green Setting (Gmax), s	6.5	30.0		34.5	11.0	25.5		34.5				
Max Q Clear Time (g_c+I1), s	3.3	7.1		28.4	8.5	18.2		20.5				
Green Ext Time (p_c), s	0.0	7.1		3.8	0.1	3.8		7.0				
Intersection Summary												
HCM 2010 Ctrl Delay				20.9								
HCM 2010 LOS				C								

HCM Unsignalized Intersection Capacity Analysis

10: Etiwanda Avenue & Existing Driveway

Horizon Year WP
Sunday Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations							
Traffic Volume (veh/h)	165	178	75	401	554	68	
Future Volume (Veh/h)	165	178	75	401	554	68	
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	174	187	79	422	583	72	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (ft)				1101	1074		
pX, platoon unblocked							
vC, conflicting volume	988	328	655				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	988	328	655				
tC, single (s)	6.8	6.9	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	22	72	91				
cM capacity (veh/h)	223	668	928				
Direction, Lane #	EB 1	EB 2	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	174	187	79	211	211	389	266
Volume Left	174	0	79	0	0	0	0
Volume Right	0	187	0	0	0	0	72
cSH	223	668	928	1700	1700	1700	1700
Volume to Capacity	0.78	0.28	0.09	0.12	0.12	0.23	0.16
Queue Length 95th (ft)	139	29	7	0	0	0	0
Control Delay (s)	61.6	12.5	9.2	0.0	0.0	0.0	0.0
Lane LOS	F	B	A				
Approach Delay (s)	36.1		1.5	0.0			
Approach LOS	E						
Intersection Summary							
Average Delay			9.1				
Intersection Capacity Utilization			41.5%	ICU Level of Service			A
Analysis Period (min)			15				

HCM 2010 Signalized Intersection Summary

11: Etiwanda Avenue & Baseline Avenue

Horizon Year WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	651	162	299	704	53	147	184	315	69	174	77
Future Volume (veh/h)	98	651	162	299	704	53	147	184	315	69	174	77
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1863	1900	1667	1863	1900	1667	1863	1863	1765	1863	1900
Adj Flow Rate, veh/h	103	685	171	315	741	56	155	194	332	73	183	81
Adj No. of Lanes	2	3	0	2	3	0	2	1	1	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	240	1198	295	337	1576	118	275	812	858	114	1037	441
Arrive On Green	0.08	0.28	0.28	0.11	0.31	0.31	0.09	0.44	0.44	0.07	0.42	0.42
Sat Flow, veh/h	3175	4334	1066	3175	5134	386	3175	1863	1583	1681	2484	1056
Grp Volume(v), veh/h	103	587	269	315	537	260	155	194	332	73	135	129
Grp Sat Flow(s),veh/h/ln	1587	1863	1675	1587	1863	1795	1587	1863	1583	1681	1863	1676
Q Serve(g_s), s	2.2	9.6	9.8	7.0	8.2	8.3	3.3	4.6	8.6	3.0	3.2	3.4
Cycle Q Clear(g_c), s	2.2	9.6	9.8	7.0	8.2	8.3	3.3	4.6	8.6	3.0	3.2	3.4
Prop In Lane	1.00		0.64	1.00		0.22	1.00		1.00	1.00		0.63
Lane Grp Cap(c), veh/h	240	1030	463	337	1144	551	275	812	858	114	778	700
V/C Ratio(X)	0.43	0.57	0.58	0.93	0.47	0.47	0.56	0.24	0.39	0.64	0.17	0.18
Avail Cap(c_a), veh/h	337	1187	533	337	1187	572	337	812	858	178	778	700
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.2	22.0	22.0	31.3	19.8	19.8	31.0	12.5	9.4	32.1	12.9	13.0
Incr Delay (d2), s/veh	1.2	0.5	1.2	32.5	0.3	0.6	1.8	0.7	1.3	5.8	0.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.0	4.6	4.5	4.3	4.2	1.5	2.5	4.0	1.6	1.8	1.7
LnGrp Delay(d),s/veh	32.4	22.5	23.2	63.8	20.1	20.5	32.8	13.2	10.7	37.8	13.4	13.6
LnGrp LOS	C	C	C	E	C	C	C	B	B	D	B	B
Approach Vol, veh/h		959			1112			681			337	
Approach Delay, s/veh		23.7			32.6			16.4			18.8	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.8	32.8	9.5	21.5	8.1	31.5	7.3	23.7				
Change Period (Y+Rc), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0				
Max Green Setting (Gmax), s	6.5	28.5	6.5	21.5	6.5	28.5	6.5	21.5				
Max Q Clear Time (g_c+I1), s	5.0	10.6	9.0	11.8	5.3	5.4	4.2	10.3				
Green Ext Time (p_c), s	0.0	3.8	0.0	6.8	0.1	4.0	0.1	7.5				
Intersection Summary												
HCM 2010 Ctrl Delay				24.8								
HCM 2010 LOS				C								

HCM 2010 Research does not support Non-NEMA phasing.

HCM 2010 Computation does not support turning movement with Shared and Exclusive lanes.

HCM Signalized Intersection Capacity Analysis

12: I-15 SB On/I-15 SB Off & Baseline Avenue

Horizon Year WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	590	335	0	772	791	0	0	0	549	0	386
Future Volume (vph)	0	590	335	0	772	791	0	0	0	549	0	386
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1800	1900	1900	1700	1900	1900
Total Lost time (s)		2.0	2.0		2.0					2.0		2.0
Lane Util. Factor		*1.00	1.00		*1.00					*1.00		*1.00
Frt		1.00	0.85		0.92					1.00		0.85
Flt Protected		1.00	1.00		1.00					0.95		1.00
Satd. Flow (prot)		5588	1583		5164					3167		3167
Flt Permitted		1.00	1.00		1.00					0.95		1.00
Satd. Flow (perm)		5588	1583		5164					3167		3167
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	621	353	0	813	833	0	0	0	578	0	406
RTOR Reduction (vph)	0	0	172	0	347	0	0	0	0	0	0	194
Lane Group Flow (vph)	0	621	181	0	1299	0	0	0	0	578	0	212
Turn Type		NA	Perm		NA					Perm		Perm
Protected Phases		4			8							
Permitted Phases			4							6		6
Actuated Green, G (s)		26.7	26.7		26.7					21.3		21.3
Effective Green, g (s)		27.7	27.7		27.7					22.3		22.3
Actuated g/C Ratio		0.51	0.51		0.51					0.41		0.41
Clearance Time (s)		3.0	3.0		3.0					3.0		3.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0		3.0
Lane Grp Cap (vph)		2866	812		2648					1307		1307
v/s Ratio Prot		0.11			c0.25							
v/s Ratio Perm			0.11							c0.18		0.07
v/c Ratio		0.22	0.22		0.49					0.44		0.16
Uniform Delay, d1		7.2	7.2		8.6					11.4		10.0
Progression Factor		1.00	1.00		1.00					1.00		1.00
Incremental Delay, d2		0.0	0.1		0.1					1.1		0.3
Delay (s)		7.2	7.4		8.7					12.5		10.2
Level of Service		A	A		A					B		B
Approach Delay (s)		7.3			8.7			0.0			11.5	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			9.1			HCM 2000 Level of Service				A		
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			54.0			Sum of lost time (s)				5.0		
Intersection Capacity Utilization			56.9%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: I-15 NB Off/I-15 NB On & Baseline Avenue

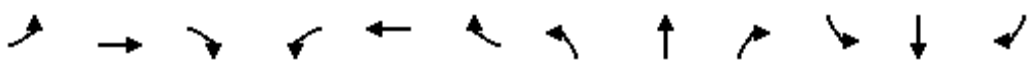
Horizon Year WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	488	688	0	0	1059	181	413	0	351	0	0	0
Future Volume (vph)	488	688	0	0	1059	181	413	0	351	0	0	0
Ideal Flow (vphpl)	1700	1900	1900	1800	1900	1900	1700	1900	1900	1800	1900	1900
Total Lost time (s)	2.0	2.0			2.0	2.0	2.0	2.0	2.0			
Lane Util. Factor	*1.00	*1.00			*1.00	1.00	*1.00	*1.00	*1.00			
Frt	1.00	1.00			1.00	0.85	1.00	0.94	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (prot)	3167	5588			7451	1583	1583	1696	1583			
Flt Permitted	0.26	1.00			1.00	1.00	0.95	0.97	1.00			
Satd. Flow (perm)	857	5588			7451	1583	1583	1696	1583			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	514	724	0	0	1115	191	435	0	369	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	65	0	36	184	0	0	0
Lane Group Flow (vph)	514	724	0	0	1115	126	278	235	71	0	0	0
Turn Type	Perm	NA			NA	Perm	Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases	4					8	2		2			
Actuated Green, G (s)	42.1	42.1			42.1	42.1	17.2	17.2	17.2			
Effective Green, g (s)	43.1	43.1			43.1	43.1	18.2	18.2	18.2			
Actuated g/C Ratio	0.66	0.66			0.66	0.66	0.28	0.28	0.28			
Clearance Time (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	565	3688			4917	1044	441	472	441			
v/s Ratio Prot		0.13			0.15							
v/s Ratio Perm	c0.60					0.08	c0.18	0.14	0.04			
v/c Ratio	0.91	0.20			0.23	0.12	0.63	0.50	0.16			
Uniform Delay, d1	9.4	4.3			4.4	4.1	20.6	19.7	17.8			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	18.5	0.0			0.0	0.1	6.7	3.7	0.8			
Delay (s)	28.0	4.4			4.5	4.2	27.3	23.4	18.6			
Level of Service	C	A			A	A	C	C	B			
Approach Delay (s)		14.2			4.4			23.2			0.0	
Approach LOS		B			A			C			A	
Intersection Summary												
HCM 2000 Control Delay		12.5			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.81										
Actuated Cycle Length (s)		65.3			Sum of lost time (s)			4.0				
Intersection Capacity Utilization		55.9%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

7: I-15 NB Off/I-15 NB On & E. Foothill Blvd

Horizon Year WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑	↑↓	↑			
Traffic Volume (vph)	0	1386	424	0	2057	367	1907	0	810	0	0	0
Future Volume (vph)	0	1386	424	0	2057	367	1907	0	810	0	0	0
Ideal Flow (vphpl)	1800	1900	1900	1800	1900	1900	1700	1900	1900	1800	1900	1900
Total Lost time (s)		2.0	2.0		2.0	2.0	2.0	2.0	2.0			
Lane Util. Factor		*1.00	1.00		*1.00	1.00	*1.00	*1.00	*1.00			
Frt		1.00	0.85		1.00	0.85	1.00	0.99	0.85			
Flt Protected		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)		5588	1583		5588	1583	1583	1759	1583			
Flt Permitted		1.00	1.00		1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)		5588	1583		5588	1583	1583	1759	1583			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1459	446	0	2165	386	2007	0	853	0	0	0
RTOR Reduction (vph)	0	0	274	0	0	231	0	3	3	0	0	0
Lane Group Flow (vph)	0	1459	172	0	2165	155	1044	1045	765	0	0	0
Turn Type		NA	Perm		NA	Perm	Perm	NA	Perm			
Protected Phases		4			8			2				
Permitted Phases			4			8	2		2			
Actuated Green, G (s)		39.5	39.5		39.5	39.5	59.5	59.5	59.5			
Effective Green, g (s)		40.5	40.5		40.5	40.5	60.5	60.5	60.5			
Actuated g/C Ratio		0.39	0.39		0.39	0.39	0.58	0.58	0.58			
Clearance Time (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0			
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)		2155	610		2155	610	912	1013	912			
v/s Ratio Prot		0.26			c0.39							
v/s Ratio Perm			0.11			0.10	c0.66	0.59	0.48			
v/c Ratio		0.68	0.28		1.00	0.25	1.14	1.03	0.84			
Uniform Delay, d1		26.8	22.2		32.2	22.0	22.2	22.2	18.3			
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2		0.9	0.3		20.5	0.2	78.1	36.8	9.2			
Delay (s)		27.7	22.5		52.8	22.2	100.4	59.1	27.4			
Level of Service		C	C		D	C	F	E	C			
Approach Delay (s)		26.5			48.1			65.7			0.0	
Approach LOS		C			D			E			A	
Intersection Summary												
HCM 2000 Control Delay			49.3				HCM 2000 Level of Service		D			
HCM 2000 Volume to Capacity ratio			1.08									
Actuated Cycle Length (s)			105.0				Sum of lost time (s)		4.0			
Intersection Capacity Utilization			107.5%				ICU Level of Service		G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

8: Etiwanda Avenue & E. Foothill Blvd

Horizon Year WP
Sunday Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	432	976	208	152	1117	96	250	147	150	91	211	440
Future Volume (vph)	432	976	208	152	1117	96	250	147	150	91	211	440
Ideal Flow (vphpl)	1700	1900	1900	1700	1900	1900	1800	1900	1900	1800	1900	1900
Total Lost time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lane Util. Factor	*1.00	*1.00	1.00	*1.00	*1.00	1.00	1.00	1.00	1.00	1.00	*1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3167	3725	1583	3167	3725	1583	1676	1863	1583	1676	3348	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3167	3725	1583	3167	3725	1583	1676	1863	1583	1676	3348	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	455	1027	219	160	1176	101	263	155	158	96	222	463
RTOR Reduction (vph)	0	0	135	0	0	69	0	0	99	0	175	0
Lane Group Flow (vph)	455	1027	84	160	1176	32	263	155	59	96	510	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)	14.3	39.5	39.5	6.8	32.0	32.0	16.0	38.4	38.4	8.9	31.3	
Effective Green, g (s)	15.3	40.5	40.5	7.8	33.0	33.0	17.0	39.4	39.4	9.9	32.3	
Actuated g/C Ratio	0.14	0.38	0.38	0.07	0.31	0.31	0.16	0.37	0.37	0.09	0.31	
Clearance Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	458	1428	607	233	1164	494	269	695	590	157	1024	
v/s Ratio Prot	c0.14	0.28		0.05	c0.32		c0.16	0.08		0.06	c0.15	
v/s Ratio Perm			0.05			0.02			0.04			
v/c Ratio	0.99	0.72	0.14	0.69	1.01	0.06	0.98	0.22	0.10	0.61	0.50	
Uniform Delay, d1	45.1	27.7	21.2	47.7	36.3	25.5	44.1	22.6	21.6	46.0	30.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	40.1	1.8	0.1	8.1	28.9	0.1	48.2	0.7	0.3	6.9	1.7	
Delay (s)	85.2	29.5	21.3	55.8	65.2	25.5	92.3	23.4	21.9	52.9	31.7	
Level of Service	F	C	C	E	E	C	F	C	C	D	C	
Approach Delay (s)		43.3			61.4			54.4			34.3	
Approach LOS		D			E			D			C	
Intersection Summary												
HCM 2000 Control Delay			49.0		HCM 2000 Level of Service					D		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			105.6		Sum of lost time (s)					8.0		
Intersection Capacity Utilization			92.6%		ICU Level of Service					F		
Analysis Period (min)			15									
c Critical Lane Group												