COUNTY OF SAN BERNARDINO

VALLEY BOULEVARD/ COMMERCE DRIVE PROJECT

TRAFFIC IMPACT ANALYSIS

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I. Introduction

The purpose of this report is to provide an assessment of the traffic impacts resulting from the proposed development of the Valley Boulevard/Commerce Drive project, and to identify the traffic mitigation measures necessary to maintain the established Level of Service standard for the elements of the impacted roadway system. The traffic issues related to the proposed land uses and development have been evaluated in the context of the California Environmental Quality Act.

The County of San Bernardino is the lead agency responsible for preparation of the traffic impact analysis, in accordance with the California Environmental Quality Act authorizing legislation. This report analyzes traffic impacts for the anticipated opening date with full occupancy of the development in Year 2012, at which time it will be generating traffic at its full potential, and for the Year 2035.

Although this is a technical report, every effort has been made to write the report clearly and concisely. To assist the reader with those terms unique to transportation engineering, a glossary of terms is provided in Appendix A.

A. Project Description

The proposed development is located on the northwest corner of the Commerce Drive and Valley Boulevard intersection in the County of San Bernardino. A vicinity map showing the project location is provided on Figure 1.

The approximately 9 acre project site is proposed to be developed with 186,300 square feet of high-cube warehouse distribution center. Figure 2 illustrates the project site plan.

B. Study Area

Regional access to the project site is provided by the I-15 Freeway and I-10 Freeway. Local access is provided by various roadways in the vicinity of the site. The east-west roadway which will be most affected by the project includes Valley Boulevard. The north-south roadways which will be most affected by the project include Etiwanda Avenue and Commerce Drive. The project will take access to Valley Boulevard and Commerce Drive.

A series of scoping discussions were conducted with the County of San Bernardino to define the desired analysis locations for each future analysis year. In addition, staff from the County of San Bernardino has also been contacted to discuss the project and its associated travel patterns.

No analysis is required further than 5 miles from the project site. The roadway elements that must be analyzed are dependent on both the analysis year (project Opening Year or Year 2035) and project generated traffic volumes. The identification of the study area, and the intersections and highway segments requiring analysis, was based on an estimate of the two-way traffic volumes on the roadway segments near the project site. All arterial segments have been included in the analysis when the anticipated project volume equals or

exceeds 50 two-way trips in the peak hours. The requirement is 100 two-way peak hour trips for freeways.

The project does not contribute traffic greater than the freeway threshold volume of 100 two-way peak hour trips. The project does not contribute traffic greater than the arterial link threshold volume of 50 two-way trips in the morning and evening peak hours in the adjacent City of Fontana or City of Ontario.

C. Analysis Methodology

The analysis of the traffic impacts from the proposed development and the assessment of the required mitigation measures were based on an evaluation of the existing and forecast traffic conditions in the vicinity of the site with and without the project. The following analysis years are considered in this report:

- Existing Conditions (2011)
- Project Opening Year Conditions (2012)
- Horizon Year Conditions (2035)

Existing intersection traffic conditions were established through morning and evening peak hour traffic counts obtained by Kunzman Associates, Inc. in November 2010 (see Appendix B).

In addition, truck classification counts were conducted at the study area intersections. The existing percent of trucks were used in the conversion of trucks to Passenger Car Equivalent's (see Appendix C).

Trip generation has been estimated based on the Institute of Transportation Engineers, Trip Generation, 8th Edition, 2008.

The distribution of the project traffic was based on the traffic distribution from the Kaiser Commerce Center Specific Plan.

The average daily traffic volume forecasts have been determined using the growth increment approach on the Comprehensive Transportation Plan (CTP) Traffic Model Year 2000 and Year 2035 average daily traffic volume forecasts (see Appendix C). This difference defines the growth in traffic over the 35 year period. The incremental growth in average daily traffic volume has been factored to reflect the forecast growth between Year 2010 and Year 2035. For this purpose, linear growth between the Year 2000 base condition and the forecast Year 2035 condition was assumed. Since the increment between Year 2010 and Year 2035 is 25 years of the 35 year time frame, a factor of 0.71 (i.e., 25/35) was used.

The Year 2035 without project daily and peak hour directional roadway segment volume forecasts have been determined using the growth increment approach on the Comprehensive Transportation Plan Year 2000 and Year 2035 peak hour volumes. The growth increment calculation worksheets are shown in Appendix C. Current peak hour intersection approach/departure data is a necessary input to this approach. The existing traffic count data serves as both the starting point for the refinement process, and also

provides important insight into current travel patterns and the relationship between peak hour and daily traffic conditions. The initial turning movement proportions are estimated based upon the relationship of each approach leg's forecast traffic volume to the other legs forecast volumes at the intersection. The initial estimate of turning movement proportions is then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program Report 255. A linear programming algorithm is used to calculate individual turning movements that match the known directional roadway segment volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

The Opening Year (2012) traffic volumes have been interpolated from the Year 2035 traffic volumes based upon a portion of the future growth increment.

Project traffic volumes were then added to the Comprehensive Transportation Plan volumes. Quality control checks and forecast adjustments were performed as necessary to ensure that all future traffic volume forecasts reflect a minimum of 10% growth over existing traffic volumes. The result of this traffic forecasting procedure is a series of traffic volumes suitable for traffic operations analysis.

The technique used to assess the capacity needs of an intersection is known as the Intersection Delay Method (see Appendix D) based on the 2000 Highway Capacity Manual – Transportation Research Board Special Report 209. To calculate delay, the volume of traffic using the intersection is compared with the capacity of the intersection. The signalized intersections are considered deficient (Level of Service F) if the overall intersection critical volume to capacity ratio equals or exceeds 1.0, even if the level of service defined by the delay value is below the defined Level of Service standard. The volume to capacity ratio is defined as the critical volumes divided by the intersection capacity. A volume to capacity ratio greater than 1.0 implies an infinite queue.

The Level of Service analysis for signalized intersections has been performed using optimized signal timing. This analysis has included an assumed lost time of two seconds per phase. Signal timing optimization has considered pedestrian safety and signal coordination requirements. Appropriate time for pedestrian crossings has also been considered in the signalized intersection analysis. The following formula has been used to calculate the pedestrian minimum times for all Highway Capacity Manual runs:

[(Curb to curb distance) / (4 feet/second)] + 7 seconds.

For existing and Opening Year traffic conditions, saturation flow rates of 1,800 vehicles per hour of green for through and right turn lanes and 1,700 vehicles per lane for single left turn lanes, 1,600 vehicles per lane for dual left turn lanes and 1,500 vehicles per lane for triple left turn lanes have been assumed for the capacity analysis.

For Year 2035 traffic conditions, saturation flow rates of 1,900 vehicles per hour of green for through and right turn lanes and 1,800 vehicles per lane for single left turn lanes, 1,700 vehicles per lane for dual left turn lanes and 1,800 vehicles per lane for double right turn lanes have been assumed for the capacity analysis.

The peak hour traffic volumes have been adjusted to peak 15 minute volumes for analysis purposes using the existing observed peak 15 minute to peak hour factors for all scenarios analyzed. Where feasible improvements in accordance with the local jurisdiction's General Plan and which result in acceptable operations cannot be identified, the Year 2035 peak hour factor has been adjusted upwards to 0.95. This is to account for the effects of congestion on peak spreading. Peak spreading refers to the tendency of traffic to spread more evenly across time as congestion increases.

The traffic mitigation needs anticipated at the time of the project opening with full occupancy and for the Year 2035 were combined into a summary of mitigation requirements and costs. The mitigation cost responsibility for the proposed development was estimated based on the percent of the increase in traffic from the existing condition to the Year 2035 that was attributed to the project-generated traffic.

D. Definition of Deficiency and Significant Impact

The following definitions of deficiencies and significant impacts have been developed in accordance with the County of San Bernardino requirements.

1. Definition of Deficiency

The definition of an intersection deficiency has been obtained from the County of San Bernardino General Plan. The General Plan states that peak hour intersection operations of Level of Service D or better are generally acceptable. Therefore, any intersection operating at Level of Service E or F will be considered deficient.

For freeway facilities, the Congestion Management Program controls the definition of deficiency for purposes of this study. The Congestion Management Program definition of deficiency is based on maintaining a Level of Service standard of Level of Service E or better, except where an existing Level of Service F condition is identified in the Congestion Management Program document (San Bernardino County Congestion Management Program Table 2-1). A Congestion Management Program deficiency is, therefore, defined as any freeway segment operating or projected to operate at Level of Service F, unless the segment is identified explicitly in the Congestion Management Program document.

The identification of a Congestion Management Program deficiency requires further analysis in satisfaction of Congestion Management Program requirements, including:

- Evaluation of the mitigation measures required to restore traffic operations to an acceptable level with respect to Congestion Management Program Level of Service standards.
- Calculation of the project share of new traffic on the impacted Congestion Management Program facility during peak hours of traffic.

- Estimation of the cost required to implement the improvements required to restore traffic operations to an acceptable Level of Service as described above.

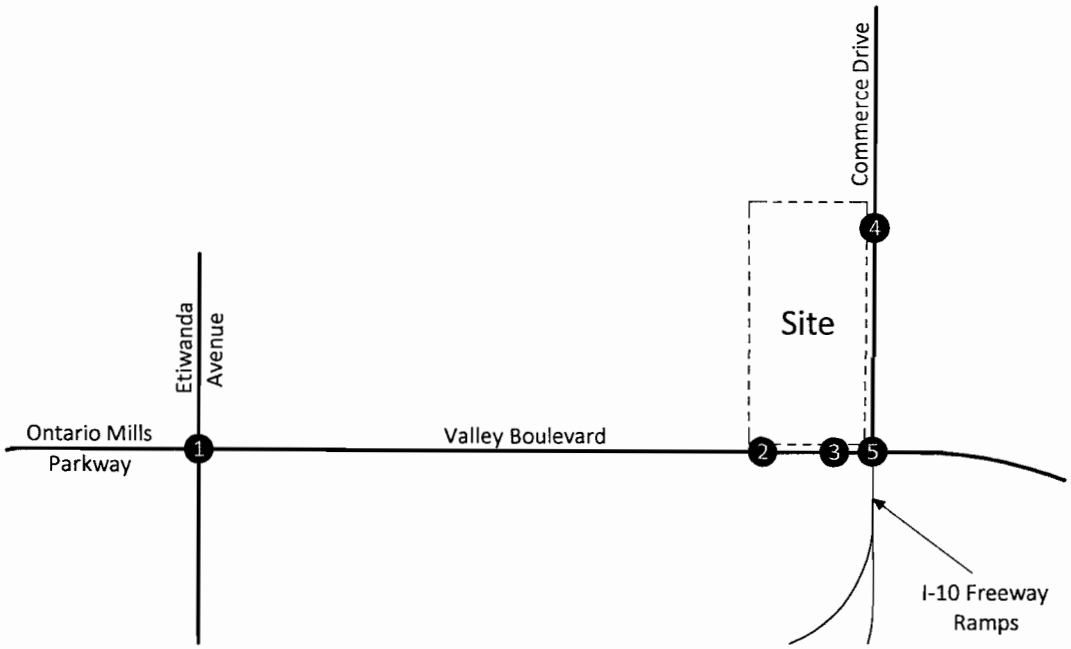
This study incorporates each of these aspects for all locations where a Congestion Management Program deficiency is identified.

2. Definition of Significant Impact

The identification of significant impacts is a requirement of the California Environmental Quality Act. The County of San Bernardino General Plan and Circulation Element have been adopted in accordance with California Environmental Quality Act requirements, and any roadway improvements within the County of San Bernardino that are consistent with these documents are not considered a significant impact, so long as the project contributes its "fair share" funding for improvements.

A traffic impact is considered significant if the project both: i) contributes measurable traffic to and ii) substantially and adversely changes the Level of Service at any off-site location projected to experience deficient operations under foreseeable cumulative conditions, where feasible improvements consistent with the County of San Bernardino General Plan cannot be constructed.

Figure 1
Project Location Map



Legend

1 = Study Area Intersection

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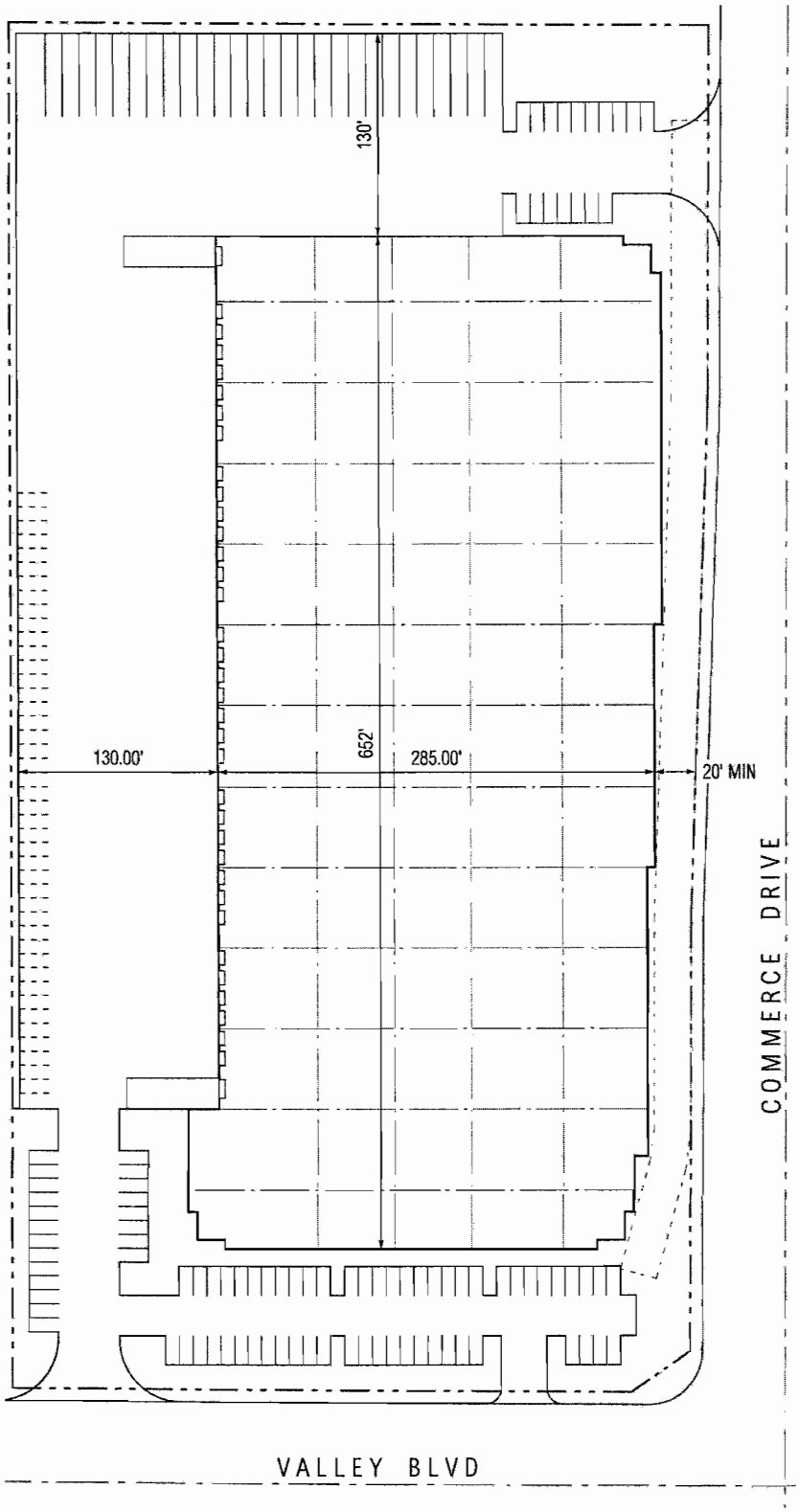
Figure 2
Site Plan



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II. Existing Conditions

A. Existing Roadway System

Figure 3 identifies the existing conditions for study area roadways. The number of through lanes for existing roadways and the existing intersection controls are identified.

Regional access to the project site is provided by the I-15 Freeway and I-10 Freeway. Local access is provided by various roadways in the vicinity of the site. The east-west roadway which will be most affected by the project includes Valley Boulevard. The north-south roadways which will be most affected by the project include Etiwanda Avenue and Commerce Drive.

B. Existing Volumes

Figure 4 depicts the existing average daily traffic volumes. The existing average daily traffic volumes were obtained by Kunzman Associates, Inc. using the following formula for each intersection leg:

PM Peak Hour (Approach + Exit Volume) x 11.5 = Daily Leg Volume.

This is a conservative estimate and may over estimate the average daily traffic volumes.

Existing intersection traffic conditions were established through morning and evening peak hour traffic counts obtained by Kunzman Associates, Inc. from November 2010 (see Appendix B) and shown on Figures 5 and 6, respectively. Explicit peak hour factors have been calculated using the data collected for this effort as well. The morning and evening peak hour traffic volumes were identified by counting the two-hour periods from 7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM.

C. Existing Level of Service

The Existing delay and Level of Service for intersections in the vicinity of the project are shown in Table 1. The study area intersections currently operate at Level of Service D or better during the peak hours for Existing traffic conditions. Existing delay worksheets are provided in Appendix D.

D. Planned Transportation Improvements and Relationship to General Plan

The County of San Bernardino General Plan Circulation Element is shown on Figure 7. Existing and future roadways are included in the Circulation Element of the General Plan and are graphically depicted on Figure 7. This figure shows the nature and extent of arterial highways that are needed to adequately serve the ultimate development depicted by the Land Use Element of the General Plan. The San Bernardino County General Plan roadway cross-sections is shown on Figure 8.

Table 1

Existing Intersection Delay and Level of Service

Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
		Northbound			Southbound			Eastbound			Westbound				
		L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Etiwanda Avenue (NS) at: Valley Boulevard (EW) - #1	TS	2	2	1>>	1	2.5	0.5	1	2	1>>	2	2	1	31.1-C	31.3-C
Commerce Drive (NS) at: Valley Boulevard (EW) - #5	TS	2	1	1>>	1	1.5	0.5	1	2	1	2	2	1>>	33.9-C	35.4-D

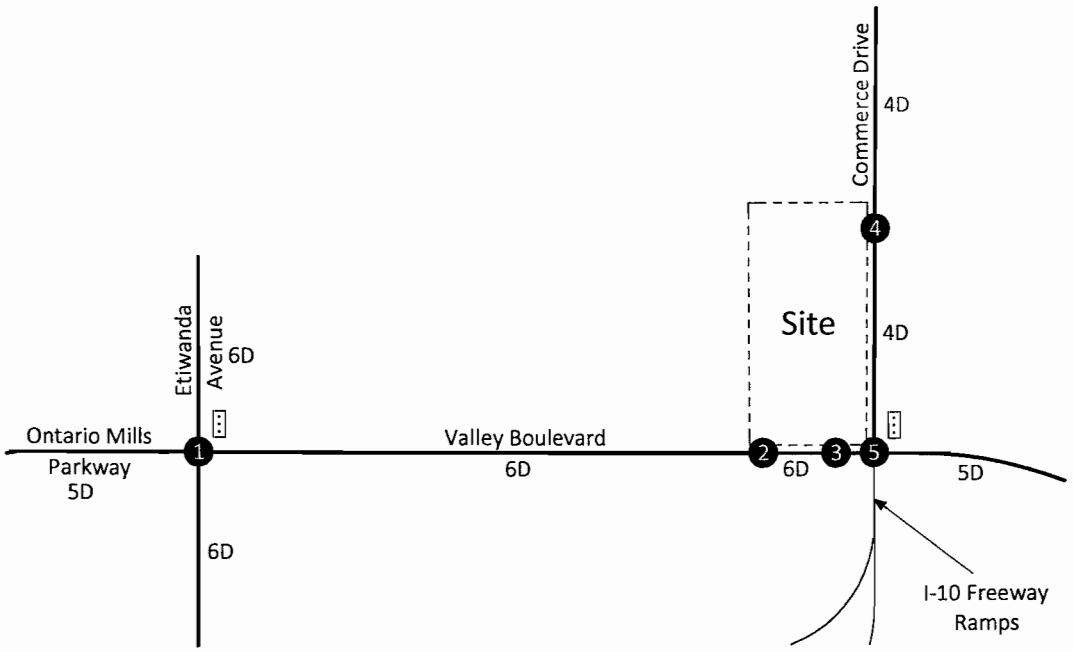
[1] When a right turn lane is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; >> = Free Right Turn

[2] Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the individual movement (or movements sharing a single lane) are shown.

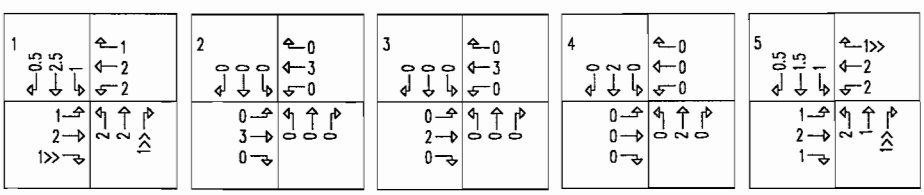
[3] TS = Traffic Signal

Figure 3
Existing Through Travel Lanes and Intersection Controls



Legend

- = Traffic Signal
- 4 = Through Travel Lanes
- D = Divided
- U = Undivided
- >> = Free Right Turn



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KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

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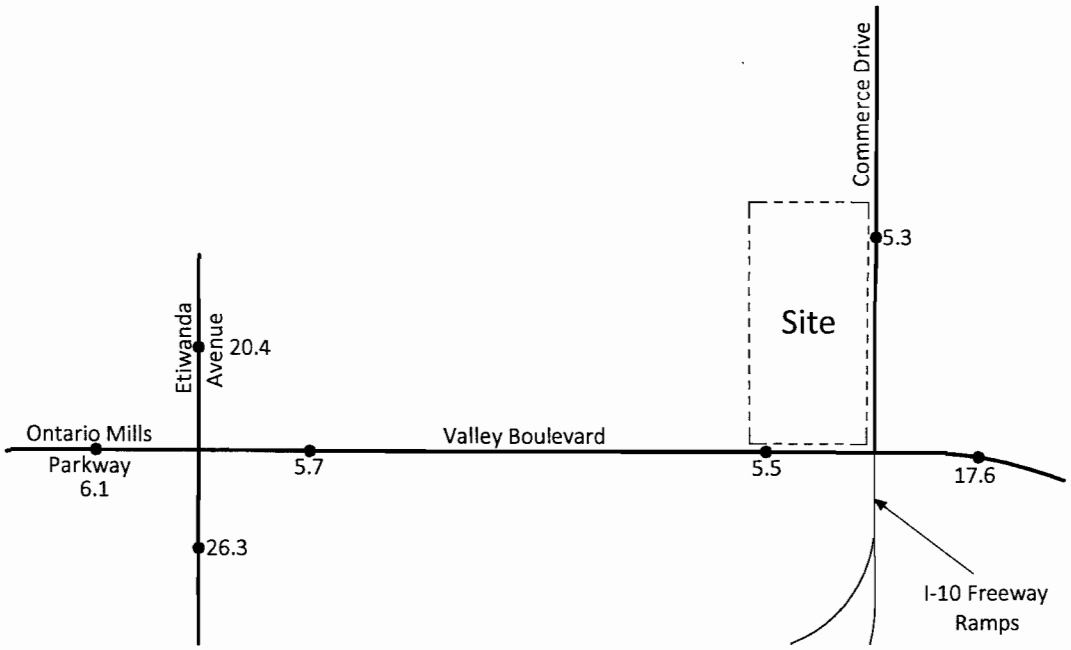
Figure 4
Existing Average Daily Traffic Volumes



Legend

17.6 = Vehicles Per Day (1,000's)

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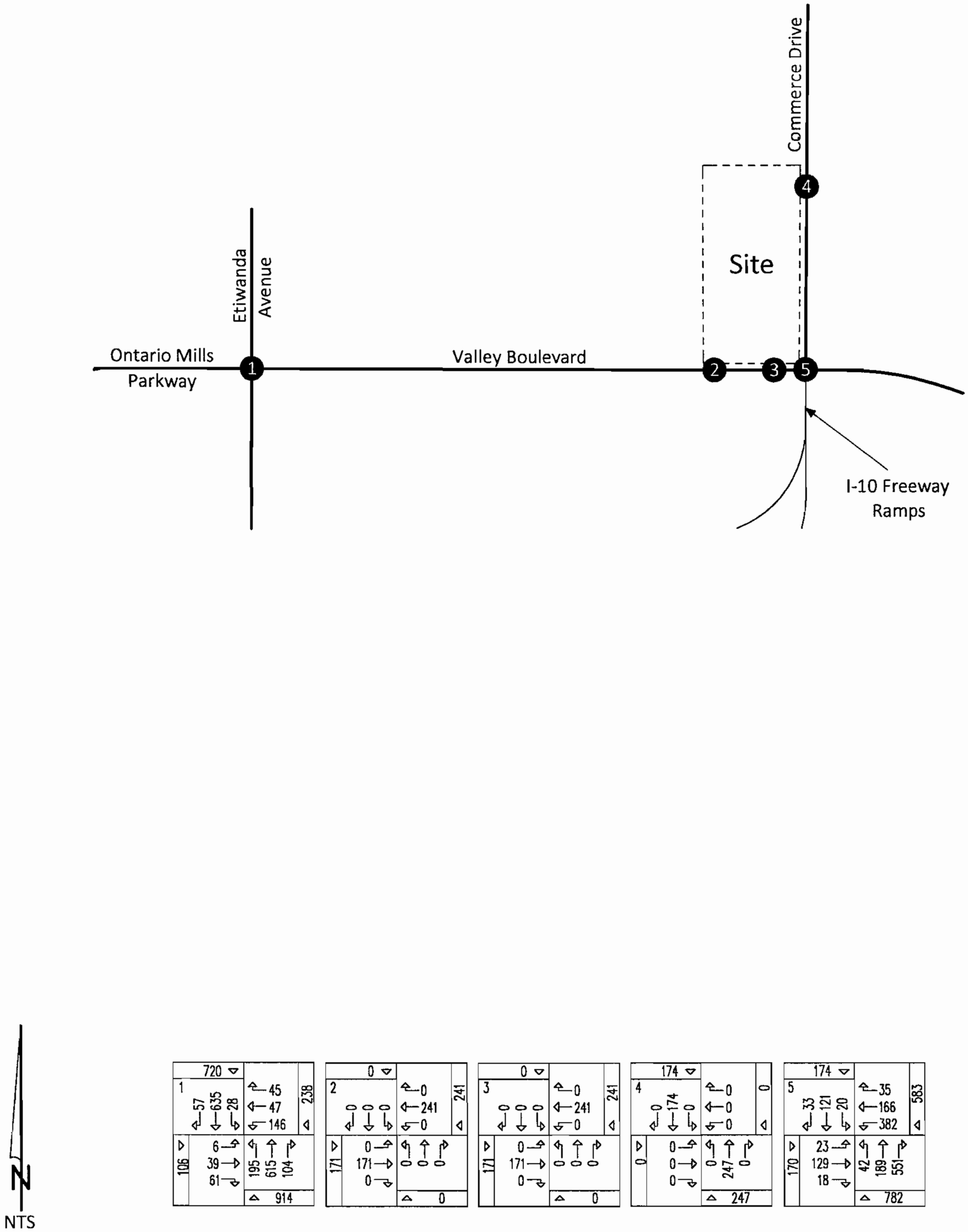
Figure 5
Existing Morning Peak Hour Intersection Turning Movement Volumes



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KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

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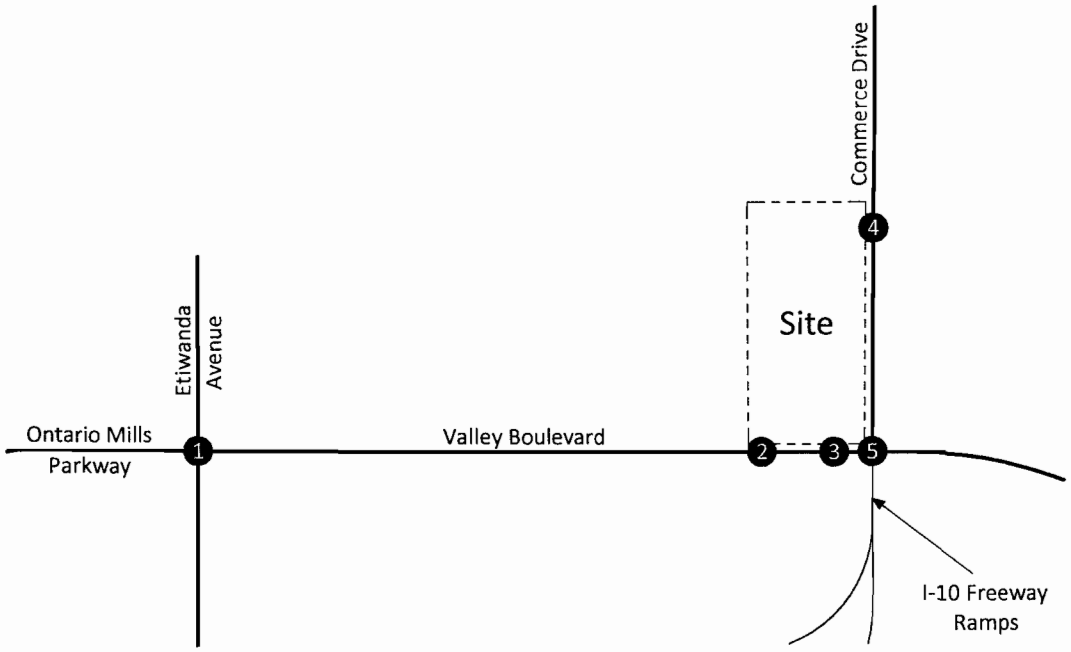
Figure 6
Existing Evening Peak Hour Intersection Turning Movement Volumes



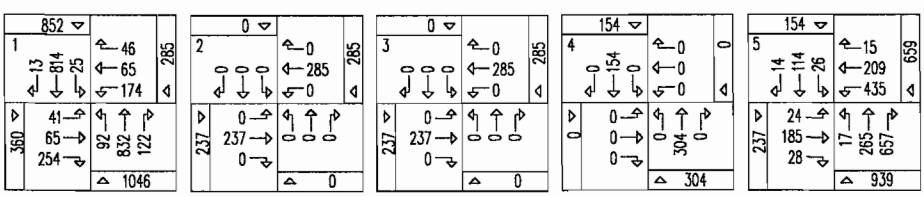


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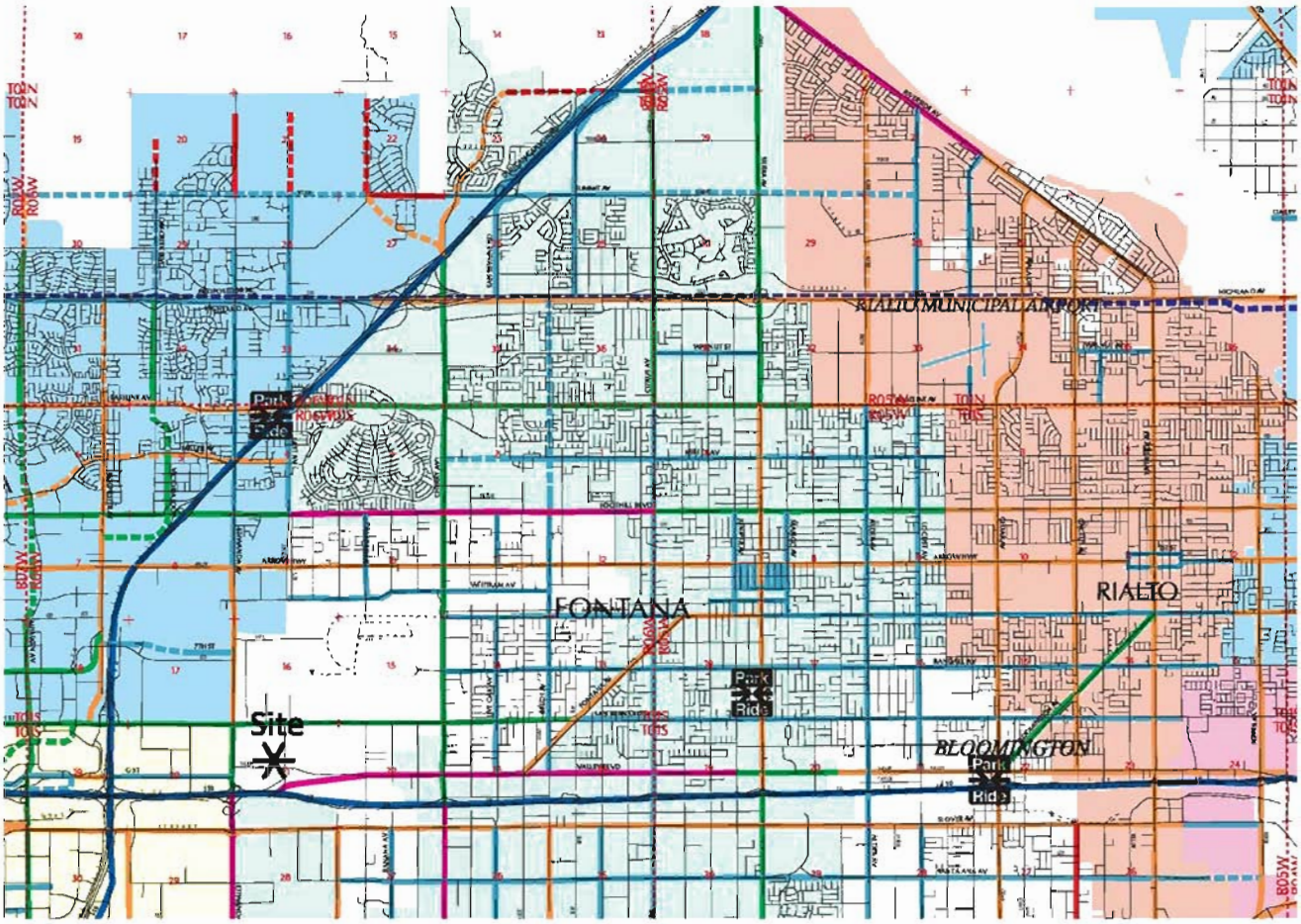
Figure 7
County of San Bernardino General Plan Circulation Element



Legend

EXISTING PROPOSED

- Freeway
- Major Divided Highway
- Major Arterial Highway
- Major Highway
- Secondary Highway
- Collector/Undivided Access Collector
- Modified Major Highway
- Modified Secondary Highway
- Modified Highway Deficient Standards or Conditions
- Railroads

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Source: County of San Bernardino

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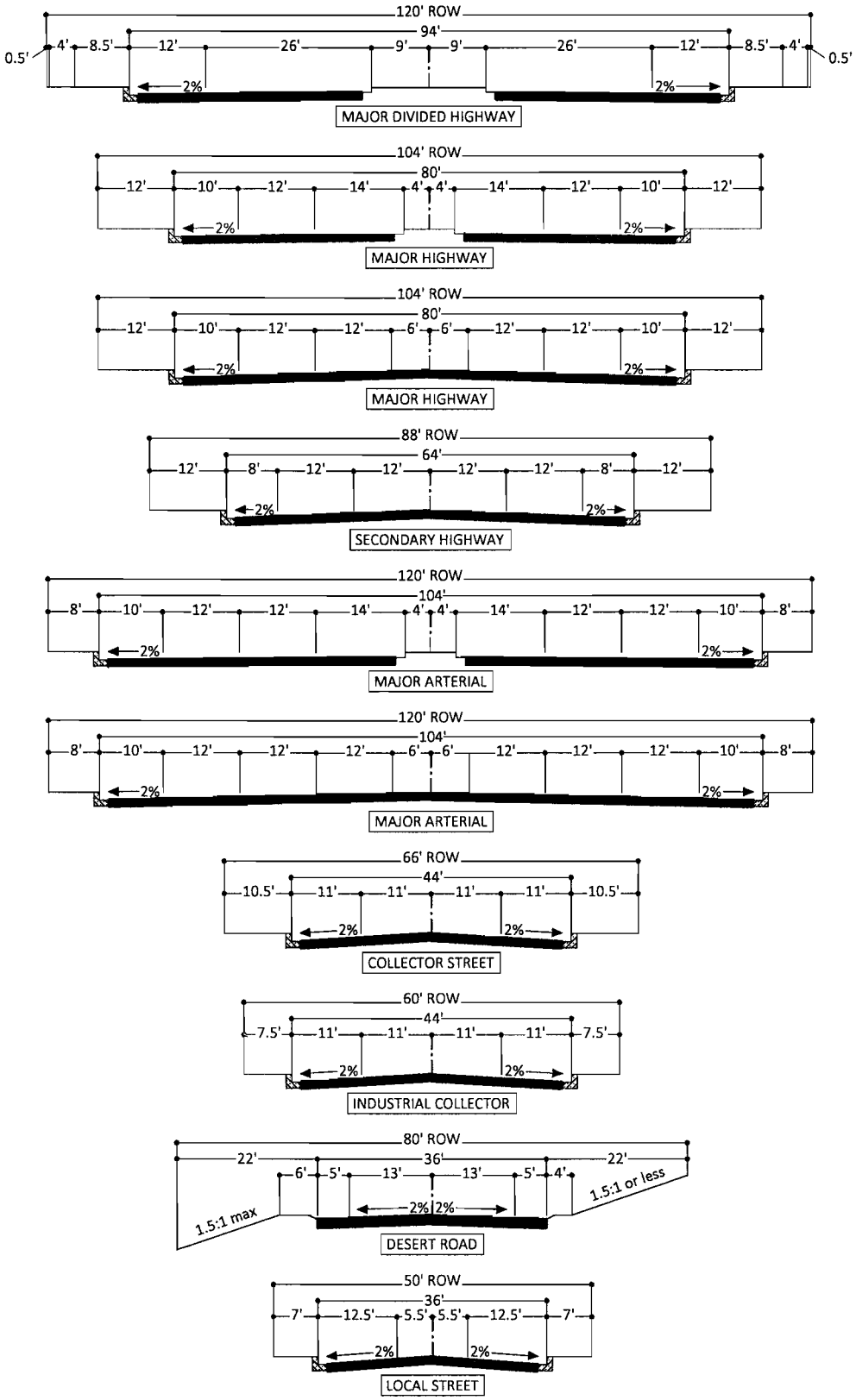
Figure 8
County of San Bernardino General Plan Roadway Cross-Sections



Source: County of San Bernardino

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III. Project Traffic

A. Project Description

The approximately 9 acre project site is proposed to be developed with 186,300 square feet of high-cube warehouse distribution center. The project will have access to Valley Boulevard and Commerce Drive.

B. Trip Generation

The traffic generated by the project is determined by multiplying an appropriate trip generation rate by the quantity of land use. Trip generation rates are predicated on the assumption that energy costs, the availability of roadway capacity, the availability of vehicles to drive, and our life styles remain similar to what we know today. A major change in these variables may affect trip generation rates.

Trip generation rates were determined for daily traffic and morning peak hour inbound and outbound traffic, and evening peak hour inbound and outbound traffic for the proposed land use. By multiplying the traffic generation rates by the land use quantity, the traffic volumes are determined. Table 2 shows the project trip generation based upon rates obtained from the Institute of Transportation Engineers, Trip Generation, 8th Edition, 2008 and Truck Trip Generation Study, City of Fontana, August 2003.

As shown in Table 2, the proposed development is projected to generate approximately 348 daily vehicle trips, 23 of which will occur during the morning peak hour and 25 of which will occur during the evening peak hour.

C. Trip Distribution

The distribution of the project traffic was based on the traffic distribution from the Kaiser Commerce Center Specific Plan. Figures 9 through 12 contain the directional distributions of the project traffic for the proposed land use.

D. Trip Assignment

Based on the identified traffic generation and distributions, project average daily traffic volumes have been calculated and shown on Figure 13. Morning and evening peak hour intersection turning movement volumes expected from the project are shown on Figures 14 and 15, respectively.

E. Traffic Contribution Test

No analysis is required further than 5 miles from the project site. The roadway elements that must be analyzed are dependent on both the analysis year (project Opening Year or Year 2035) and project generated traffic volumes. The identification of the study area, and the intersections and highway segments requiring analysis, was based on an estimate of the

two-way traffic volumes on the roadway segments near the project site. All arterial segments have been included in the analysis when the anticipated project volume equals or exceeds 50 two-way trips in the peak hours. The requirement is 100 two-way peak hour trips for freeways. Figure 16 graphically depicts the project traffic contribution test volumes on all of the roadway segments adjacent to the potential intersection analysis locations until the project volume contribution has clearly dropped below the 50 trip threshold.

The project does not contribute traffic greater than the freeway threshold volume of 100 two-way peak hour trips. The project does not contribute traffic greater than the arterial link threshold volume of 50 two-way trips in the morning and evening peak hours in the adjacent City of Fontana or City of Ontario.

Table 2

Project Traffic Generation[1]

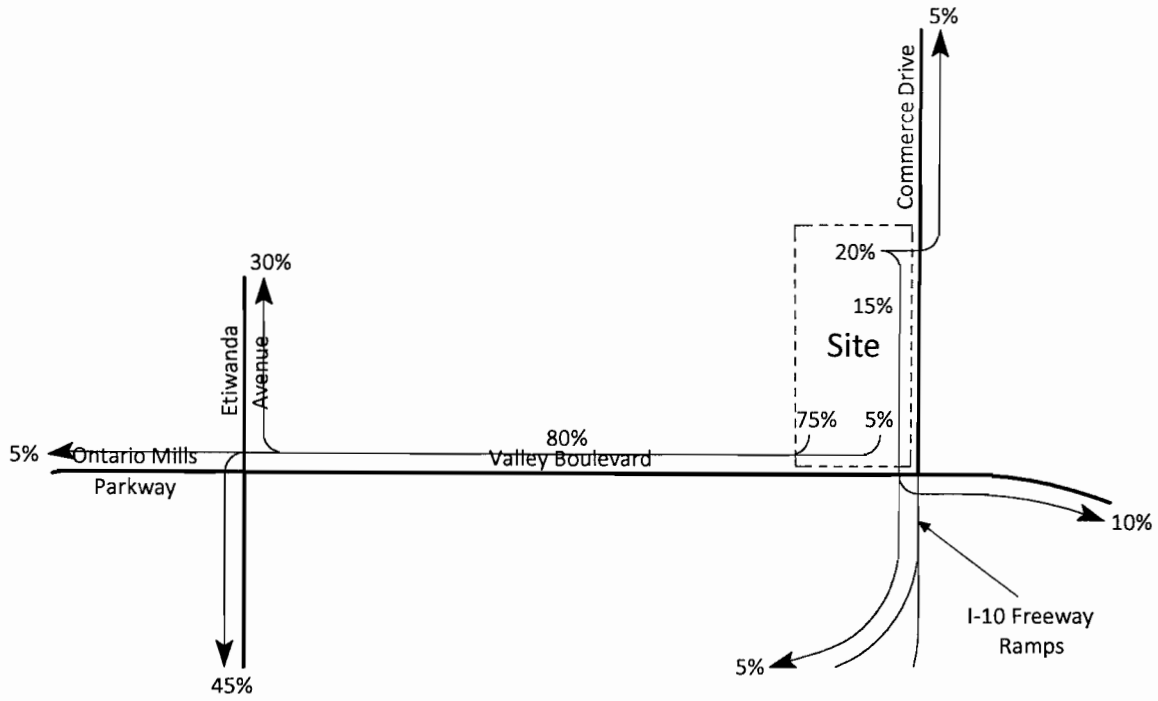
Descriptor	Quantity	Units[2]	Type of Vehicle: Passenger Car	2 Axle Truck	3 Axle Truck	4+ Axle Truck	Total Trucks	Total
Land Use: High Cube	186.300	TSF	71.4%	12.5%	9.1%	6.9%	28.6%	100%
Traffic Generation Rates in trips per TSF								
Daily			1.028	0.180	0.131	0.100	0.411	1.44
Morning Peak Hour			0.064	0.011	0.008	0.006	0.026	0.09
Evening Peak Hour			0.071	0.013	0.009	0.007	0.029	0.10
Traffic Generation in Vehicles								
Daily			192	34	24	19	77	269
Morning Peak Hour								
Inbound			8	1	1	1	3	11
Outbound			4	1	1	-	2	6
Total			12	2	2	1	5	17
Evening Peak Hour								
Inbound			4	1	1	-	2	6
Outbound			9	2	1	1	4	13
Total			13	3	2	1	6	19
Passenger Car Equivalent's (PCE'S) Factor[3]			1.00	1.50	2.00	3.00		
Traffic Generation in PCE's								
Daily			192	51	48	57	156	348
Morning Peak Hour								
Inbound			8	2	2	3	7	15
Outbound			4	2	2	-	4	8
Total			12	4	4	3	11	23
Evening Peak Hour								
Inbound			4	2	2	-	4	8
Outbound			9	3	2	3	8	17
Total			13	5	4	3	12	25

[1] Source: Institute of Transportation Engineers, Trip Generation, 8th Edition, 2008, Land Use Category 152 and Truck Trip Generation Study, City of Fontana, August 2003.

[2] TSF = Thousand Square Feet

[3] Passenger Car Equivalent factors are recommended by San Bernardino Associated Governments.

Figure 9
Project Outbound Traffic Distribution - Cars



Legend

10% = Percent From Project

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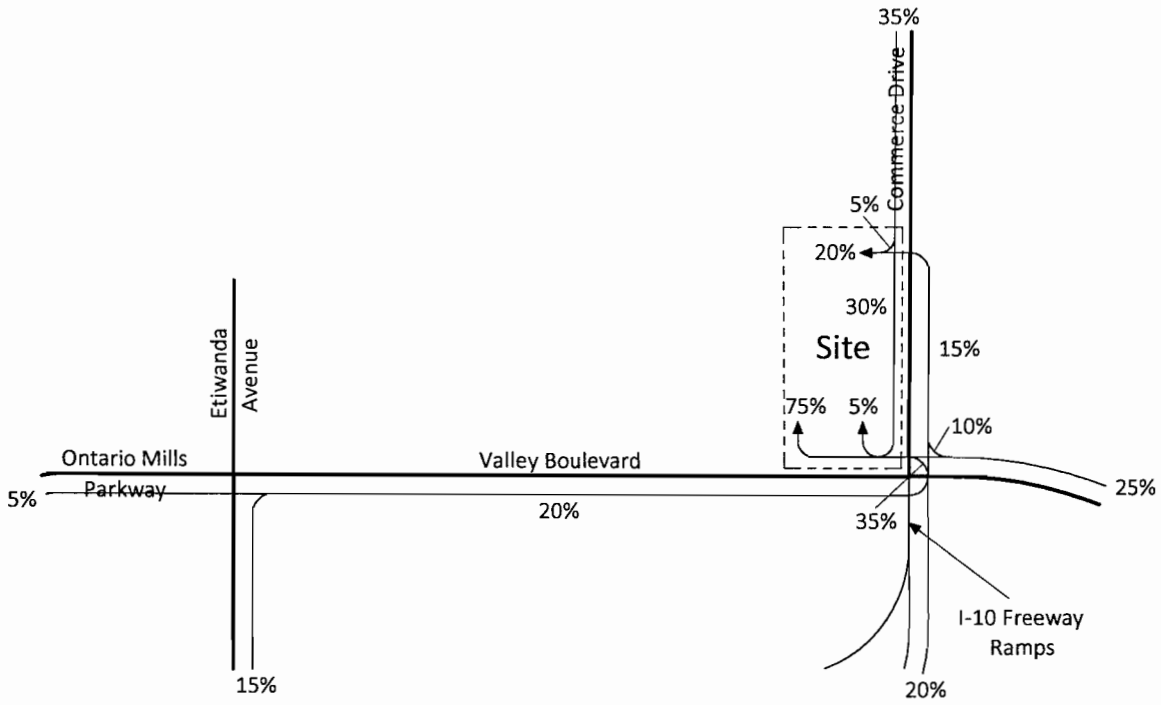
Figure 10
Project Inbound Traffic Distribution - Cars



Legend

10% = Percent To Project

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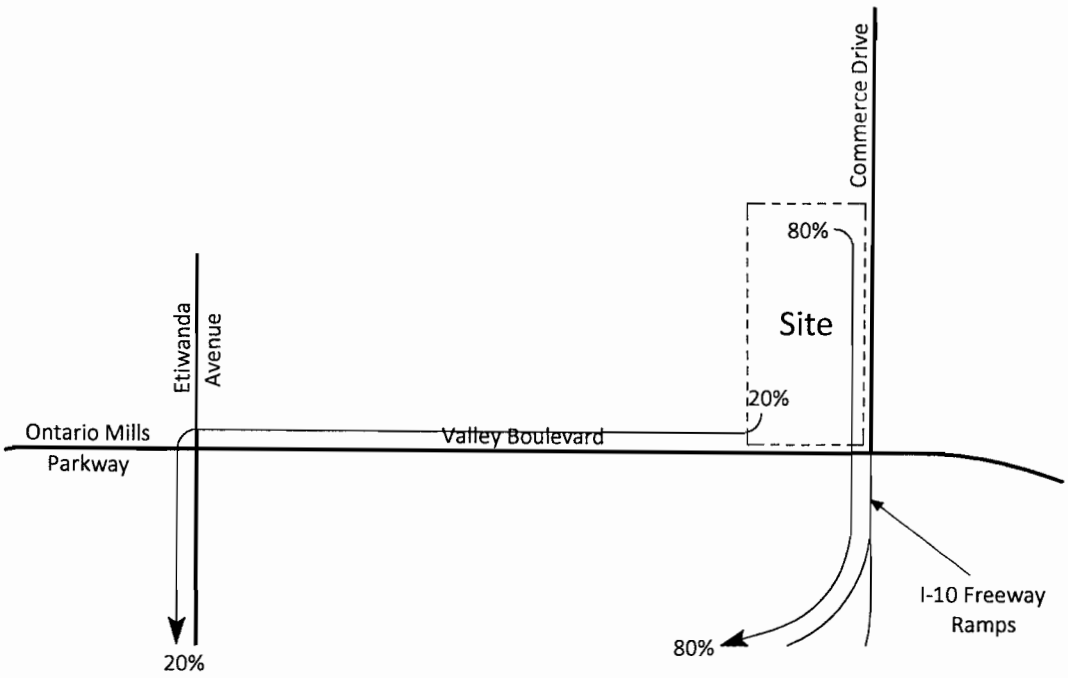
Figure 11
Project Outbound Traffic Distribution - Trucks



Legend

10% = Percent From Project

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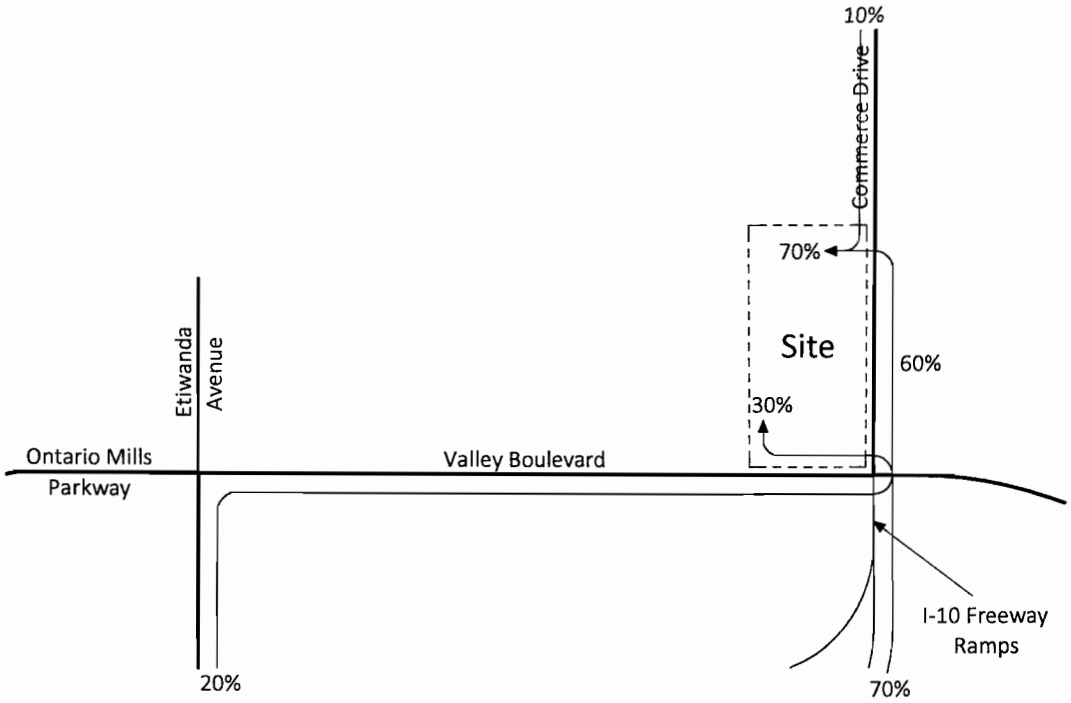
Figure 12
Project Inbound Traffic Distribution - Trucks



Legend

10% = Percent To Project

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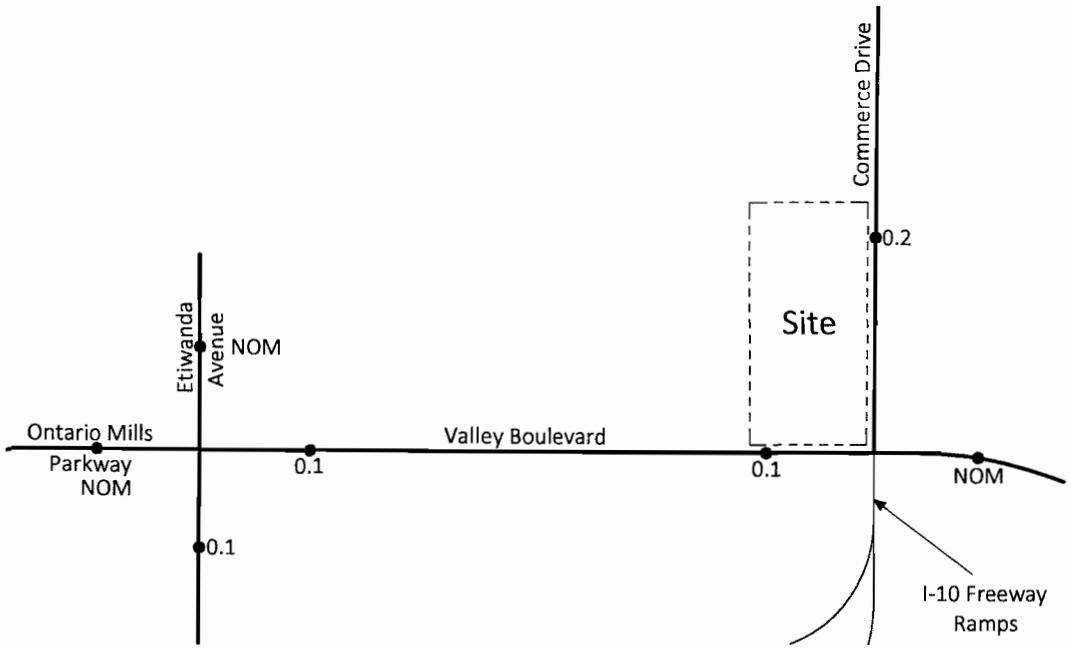
Figure 13
Project Average Daily Traffic Volumes



Legend

0.1 = Vehicles Per Day (1,000's)
NOM = Nominal, Less Than 50 Vehicles Per Day

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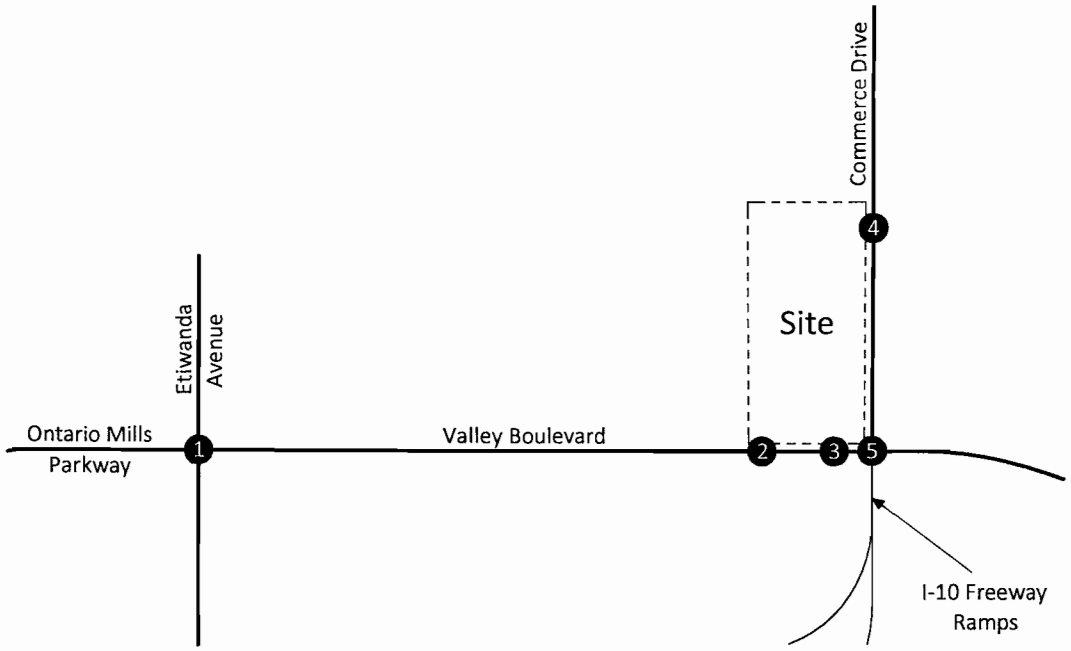
Figure 14
Project Morning Peak Hour Intersection Turning Movement Volumes



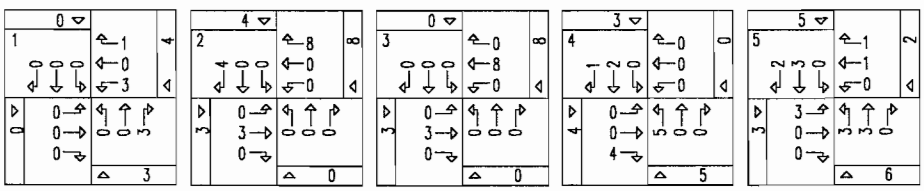


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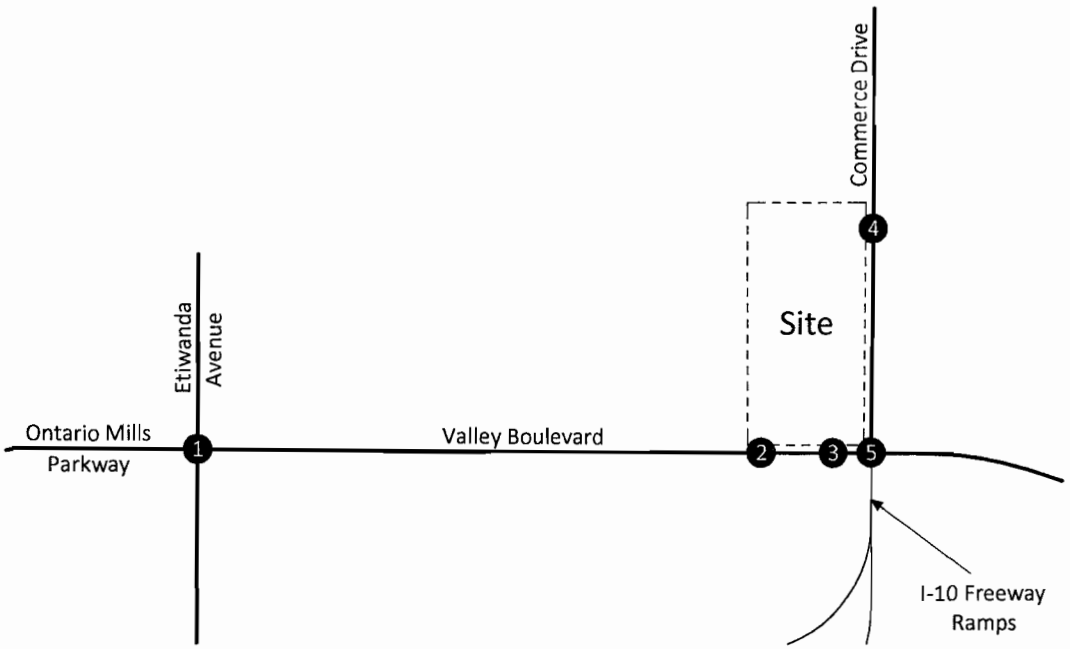
Figure 15
Project Evening Peak Hour Intersection Turning Movement Volumes



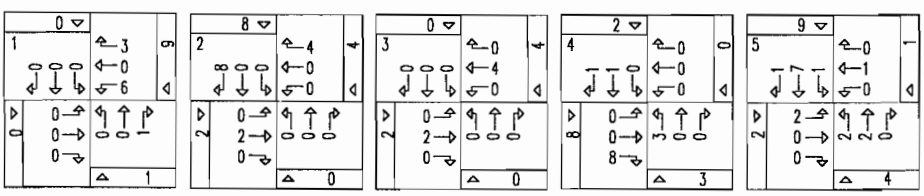


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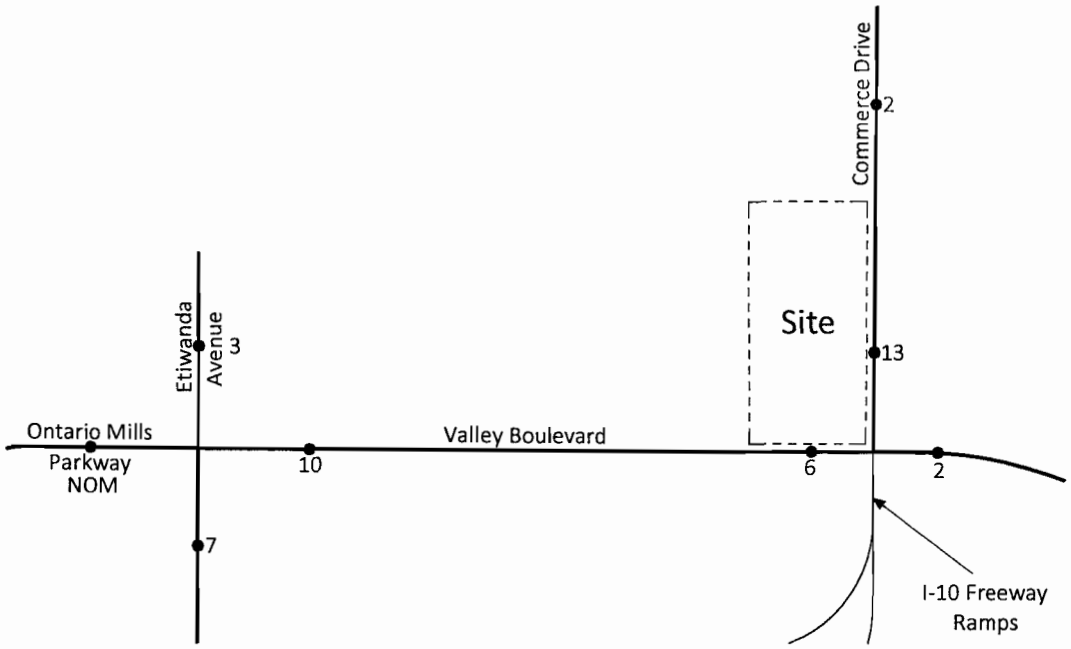
Figure 16
Project Traffic Contribution Test Volumes



Legend

2 = Project Evening Peak Hour Volumes
NOM = Nominal, Rounding Down Results In 0 Project Evening Peak Hour Volumes

N

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IV. Future Conditions

A. Future Volumes

As described within Section I.C., the Year 2035 average daily traffic volume forecasts with the project are developed using a growth increment process based on volumes predicted by the Comprehensive Transportation Plan (CTP) Year 2000 and Year 2035 traffic models. The growth increment for Year 2035 on each roadway segment is the increase in Comprehensive Transportation Plan Traffic Model volumes from existing Year 2010 to Year 2035. The final Year 2035 roadway segment volume used for analysis purposes is then determined by adding the Year 2035 growth increment volume to the existing counted volume.

The Opening Year (2012) traffic projections have been interpolated between Year 2035 traffic volumes and existing traffic volumes utilizing a portion of the growth increment (see Section I.C.). Project traffic volumes for all future projections were estimated using the manual approach.

1. Opening Year (2012) Without Project

   The average daily traffic volumes for Opening Year (2012) Without Project traffic conditions have been determined as described above using the growth interpolation process (see Section I.C.). Opening Year (2012) Without Project average daily traffic volumes are shown on Figure 17.

2. Opening Year (2012) With Project

   The average daily traffic volumes for Opening Year (2012) With Project traffic conditions have been determined as described above using the volume addition process (see Section I.C.). Opening Year (2012) With Project average daily traffic volumes are shown on Figure 18.

3. Year 2035 Without Project

   The average daily traffic volumes for Year 2035 Without Project traffic conditions have been determined as described above using the growth increment process (see Section I.C.). Year 2035 Without Project average daily traffic volumes are shown on Figure 19.

4. Year 2035 With Project

   The average daily traffic volumes for Year 2035 With Project traffic conditions have been determined as described above using the volume addition process (see Section I.C.). Year 2035 With Project average daily traffic volumes are shown on Figure 20.

B. Future Level of Service

1. Opening Year (2012) Without Project

The Opening Year (2012) Without Project delay and Level of Service for the study area roadway network without the proposed project are shown in Table 3. Table 3 shows delay values based on the geometrics at the study area intersections, without improvements. Opening Year (2012) Without Project delay calculation worksheets are provided in Appendix D. Opening Year (2012) Without Project morning and evening peak hour intersection turning movement volumes are shown on Figures 21 and 22, respectively.

For Opening Year (2012) Without Project traffic conditions, the study area intersections are projected to operate at Level of Service D or better during the peak hours.

2. Opening Year (2012) With Project

The Opening Year (2012) With Project delay and Level of Service for the study area roadway network with the proposed project are shown in Table 4. Table 4 shows delay values based on the geometrics at the study area intersections, without improvements. Opening Year (2012) With Project delay calculation worksheets are provided in Appendix D. Opening Year (2012) With Project morning and evening peak hour intersection turning movement volumes are shown on Figures 23 and 24, respectively.

For Opening Year (2012) With Project traffic conditions, the study area intersections are projected to operate at Level of Service D or better during the peak hours.

3. Year 2035 Without Project

The Year 2035 delay and Level of Service for the study area roadway network without the proposed project are shown in Table 5. Table 5 shows delay values based on the geometrics at the study area intersections, without and with improvements. Year 2035 Without Project delay calculation worksheets are provided in Appendix D. Year 2035 Without Project morning and evening peak hour intersection turning movement volumes are shown on Figures 25 and 26, respectively.

For Year 2035 Without Project traffic conditions, the study area intersections are projected to operate at Level of Service D or better during the peak hours.

4. Year 2035 With Project

The Year 2035 With Project delay and Level of Service for the study area roadway network with the proposed project are shown in Table 6. Table 6 shows delay values based on the geometrics at the study area intersections, without improvements. Year 2035 With Project delay calculation worksheets are provided in Appendix D. Year

2035 With Project morning and evening peak hour intersection turning movement volumes are shown on Figures 27 and 28, respectively.

For Year 2035 With Project traffic conditions, the study area intersections are projected to operate at Level of Service D or better during the peak hours.

C. Project Driveway at Commerce Drive Queue Analysis

The project proposes to construct a full access project driveway at Commerce Drive.

The proposed project driveway intersection will provide adequate gaps in vehicular traffic on Commerce Drive to allow vehicles to enter and exit the project site without blocking any parking spaces within the project parking lot or stacking out of the proposed northbound left turn storage bay. It is projected that the 95th percentile demand at this project access will result in two vehicles stacked in the proposed northbound left turn lane and one vehicle stacked in the eastbound left/right turn lane. Specifically, the analysis shows that the 95th percentile likely maximum northbound left turn queue length is 1.8 vehicles (or 2 vehicles when rounded up) and the 95th percentile likely maximum eastbound left/right turn queue length is one vehicle.

Table 7 shows the queue lengths for the proposed full access project driveway at Commerce Drive. The maximum queue lengths of the proposed full access project driveway and Commerce Drive will allow for sufficient storage based upon the proposed storage lengths.

Table 3

Opening Year (Year 2012) Without Project Intersection Delay and Level of Service

Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
		Northbound			Southbound			Eastbound			Westbound				
		L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Etiwanda Avenue (NS) at: Valley Boulevard (EW) - #1	TS	2	2	1>>	1	2.5	0.5	1	2	1>>	2	2	1	32.8-C	31.7-C
Commerce Drive (NS) at: Valley Boulevard (EW) - #5	TS	2	1	1>>	1	1.5	0.5	1	2	1	2	2	1>>	34.0-C	35.6-D

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

L = Left; T = Through; R = Right; >> = Free Right Turn

[2] Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal

Table 4

Opening Year (2012) With Project Intersection Delay and Level of Service

Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
		Northbound			Southbound			Eastbound			Westbound				
		L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Etiwanda Avenue (NS) at:															
Valley Boulevard (EW) - #1	TS	2	2	1>>	1	2.5	0.5	1	2	1>>	2	2	1	32.9-C	31.9-C
Project West Driveway (NS) at:															
Valley Boulevard (EW) - #2	**CSS**	0	0	0	0	0	**1**	0	**3**	0	0	**2.5**	**0.5**	8.9-A	8.9-A
Project East Driveway (NS) at:															
Valley Boulevard (EW) - #3	**CSS**	0	0	0	0	0	**1**	0	**2**	0	0	**2.5**	**0.5**	0.0-A	0.0-A
Commerce Drive (NS) at:															
Project Driveway (EW) - #4	**CSS**	**1**	**2**	0	0	**1.5**	**0.5**	0	**1**	0	0	0	0	10.6-B	11.1-B
Valley Boulevard (EW) - #5	TS	2	1	1>>	1	1.5	0.5	1	2	1	2	2	1>>	34.0-C	35.6-D

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

L = Left; T = Through; R = Right; >> = Free Right Turn; **1** = Improvement

[2] Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level service for the individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal; CSS = Cross Street Stop

Table 5

Year 2035 Without Project Intersection Delay and Level of Service

Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
		Northbound			Southbound			Eastbound			Westbound				
		L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Etiwanda Avenue (NS) at: Valley Boulevard (EW) - #1	TS	2	2	1>>	1	2.5	0.5	1	2	1>>	2	2	1	44.2-D	54.5-D
Commerce Drive (NS) at: Valley Boulevard (EW) - #5	TS	2	1	1>>	1	1.5	0.5	1	2	1	2	2	1>>	34.6-C	44.5-D

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

L = Left; T = Through; R = Right; >> = Free Right Turn

[2] Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for the individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal

Table 6

Year 2035 With Project Intersection Delay and Level of Service

Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Peak Hour Delay-LOS[2]	
		Northbound			Southbound			Eastbound			Westbound				
		L	T	R	L	T	R	L	T	R	L	T	R	Morning	Evening
Etiwanda Avenue (NS) at:															
Valley Boulevard (EW) - #1	TS	2	2	1>>	1	2.5	0.5	1	2	1>>	2	2	1	44.2-D	54.7-D
Project West Driveway (NS) at:															
Valley Boulevard (EW) - #2	CSS	0	0	0	0	0	1	0	3	0	0	2.5	0.5	11.2-B	9.2-A
Project East Driveway (NS) at:															
Valley Boulevard (EW) - #3	CSS	0	0	0	0	0	1	0	2	0	0	2.5	0.5	0.0-A	0.0-A
Commerce Drive (NS) at:															
Project Driveway (EW) - #4	CSS	1	2	0	0	1.5	0.5	0	1	0	0	0	0	10.8-B	11.5-B
Valley Boulevard (EW) - #5	TS	2	1	1>>	1	1.5	0.5	1	2	1	2	2	1>>	34.6-C	44.5-D

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

L = Left; T = Through; R = Right; >> = Free Right Turn; 1 = Improvement

[2] Delay and level of service has been calculated using the following analysis software: Traffix, Version 7.9.0215 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level service for the individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal; CSS = Cross Street Stop

Table 7

Project Driveway at Commerce Drive Queue Analysis

Descriptor	Peak Hour Queue							
	Opening Year (2012)				Year 2035			
	Northbound Left Turn		Eastbound Left/Right Turn		Northbound Left Turn		Eastbound Left/Right Turn	
	Morning	Evening	Morning	Evening	Morning	Evening	Morning	Evening
Number of Vehicles[1]	1.2	1.6	1.0*	1.0*	1.3	1.8	1.0*	1.0*
Length of Queue[2]	50 feet	50 feet	25 feet	25 feet	50 feet	50 feet	25 feet	25 feet
Storage Length Available[3]	150 feet	150 feet	70 feet	70 feet	150 feet	150 feet	70 feet	70 feet

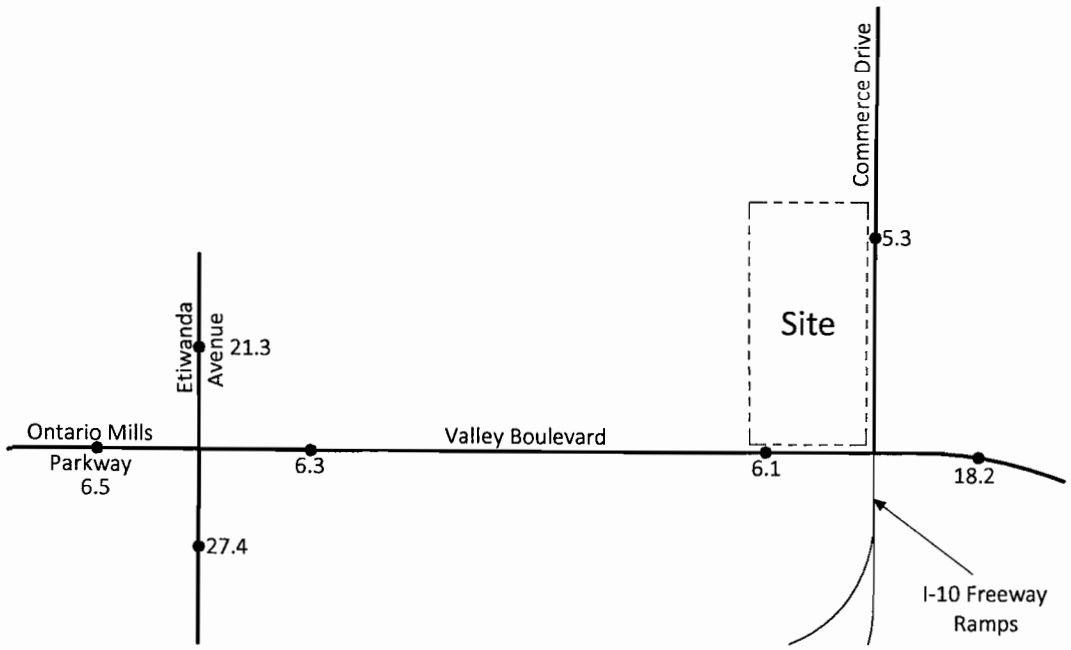
* The trip assignment indicates eastbound left turn traffic to be rounded to zero. In order to analyze the queue, a minimum of one car has been assumed.

[1] Based upon the 95th percentile queue. See intersection delay worksheets in Appendix D.

[2] Number of vehicles (rounded up) times vehicle length. Assumes vehicle length is 25 feet.

[3] Northbound left assumes minimum of 150 feet storage bay (longer storage bay is feasible).

Figure 17
Opening Year (2012) Without Project
Average Daily Traffic Volumes



Legend

18.2 = Vehicles Per Day (1,000's)

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OVER 30 YEARS OF EXCELLENT SERVICE

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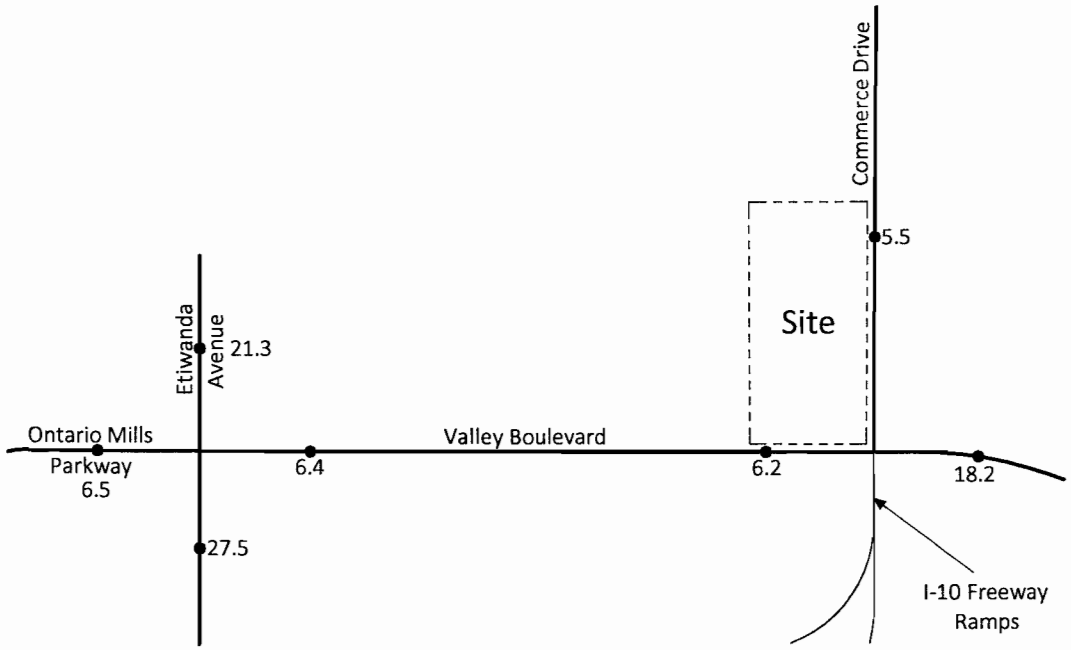
Figure 18
Opening Year (2012) With Project
Average Daily Traffic Volumes



Legend

18.2 = Vehicles Per Day (1,000's)

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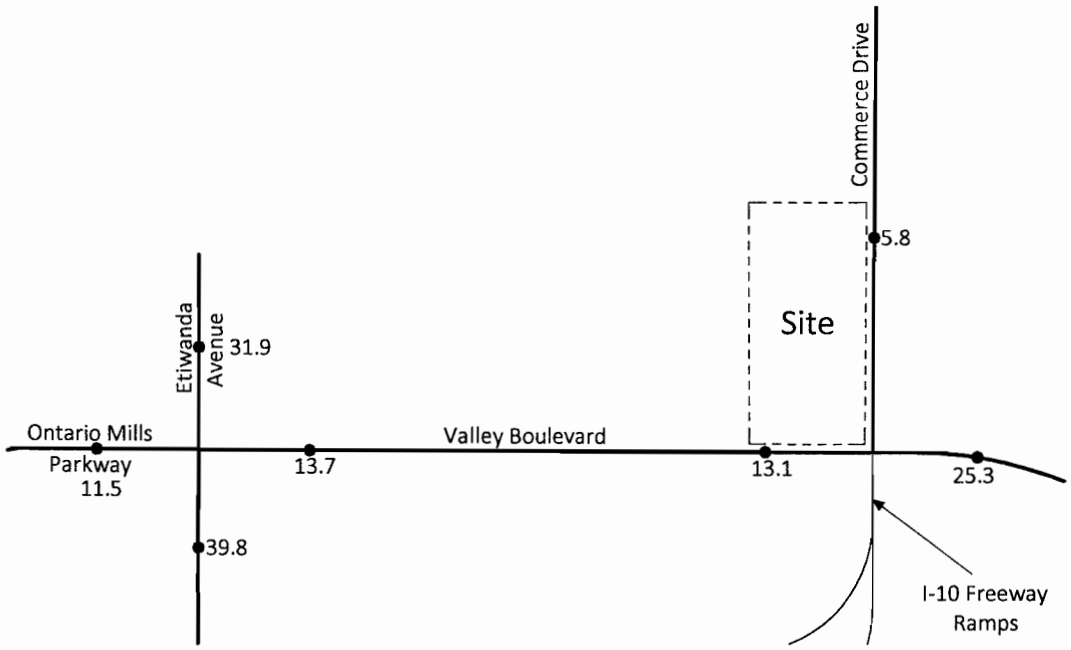
Figure 19
Year 2035 Without Project
Average Daily Traffic Volumes



Legend

25.3 = Vehicles Per Day (1,000's)

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OVER 30 YEARS OF EXCELLENT SERVICE

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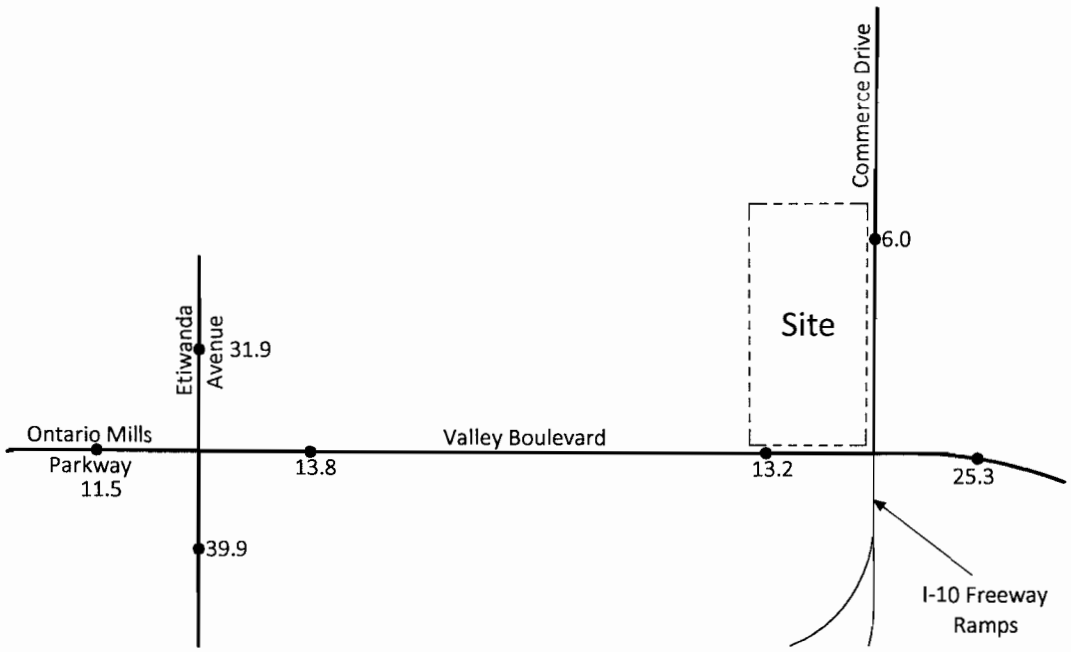
Figure 20
Year 2035 With Project
Average Daily Traffic Volumes



Legend

25.3 = Vehicles Per Day (1,000's)

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OVER 30 YEARS OF EXCELLENT SERVICE

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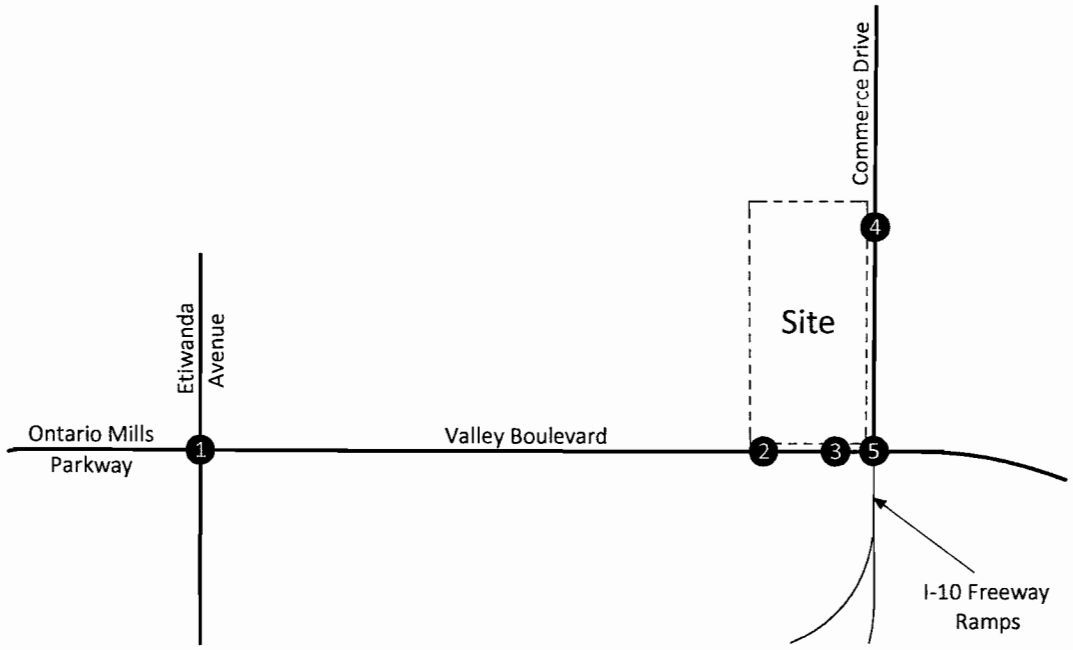
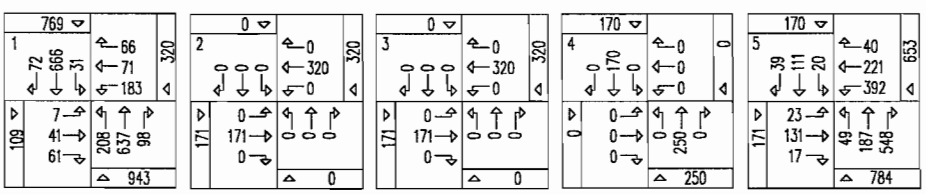
Figure 21
Opening Year (2012) Without Project
Morning Peak Hour Intersection Turning Movement Volumes





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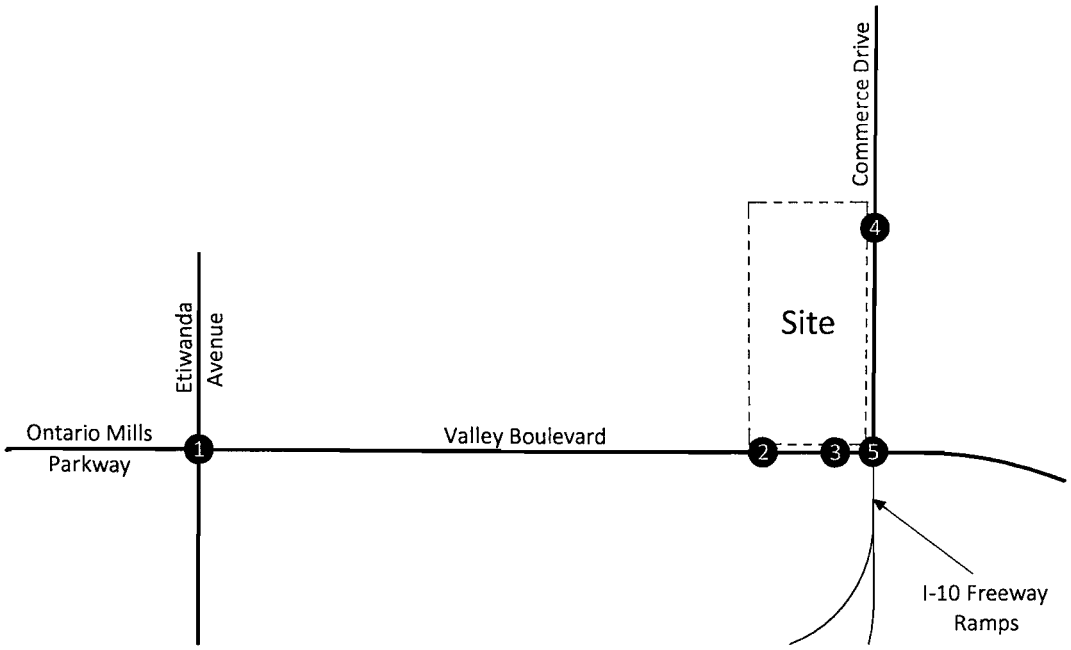
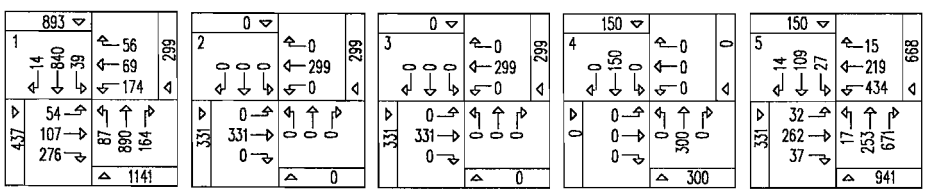
KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 30 YEARS OF EXCELLENT SERVICE

Figure 22
Opening Year (2012) Without Project
Evening Peak Hour Intersection Turning Movement Volumes





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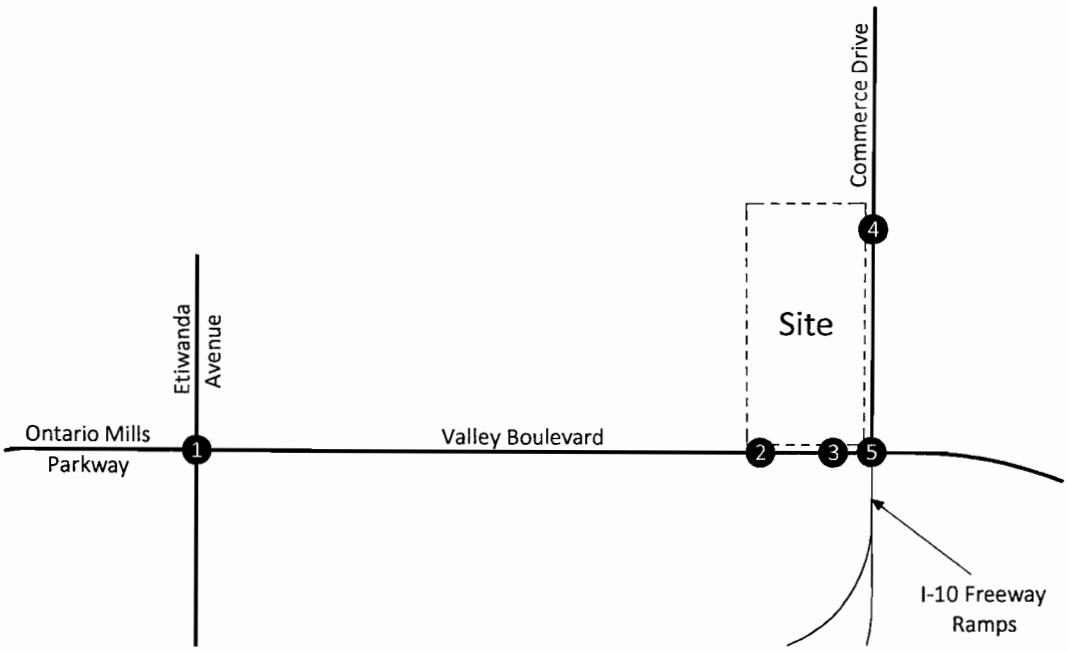
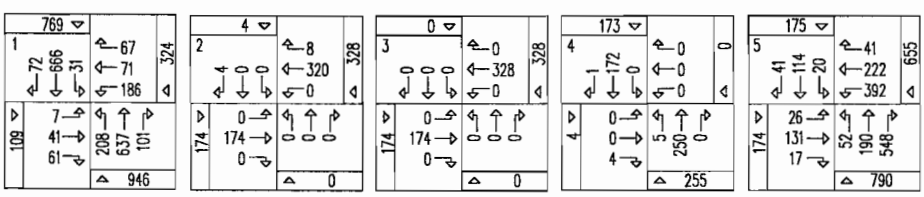
KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 30 YEARS OF EXCELLENT SERVICE

Figure 23
Opening Year (2012) With Project
Morning Peak Hour Intersection Turning Movement Volumes





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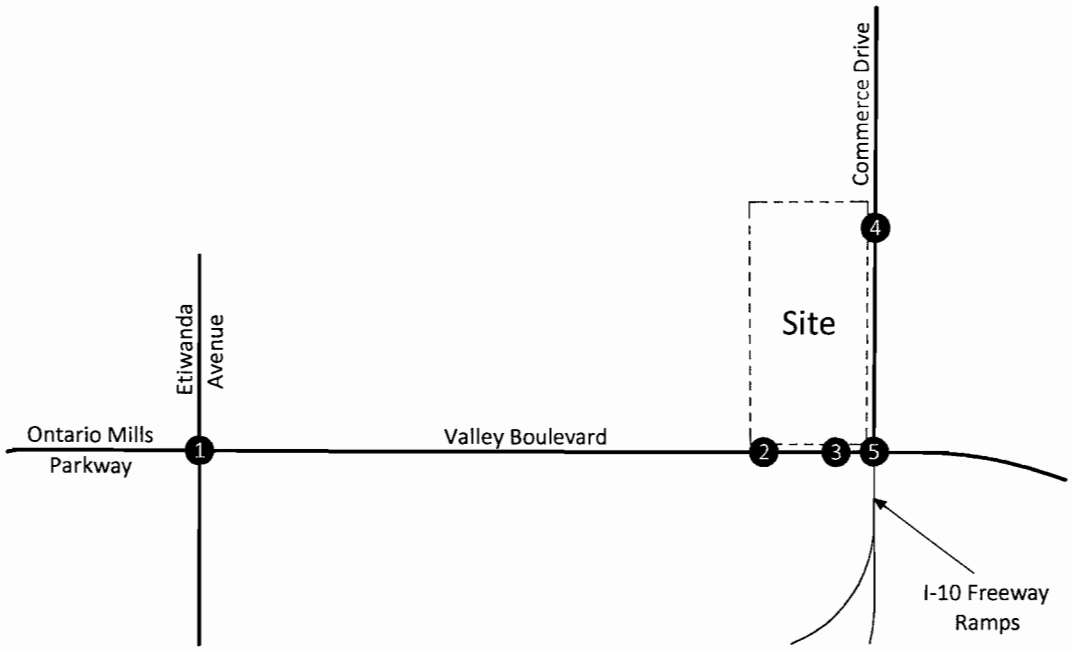
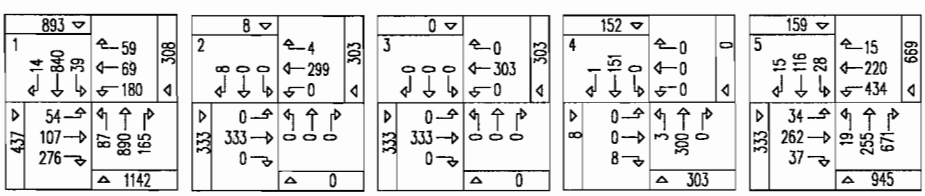
4906/23

KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 30 YEARS OF EXCELLENT SERVICE

Figure 24
Opening Year (2012) With Project
Evening Peak Hour Intersection Turning Movement Volumes





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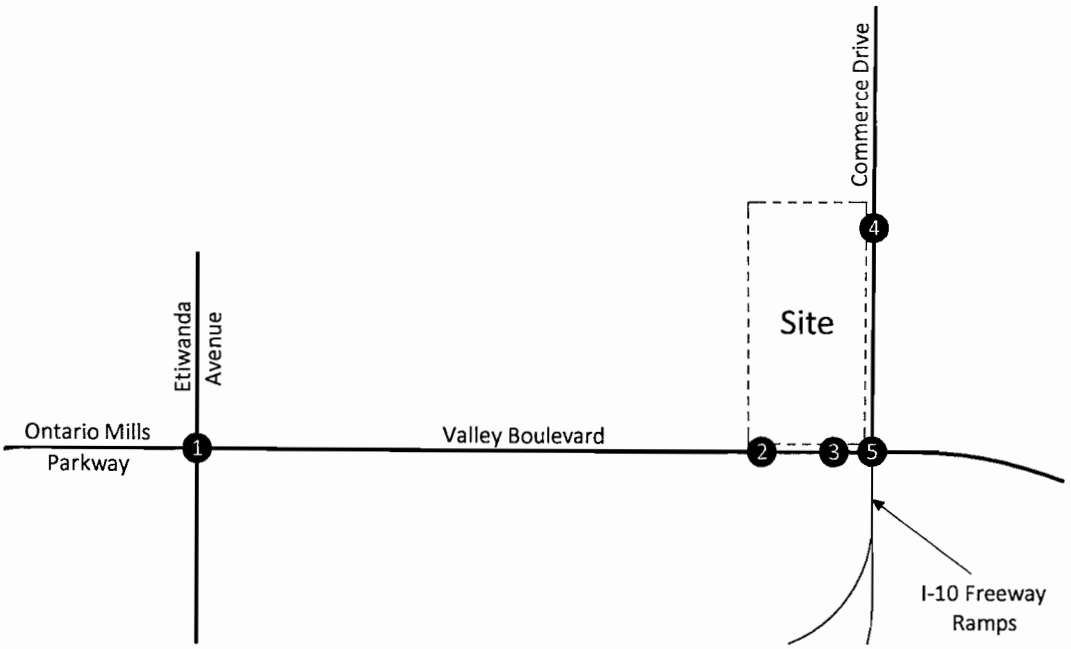
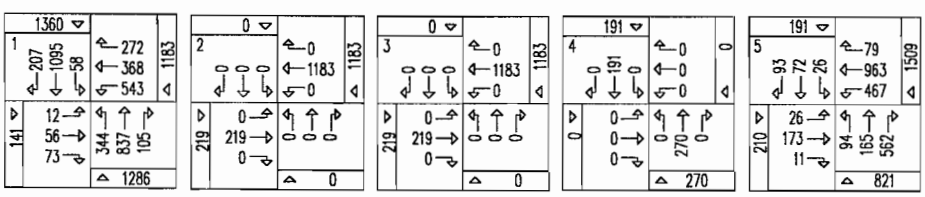
4906/24

KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 30 YEARS OF EXCELLENT SERVICE

Figure 25
Year 2035 Without Project
Morning Peak Hour Intersection Turning Movement Volumes





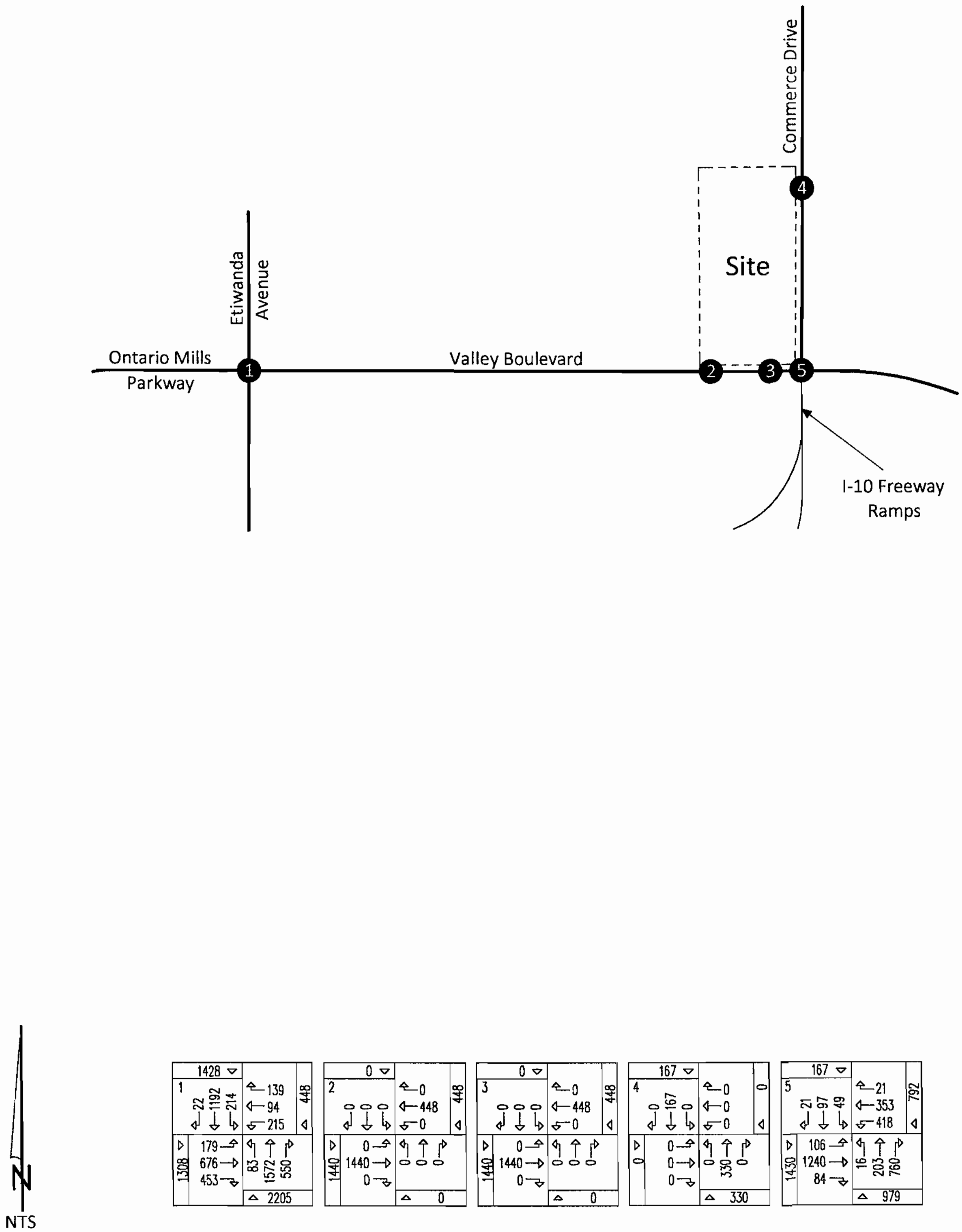
NTS

4906/25

KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 30 YEARS OF EXCELLENT SERVICE

Figure 26
Year 2035 Without Project
Evening Peak Hour Intersection Turning Movement Volumes



4906/26

Kunzman Associates, Inc. Intersection reference numbers are in upper left corner of turning movement boxes.

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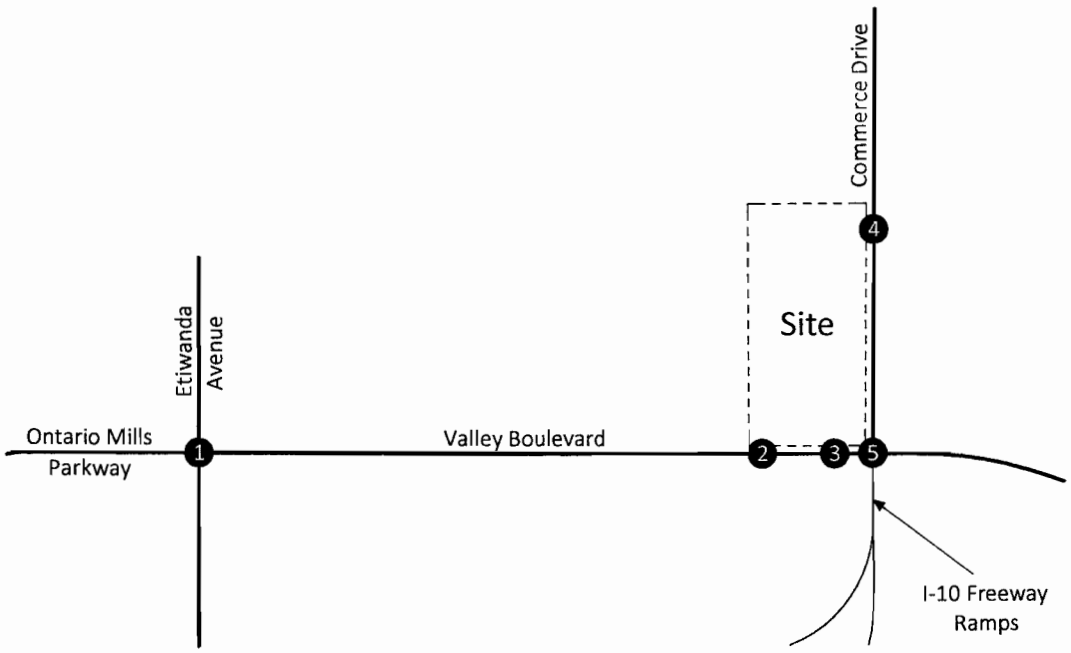
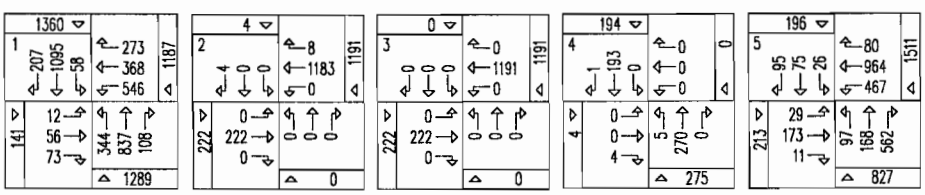
Figure 27
Year 2035 With Project
Morning Peak Hour Intersection Turning Movement Volumes





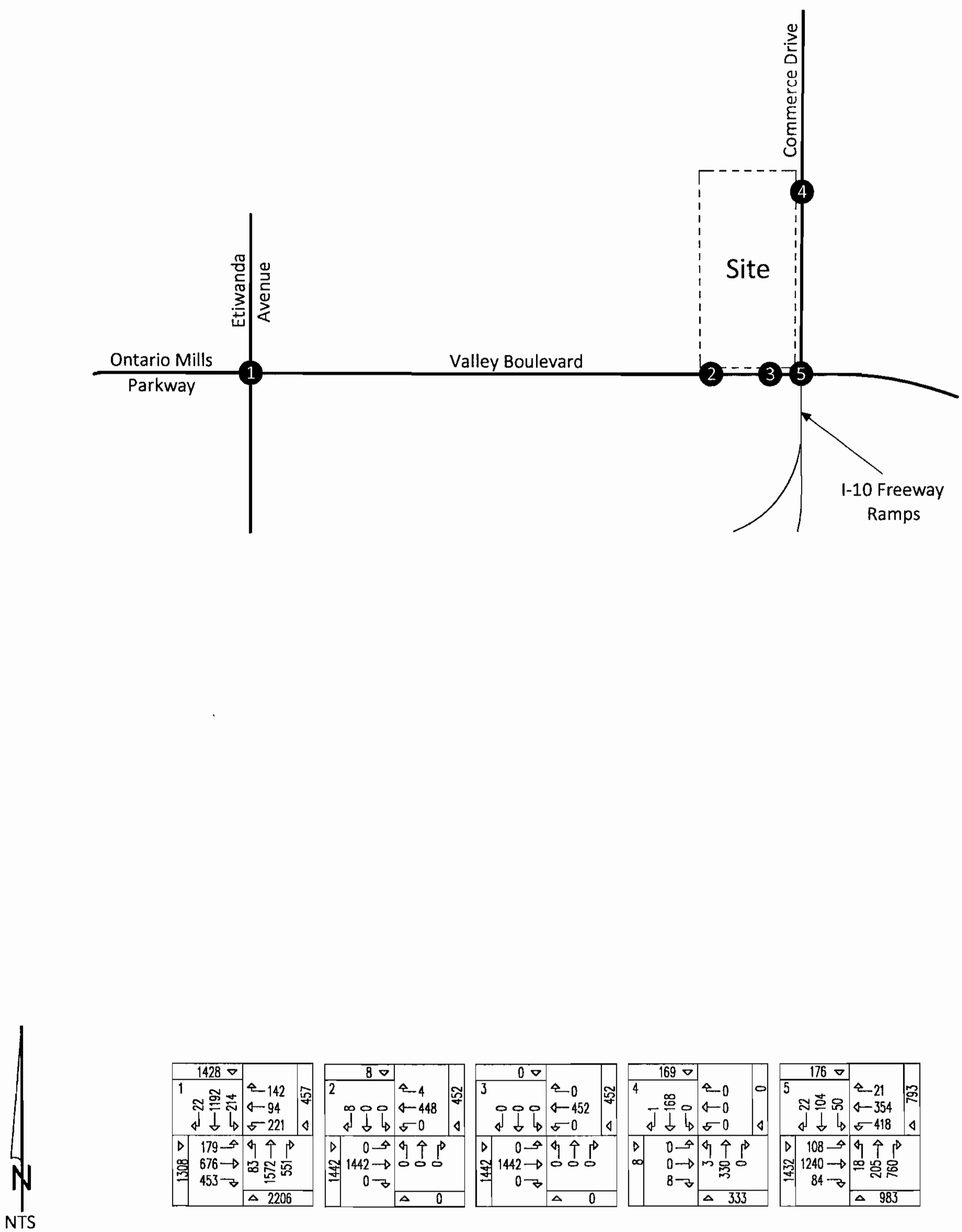
NTS

4906/27

KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 30 YEARS OF EXCELLENT SERVICE

Figure 28
Year 2035 With Project
Evening Peak Hour Intersection Turning Movement Volumes



4906/28

Kunzman Associates, Inc. Intersection reference numbers are in upper left corner of turning movement boxes.

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V. Conclusions and Recommendations

A. Summary

The traffic issues related to the proposed land use and development have been evaluated in the context of the California Environmental Quality Act.

The County of San Bernardino is the lead agency responsible for preparation of the traffic impact analysis, in accordance with the California Environmental Quality Act authorizing legislation. This report analyzes traffic impacts for the anticipated opening date with full occupancy of the development in Year 2012, at which time it will be generating traffic at its full potential, and for the Year 2035.

A series of scoping discussions were conducted with the County of San Bernardino to define the desired analysis locations for each future analysis year. In addition, staff from the County of San Bernardino has also been contacted to discuss the project and its associated travel patterns.

No analysis is required further than 5 miles from the project site. The roadway elements that must be analyzed are dependent on both the analysis year (project Opening Year or Year 2035) and project generated traffic volumes. The identification of the study area, and the intersections and highway segments requiring analysis, was based on an estimate of the two-way traffic volumes on the roadway segments near the project site. All arterial segments have been included in the analysis when the anticipated project volume equals or exceeds 50 two-way trips in the peak hours. The requirement is 100 two-way peak hour trips for freeways.

The project does not contribute traffic greater than the freeway threshold volume of 100 two-way peak hour trips. The project does not contribute traffic greater than the arterial link threshold volume of 50 two-way trips in the morning and evening peak hours in the adjacent City of Fontana or City of Ontario.

B. Existing Conditions

Regional access to the project site is provided by the I-15 Freeway and I-10 Freeway. Local access is provided by various roadways in the vicinity of the site. The east-west roadway which will be most affected by the project includes Valley Boulevard. The north-south roadways which will be most affected by the project include Etiwanda Avenue and Commerce Drive. The project will take access to Valley Boulevard and Commerce Drive.

The study area intersections currently operate at Level of Service D or better during the peak hours for Existing traffic conditions. Existing delay worksheets are provided in Appendix D.

C. Project Traffic

Trip generation rates were determined for daily traffic and morning peak hour inbound and outbound traffic, and evening peak hour inbound and outbound traffic for the proposed land use. By multiplying the traffic generation rates by the land use quantity, the traffic volumes are determined. Table 2 shows the project trip generation based upon rates obtained from the Institute of Transportation Engineers, Trip Generation, 8th Edition, 2008 and Truck Trip Generation Study, City of Fontana, August 2003.

As shown in Table 2, the proposed development is projected to generate approximately 348 daily vehicle trips, 23 of which will occur during the morning peak hour and 25 of which will occur during the evening peak hour.

The distribution of the project traffic was based on the traffic distribution from the Kaiser Commerce Center Specific Plan.

D. Future Conditions

An Opening Year (2012) analysis and Year 2035 analysis are included in this report. Opening Year (2012) traffic operations analysis has been completed for the morning and evening peak hours and are shown in Tables 3 and 4. Morning and evening peak hour traffic operations analysis are summarized in Tables 5 and 6 for the Year 2035.

1. Opening Year (2012) Without Project

   For Opening Year (2012) Without Project traffic conditions, the study area intersections are projected to operate at Level of Service D or better during the peak hours.

2. Opening Year (2012) With Project

   For Opening Year (2012) With Project traffic conditions, the study area intersections are projected to operate at Level of Service D or better during the peak hours.

3. Year 2035 Without Project

   For Year 2035 Without Project traffic conditions, the study area intersections are projected to operate at Level of Service D or better during the peak hours.

4. Year 2035 With Project

   For Year 2035 With Project traffic conditions, the study area intersections are projected to operate at Level of Service D or better during the peak hours.

5. Project Driveway at Commerce Drive Queue Analysis

The maximum queue lengths of the proposed full access project driveway and Commerce Drive will allow for sufficient storage based upon the proposed storage lengths.

E. Recommendations

The recommendations in this section address on-site improvements, off-site improvements and the phasing of all necessary study area transportation improvements.

1. On-Site Improvements

On-site improvements and improvements adjacent to the site will be required in conjunction with the proposed development to ensure adequate circulation within the project itself (see Figure 29).

Construct Commerce Drive from the north project boundary to Valley Boulevard at its ultimate half-section width including landscaping and parkway improvements in conjunction with development.

Construct Valley Boulevard from the west project boundary to Commerce Drive at its ultimate half-section width including landscaping and parkway improvements in conjunction with development.

Sight distance at each project access should be reviewed with respect to California Department of Transportation/County of San Bernardino standards in conjunction with the preparation of final grading, landscaping, and street improvement plans.

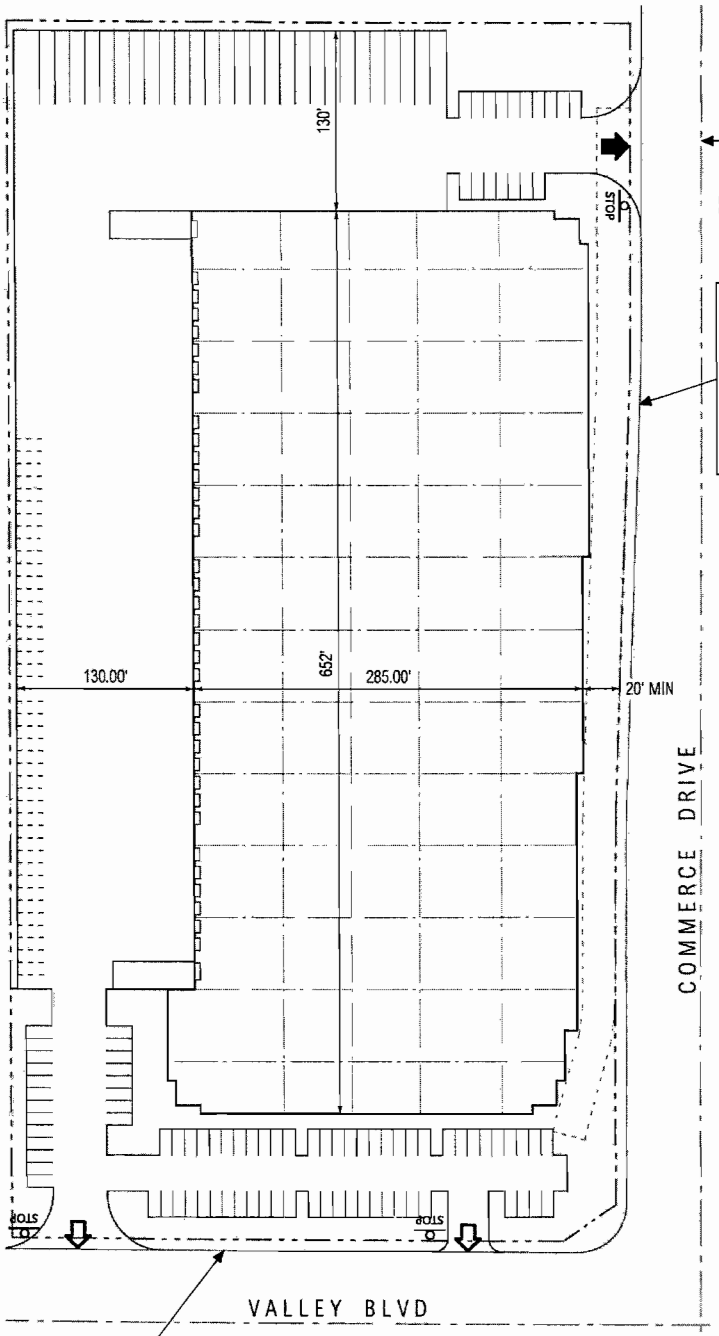
On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

2. Off-Site Improvements

Construct a minimum 150 foot northbound left turn lane at the Commerce Drive and Project Driveway intersection.

As is the case for any roadway design, the County of San Bernardino should periodically review traffic operations in the vicinity of the project once the project is constructed to assure that the traffic operations are satisfactory.

Figure 29
Circulation Recommendations



Construct Commerce Drive from the north project boundary to Valley Boulevard at its ultimate half-section width including landscaping and parkway improvements in conjunction with development.

Legend

- STOP = Stop Sign
- = Full Access Driveway
- = Right Turns In/Out Only Access Driveway
- 150' = Left Turn Pocket Length

Construct Valley Boulevard from the west project boundary to Commerce Drive at its ultimate half-section width including landscaping and parkway improvements in conjunction with development.

Sight distance at each project access should be reviewed with respect to California Department of Transportation/County of San Bernardino standards in conjunction with the preparation of final grading, landscaping, and street improvement plans.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project.

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KUNZMAN ASSOCIATES, INC.

OVER 30 YEARS OF EXCELLENT SERVICE

Appendices

Appendix A – **Glossary of Transportation Terms**

Appendix B – **Traffic Count Worksheets**

Appendix C – **Future Growth Increment Calculation Worksheets**

Appendix D – **Explanation and Calculation of Intersection Delay**

APPENDIX A

Glossary of Transportation Terms

GLOSSARY OF TRANSPORTATION TERMS

COMMON ABBREVIATIONS

AC:	Acres
ADT:	Average Daily Traffic
Caltrans:	California Department of Transportation
DU:	Dwelling Unit
ICU:	Intersection Capacity Utilization
LOS:	Level of Service
TSF:	Thousand Square Feet
V/C:	Volume/Capacity
VMT:	Vehicle Miles Traveled

TERMS

AVERAGE DAILY TRAFFIC: The total volume during a year divided by the number of days in a year. Usually only weekdays are included.

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

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

CAPACITY: The maximum number of vehicles that can be reasonably expected to pass over a given section of a lane or a roadway in a given time period.

CHANNELIZATION: The separation or regulation of conflicting traffic movements into definite paths of travel by the use of pavement markings, raised islands, or other suitable means to facilitate the safe and orderly movements of both vehicles and pedestrians.

CLEARANCE INTERVAL: Nearly same as yellow time. If there is an all red interval after the end of a yellow, then that is also added into the clearance interval.

CORDON: An imaginary line around an area across which vehicles, persons, or other items are counted (in and out).

CYCLE LENGTH: The time period in seconds required for one complete signal cycle.

CUL-DE-SAC STREET: A local street open at one end only, and with special provisions for turning around.

DAILY CAPACITY: The daily volume of traffic that will result in a volume during the peak hour equal to the capacity of the roadway.

DELAY: The time consumed while traffic is impeded in its movement by some element over which it has no control, usually expressed in seconds per vehicle.

DEMAND RESPONSIVE SIGNAL: Same as traffic-actuated signal.

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

DETECTOR: A device that responds to a physical stimulus and transmits a resulting impulse to the signal controller.

DESIGN SPEED: A speed selected for purposes of design. Features of a highway, such as curvature, superelevation, and sight distance (upon which the safe operation of vehicles is dependent) are correlated to design speed.

DIRECTIONAL SPLIT: The percent of traffic in the peak direction at any point in time.

DIVERSION: The rerouting of peak hour traffic to avoid congestion.

FORCED FLOW: Opposite of free flow.

FREE FLOW: Volumes are well below capacity. Vehicles can maneuver freely and travel is unimpeded by other traffic.

GAP: Time or distance between successive vehicles in a traffic stream, rear bumper to front bumper.

HEADWAY: Time or distance spacing between successive vehicles in a traffic stream, front bumper to front bumper.

INTERCONNECTED SIGNAL SYSTEM: A number of intersections that are connected to achieve signal progression.

LEVEL OF SERVICE: A qualitative measure of a number of factors, which include speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs.

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

MINIMUM ACCEPTABLE GAP: Smallest time headway between successive vehicles in a traffic stream into which another vehicle is willing and able to cross or merge.

MULTI-MODAL: More than one mode; such as automobile, bus transit, rail rapid transit, and bicycle transportation modes.

OFFSET: The time interval in seconds between the beginning of green at one intersection and the beginning of green at an adjacent intersection.

PLATOON: A closely grouped component of traffic that is composed of several vehicles moving, or standing ready to move, with clear spaces ahead and behind.

ORIGIN-DESTINATION SURVEY: A survey to determine the point of origin and the point of destination for a given vehicle trip.

PASSENGER CAR EQUIVALENTS (PCE): One car is one Passenger Car Equivalent. A truck is equal to 2 or 3 Passenger Car Equivalents in that a truck requires longer to start, goes slower, and accelerates slower. Loaded trucks have a higher Passenger Car Equivalent than empty trucks.

PEAK HOUR: The 60 consecutive minutes with the highest number of vehicles.

PRETIMED SIGNAL: A type of traffic signal that directs traffic to stop and go on a predetermined time schedule without regard to traffic conditions. Also, fixed time signal.

PROGRESSION: A term used to describe the progressive movement of traffic through several signalized intersections.

SCREEN-LINE: An imaginary line or physical feature across which all trips are counted, normally to verify the validity of mathematical traffic models.

SIGNAL CYCLE: The time period in seconds required for one complete sequence of signal indications.

SIGNAL PHASE: The part of the signal cycle allocated to one or more traffic movements.

STARTING DELAY: The delay experienced in initiating the movement of queued traffic from a stop to an average running speed through a signalized intersection.

TRAFFIC-ACTUATED SIGNAL: A type of traffic signal that directs traffic to stop and go in accordance with the demands of traffic, as registered by the actuation of detectors.

TRIP: The movement of a person or vehicle from one location (origin) to another (destination). For example, from home to store to home is two trips, not one.

TRIP-END: One end of a trip at either the origin or destination; i.e. each trip has two trip-ends. A trip-end occurs when a person, object, or message is transferred to or from a vehicle.

TRIP GENERATION RATE: The quality of trips produced and/or attracted by a specific land use stated in terms of units such as per dwelling, per acre, and per 1,000 square feet of floor space.

TRUCK: A vehicle having dual tires on one or more axles, or having more than two axles.

UNBALANCED FLOW: Heavier traffic flow in one direction than the other. On a daily basis, most facilities have balanced flow. During the peak hours, flow is seldom balanced in an urban area.

VEHICLE MILES OF TRAVEL: A measure of the amount of usage of a section of highway, obtained by multiplying the average daily traffic by length of facility in miles.

APPENDIX B

Traffic Count Worksheets

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # Historical

Location: Etiwanda Ave & Valley Blvd City: Fontana Date: 11/17/2010 Day: Wednesday

CONTROL: Signalized

		LANES:	2	2	1	1	3	0	1	2	1	2	2	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS		22	90	10	3	75	6	0	4	6	12	6	4
	2-Axle Trucks		0	2	0	0	1	0	0	0	0	4	0	0
	3-Axle Trucks		0	7	1	0	5	0	0	0	1	1	0	1
	4-Axle Trucks		0	1	0	0	1	0	0	0	0	0	0	0
	5-Axle Trucks+		0	7	2	1	7	0	0	1	1	3	0	1
7:15	CARS		24	111	11	0	88	11	0	2	7	9	6	4
	2-Axle Trucks		1	2	0	1	4	0	0	0	2	0	0	0
	3-Axle Trucks		1	4	1	1	8	0	0	0	0	2	1	0
	4-Axle Trucks		1	1	0	0	0	0	0	0	0	1	1	0
	5-Axle Trucks+		5	7	1	1	9	0	0	2	1	3	2	3
7:30	CARS		53	107	11	6	100	20	1	6	4	35	5	5
	2-Axle Trucks		1	8	1	0	3	0	1	1	0	2	0	0
	3-Axle Trucks		1	3	3	0	6	0	0	0	0	1	0	0
	4-Axle Trucks		0	0	2	0	0	0	0	0	1	0	1	0
	5-Axle Trucks+		3	6	2	0	15	1	0	0	3	6	0	1
7:45	CARS		51	121	21	1	118	17	3	6	15	18	8	4
	2-Axle Trucks		1	4	0	0	3	0	0	0	1	0	1	1
	3-Axle Trucks		0	3	2	0	6	0	0	0	0	0	0	1
	4-Axle Trucks		0	4	1	0	2	0	0	0	0	1	1	0
	5-Axle Trucks+		0	14	0	2	17	0	0	2	2	3	0	2
8:00	CARS		20	68	16	5	79	6	0	8	6	15	0	4
	2-Axle Trucks		2	7	0	0	1	0	0	0	0	2	0	3
	3-Axle Trucks		1	9	2	0	8	0	0	0	0	0	0	1
	4-Axle Trucks		1	4	0	0	2	0	0	0	0	1	2	0
	5-Axle Trucks+		1	10	3	1	14	0	0	1	1	4	1	0
8:15	CARS		16	54	12	3	62	5	2	3	4	22	1	3
	2-Axle Trucks		0	7	0	0	9	0	0	0	0	1	0	1
	3-Axle Trucks		1	12	0	0	9	0	0	0	2	2	0	1
	4-Axle Trucks		1	8	1	0	1	0	0	0	0	3	0	0
	5-Axle Trucks+		1	18	2	1	15	0	1	1	4	1	1	2
8:30	CARS		9	69	17	5	71	2	0	2	4	16	5	4
	2-Axle Trucks		2	8	1	0	8	1	1	1	0	0	0	1
	3-Axle Trucks		2	10	3	0	15	1	0	0	0	5	1	1
	4-Axle Trucks		1	1	2	0	5	0	0	0	0	1	0	0
	5-Axle Trucks+		2	15	3	1	12	0	0	1	1	3	1	1
8:45	CARS		24	81	14	4	55	1	3	3	6	12	1	2
	2-Axle Trucks		0	6	1	0	2	0	0	0	3	1	0	0
	3-Axle Trucks		0	8	0	0	10	0	0	0	0	2	0	1
	4-Axle Trucks		0	1	0	0	1	0	0	0	0	1	2	0
	5-Axle Trucks+		1	10	4	1	22	0	0	0	2	3	2	1

MOVEMENT TOTALS

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
CARS	219	701	112	27	648	68	9	34	52	139	32	30
2-Axle Trucks	7	44	3	1	31	1	2	2	6	10	1	6
3-Axle Trucks	6	56	12	1	67	1	0	0	3	13	2	6
4-Axle Trucks	4	20	6	0	12	0	0	0	1	8	7	0
5-Axle Trucks+	13	87	17	8	111	1	1	8	15	26	7	11
TOTALS	249	908	150	37	869	71	12	44	77	196	49	53
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	167	493	77	18	483	55	5	28	43	103	29	29
PEAK HR. FACTOR:		0.830			0.837			0.655			0.719	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # Historical

Location: Etiwanda Ave & Valley Blvd City: Fontana Date: 11/17/2010 Day: Wednesday

CONTROL: Signalized

		LANES:	2	2	1	1	3	0	1	2	1	2	2	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		9	130	15	8	138	3	7	20	39	31	6	7
	2-Axle Trucks		2	2	1	0	3	0	0	1	0	1	0	0
	3-Axle Trucks		1	10	3	0	5	0	0	1	0	2	0	1
	4-Axle Trucks		1	3	1	0	4	0	0	0	1	1	0	0
	5-Axle Trucks+		0	5	0	0	9	0	0	1	3	2	2	1
16:15	CARS		17	124	19	4	125	2	6	8	28	21	5	4
	2-Axle Trucks		1	4	0	0	2	0	0	0	1	0	0	0
	3-Axle Trucks		0	9	3	0	5	1	1	0	0	4	0	0
	4-Axle Trucks		2	2	0	0	3	0	0	0	0	0	1	0
	5-Axle Trucks+		1	9	1	2	10	0	0	0	0	1	0	0
16:30	CARS		18	175	15	3	144	3	5	19	90	34	10	7
	2-Axle Trucks		0	2	0	0	4	0	0	0	0	0	1	1
	3-Axle Trucks		0	6	1	0	4	0	0	0	1	2	0	0
	4-Axle Trucks		0	3	0	0	0	0	0	0	1	1	0	0
	5-Axle Trucks+		2	14	4	1	7	0	0	0	3	1	0	1
16:45	CARS		22	149	20	4	181	7	17	13	48	26	17	5
	2-Axle Trucks		0	2	0	0	4	0	0	0	1	0	0	1
	3-Axle Trucks		1	5	2	0	9	0	0	0	0	1	0	0
	4-Axle Trucks		0	1	0	0	2	0	0	0	1	0	0	0
	5-Axle Trucks+		1	9	2	1	9	0	0	1	1	3	0	0
17:00	CARS		12	135	13	5	171	2	12	8	45	26	18	15
	2-Axle Trucks		0	3	0	0	3	0	0	0	1	0	0	0
	3-Axle Trucks		1	1	2	1	4	0	0	0	3	2	0	0
	4-Axle Trucks		0	3	1	0	3	0	0	2	1	1	1	0
	5-Axle Trucks+		1	5	5	1	13	0	1	1	0	7	0	0
17:15	CARS		21	186	15	2	119	1	4	13	33	25	14	10
	2-Axle Trucks		0	2	1	0	1	0	0	0	0	0	1	0
	3-Axle Trucks		0	7	1	0	6	0	0	0	0	1	0	0
	4-Axle Trucks		0	2	0	0	2	0	0	0	0	0	0	1
	5-Axle Trucks+		1	8	3	0	9	0	0	0	2	4	0	0
17:30	CARS		27	191	18	0	113	5	10	17	60	34	12	12
	2-Axle Trucks		0	1	1	0	6	0	0	0	0	0	0	0
	3-Axle Trucks		1	7	2	0	2	0	0	0	0	2	0	0
	4-Axle Trucks		0	0	0	0	2	0	0	1	1	0	0	0
	5-Axle Trucks+		0	7	2	0	7	0	0	0	1	2	0	1
17:45	CARS		18	161	14	6	88	4	3	14	27	20	7	8
	2-Axle Trucks		0	1	0	0	1	0	0	0	0	1	0	0
	3-Axle Trucks		0	3	1	0	4	0	0	1	0	2	0	0
	4-Axle Trucks		0	2	0	0	1	0	0	0	1	1	0	0
	5-Axle Trucks+		1	9	1	1	8	0	0	0	0	4	0	1

MOVEMENT TOTALS

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
CARS	144	1251	129	32	1079	27	64	112	370	217	89	68
2-Axle Trucks	3	17	3	0	24	0	0	1	3	2	2	2
3-Axle Trucks	4	48	15	1	39	1	1	2	4	16	0	1
4-Axle Trucks	3	16	2	0	17	0	0	3	6	4	2	1
5-Axle Trucks+	7	66	18	6	72	0	1	3	10	24	2	4
TOTALS	161	1398	167	39	1231	28	66	121	393	263	95	76
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

PM Peak Hr Begins at: 1630 PM

PEAK VOLUMES =	80	718	85	18	695	13	39	57	231	134	62	41
PEAK HR. FACTOR:		0.894			0.836			0.687			0.846	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # Historical

Location: Commerce Dr & Valley Blvd City: Fontana Date: 11/17/2010 Day: Wednesday

CONTROL: Signalized

		LANES:	1	2	1	1	1.5	0.5	1	2	1	2	2	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00	CARS		1	16	67	2	20	3	1	13	2	41	20	0
	2-Axle Trucks		0	1	2	0	1	2	1	0	1	6	1	0
	3-Axle Trucks		1	0	2	0	0	0	1	1	0	0	3	0
	4-Axle Trucks		0	0	0	0	0	0	0	0	0	0	1	0
	5-Axle Trucks+		0	6	14	1	5	1	0	3	1	14	1	0
7:15	CARS		5	20	76	0	6	4	3	4	2	47	16	4
	2-Axle Trucks		0	1	4	0	1	0	0	1	0	2	1	1
	3-Axle Trucks		0	0	2	0	2	0	0	1	0	1	3	0
	4-Axle Trucks		1	1	1	0	1	0	0	0	0	2	1	0
	5-Axle Trucks+		1	2	7	0	9	0	0	2	1	8	9	0
7:30	CARS		8	25	92	4	14	5	0	15	2	34	31	2
	2-Axle Trucks		0	1	2	0	1	1	0	1	1	3	1	0
	3-Axle Trucks		1	0	0	0	0	0	1	1	0	2	2	0
	4-Axle Trucks		0	0	5	0	1	0	0	1	1	0	1	1
	5-Axle Trucks+		1	5	9	1	5	2	1	2	0	18	2	3
7:45	CARS		4	36	102	2	17	5	2	18	1	44	36	1
	2-Axle Trucks		0	0	1	0	1	0	0	0	1	4	0	0
	3-Axle Trucks		0	2	3	0	0	0	2	0	0	6	0	2
	4-Axle Trucks		1	1	1	0	1	0	0	1	0	0	0	0
	5-Axle Trucks+		1	4	14	0	6	2	0	2	2	7	2	2
8:00	CARS		0	18	81	5	8	5	0	24	1	38	12	0
	2-Axle Trucks		0	1	4	0	0	0	0	0	0	2	2	0
	3-Axle Trucks		0	0	2	0	0	0	1	1	0	2	1	0
	4-Axle Trucks		2	0	0	0	0	0	0	0	0	0	2	0
	5-Axle Trucks+		2	10	16	0	5	0	0	6	0	22	5	1
8:15	CARS		1	16	76	4	4	1	0	18	2	29	22	2
	2-Axle Trucks		0	0	1	1	2	0	0	1	0	3	3	0
	3-Axle Trucks		0	0	2	0	0	0	2	1	0	5	1	1
	4-Axle Trucks		2	0	1	0	0	0	0	1	0	2	1	1
	5-Axle Trucks+		0	9	12	0	6	1	2	2	0	14	3	0
8:30	CARS		4	12	68	0	12	2	0	14	2	37	24	4
	2-Axle Trucks		0	2	1	0	1	1	0	0	1	1	1	0
	3-Axle Trucks		4	0	7	0	2	1	0	2	0	3	2	0
	4-Axle Trucks		1	0	2	0	0	0	1	1	0	3	0	0
	5-Axle Trucks+		0	5	19	3	5	0	0	3	1	10	6	1
8:45	CARS		3	10	67	1	7	2	2	23	1	30	13	2
	2-Axle Trucks		1	0	5	2	2	1	0	0	0	1	2	0
	3-Axle Trucks		0	0	3	0	2	0	0	0	1	2	3	0
	4-Axle Trucks		2	0	0	0	0	0	0	0	0	1	1	1
	5-Axle Trucks+		0	2	18	1	6	1	1	3	2	15	6	0

MOVEMENT TOTALS

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
CARS	26	153	629	18	88	27	8	129	13	300	174	15
2-Axle Trucks	1	6	20	3	9	5	1	3	4	22	11	1
3-Axle Trucks	6	2	21	0	6	1	7	7	1	21	15	3
4-Axle Trucks	9	2	10	0	3	0	1	4	1	8	7	3
5-Axle Trucks+	5	43	109	6	47	7	4	23	7	108	34	7
TOTALS	47	206	789	27	153	40	21	166	26	459	241	29
	NL	*NT*	*NR*	*SL*	*ST*	*SR*	*EL*	*ET*	*ER*	*WL*	*WT*	*WR*

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	23	128	424	17	71	22	11	95	11	235	127	16
PEAK HR. FACTOR:		0.846			0.809			0.886			0.909	

NATIONAL DATA AND SURVEYING SERVICES

Axle Count

Project # Historical

Location: Commerce Dr & Valley Blvd City: Fontana Date: 11/17/2010 Day: Wednesday

CONTROL: Signalized

		LANES:	1	2	1	1	1.5	0.5	1	2	1	2	2	1
			NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
16:00	CARS		0	35	96	2	32	2	3	40	4	90	41	4
	2-Axle Trucks		1	2	2	0	0	0	0	1	0	0	0	0
	3-Axle Trucks		0	2	7	0	0	1	1	3	0	3	2	1
	4-Axle Trucks		1	0	2	1	1	0	0	0	0	0	0	0
	5-Axle Trucks+		1	12	11	1	3	0	0	1	0	12	5	0
16:15	CARS		0	32	107	4	23	3	1	35	2	52	30	5
	2-Axle Trucks		1	3	4	0	0	0	0	0	1	0	0	0
	3-Axle Trucks		0	0	4	1	0	0	0	2	1	3	3	0
	4-Axle Trucks		1	0	0	0	0	0	1	0	0	2	0	0
	5-Axle Trucks+		0	8	10	0	2	1	0	2	2	6	1	0
16:30	CARS		2	31	96	2	20	2	8	35	5	76	43	0
	2-Axle Trucks		0	0	1	0	0	0	0	0	0	2	2	0
	3-Axle Trucks		0	4	2	1	0	0	0	0	0	3	3	0
	4-Axle Trucks		0	0	2	1	0	0	0	0	0	1	1	0
	5-Axle Trucks+		0	9	19	0	2	0	0	4	1	13	0	1
16:45	CARS		3	33	108	1	15	2	2	31	1	57	42	1
	2-Axle Trucks		0	1	2	0	0	0	0	0	0	1	1	0
	3-Axle Trucks		0	1	3	2	0	0	1	1	0	4	1	0
	4-Axle Trucks		0	2	1	0	0	0	0	0	1	1	0	0
	5-Axle Trucks+		0	6	23	0	0	0	1	3	0	8	3	0
17:00	CARS		1	23	86	2	25	1	0	25	3	112	48	10
	2-Axle Trucks		0	1	2	0	0	0	0	0	0	3	0	2
	3-Axle Trucks		0	2	4	1	0	0	0	2	0	5	3	0
	4-Axle Trucks		1	0	0	0	0	0	1	1	0	1	1	0
	5-Axle Trucks+		0	0	12	0	1	1	1	6	1	6	7	0
17:15	CARS		1	26	82	2	23	2	5	23	4	81	39	6
	2-Axle Trucks		0	0	1	0	1	0	0	0	0	1	1	0
	3-Axle Trucks		0	2	3	0	1	0	0	3	0	6	1	0
	4-Axle Trucks		0	0	0	0	0	0	0	0	0	2	0	0
	5-Axle Trucks+		0	3	13	0	0	0	0	2	1	8	2	0
17:30	CARS		5	26	73	2	17	2	9	31	2	71	44	1
	2-Axle Trucks		0	0	2	0	0	0	0	0	0	1	0	0
	3-Axle Trucks		0	1	4	0	0	0	1	1	0	2	2	0
	4-Axle Trucks		0	1	2	0	0	0	0	0	0	0	0	0
	5-Axle Trucks+		1	2	20	0	2	0	1	1	0	14	1	0
17:45	CARS		3	26	77	0	8	0	0	28	1	50	38	3
	2-Axle Trucks		0	0	1	0	0	0	0	1	0	0	0	0
	3-Axle Trucks		0	0	1	0	0	1	0	2	0	1	1	0
	4-Axle Trucks		0	2	0	0	0	0	0	0	0	2	1	0
	5-Axle Trucks+		1	3	19	0	1	0	0	2	0	8	5	1

MOVEMENT TOTALS

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
CARS	15	232	725	15	163	14	28	248	22	589	325	30
2-Axle Trucks	2	7	15	0	1	0	0	2	1	8	4	2
3-Axle Trucks	0	12	28	5	1	2	3	14	1	27	16	1
4-Axle Trucks	3	5	7	2	1	0	2	1	1	9	3	0
5-Axle Trucks+	3	43	127	1	11	2	3	21	5	75	24	2
TOTALS	23	299	902	23	177	18	36	286	30	708	372	35

PM Peak Hr Begins at: 1600 PM

PEAK VOLUMES =	10	181	500	16	98	11	18	158	18	334	178	12
PEAK HR. FACTOR:		0.944			0.727			0.915			0.829	

APPENDIX C

Future Growth Increment Calculation Worksheets

INTERSECTION	LEG	MODEL 2000 ADT	EXISTING **2010** ADT	MODEL 2030 ADT	FUTURE **2035** ADT[1]	OPENING **2012** ADT
Etiwanda Avenue (NS) / Valley Boulevard (EW)	North	4,358	**20,400**	18,137	31,900	21,300
	South	6,876	**26,300**	23,059	39,800	27,400
	East	1,831	**5,700**	11,374	13,700	6,300
	West	1,168	**6,100**	7,643	11,500	6,500
Commerce Drive (NS) / Valley Boulevard (EW)	North	19	**5,300**	238	5,800	5,300
	South	28	**17,400**	468	19,100	17,500
	East	2,310	**17,600**	11,607	25,300	18,200
	West	2,301	**5,500**	11,374	13,100	6,100

[1] Adjusted for minimum 10% growth over existing average daily traffic volumes for year 2035.

ETIWANDA AVENUE (NS) / VALLEY BOULEVARD (EW)

MORNING PEAK HOUR

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS):

2010

				<	54	v	385	>	12	
4	^								^	17
22	>								<	19
32	v								v	77
				<	148	^	407	>	59	

EXISTING PEAK HOUR COUNT YEAR (AUTOS):

2010

					451	v	428			
		221	<	IN =	1236	<	113			
		58	>	OUT =	1236	>	93			
					494	^	614			

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCE'S):

				<	3	v	250	>	16	
2	^								^	28
17	>								<	28
29	v								v	69
				<	47	^	208	>	45	

PCE FACTORS BY AXLE:

2: 1.5 3: 2.0 4+: 3.0

TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCES):

2010

				<	57	v	635	>	28	
6	^								^	45
39	>								<	47
61	v								v	146
				<	195	^	615	>	104	

EXISTING PEAK PERIOD MODEL YEAR (AUTO):

2000

					443	v	439			
		134	<	IN =	1460	<	339			
		51	>	OUT =	1460	>	98			
					789	^	627			

EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2000

					53	v	21			
		0	<	IN =	74	<	0			
		0	>	OUT =	74	>	0			
					53	^	21			

EXISTING PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.38

PHF FOR TRUCKS: 0.333

					186	v	174			
		51	<	IN =	579	<	129			
		19	>	OUT =	579	>	37			
					317	^	245			

FUTURE PEAK PERIOD MODEL YEAR (AUTO):

2030

					2155	v	1765			
		1506	<	IN =	6700	<	2806			
		113	>	OUT =	6700	>	188			
					3241	^	1626			

FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2020

					292	v	95			
		428	<	IN =	848	<	393			
		13	>	OUT =	843	>	49			
					271	^	150			

FUTURE PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.38

PHF FOR TRUCKS: 0.333

					916	v	702			
		715	<	IN =	2828	<	1197			
		47	>	OUT =	2827	>	88			
					1322	^	668			

RAW GROWTH (PCE'S): 2000 TO 2030

CONVERSION OF TRUCKS TO: 2030

FACTOR = 1.50

					770	v	541			
		735	<			<	1134			
		30	>			>	59			
					1041	^	444			

ADJUSTED GROWTH (PCE'S): 2000 TO 2030

10 MINIMUM GROWTH %

					770	v	540			
		740	<	IN =	2370	<	1130			
		30	>	OUT =	2380	>	60			
					1040	^	440			

OPENING YEAR GROWTH: 2010 TO 2012

2 YEARS

					50	v	40			
		50	<			<	80			
		0	>			>	0			
					70	^	30			

INITIAL OPENING YEAR VOLUMES:

2012

					770	v	710			
		350	<	IN =	2140	<	320			
		110	>	OUT =	2140	>	170			
					910	^	940			

BALANCED OPENING YEAR VOLUMES:

2012

					770	v	710			
		350	<	IN =	2140	<	320			
		110	>	OUT =	2140	>	170			
					910	^	940			

EVENING PEAK HOUR

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS):

2010

				<	13	v	615	>	14	
38	^								^	37
53	>								<	59
216	v								v	111
				<	73	^	645	>	63	

EXISTING PEAK HOUR COUNT YEAR (AUTOS):

2010

					642	v	720			
		145	<	IN =	1937	<	207			
		307	>	OUT =	1937	>	130			
					942	^	781			

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCE'S):

				<	0	v	199	>	11	
3	^								^	9
12	>								<	6
38	v								v	63
				<	19	^	187	>	59	

PCE FACTORS BY AXLE:

2. 1.5 3: 2 4+: 3.0

TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCES):

2010

				<	13	v	814	>	25	
41	^								^	46
65	>								<	65
254	v								v	174
				<	92	^	832	>	122	

EXISTING PEAK PERIOD MODEL YEAR (AUTO):

2000

					737	v	811			
		199	<	IN =	3006	<	208			
		342	>	OUT =	3005	>	885			
					1110	^	1719			

EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2000

					61	v	48			
		0	<	IN =	109	<	0			
		0	>	OUT =	109	>	0			
					61	^	48			

EXISTING PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.28

PHF FOR TRUCKS: 0.25

					222	v	239			
		56	<	IN =	869	<	58			
		96	>	OUT =	869	>	248			
					326	^	493			

FUTURE PEAK PERIOD MODEL YEAR (AUTO):

2030

					3180	v	4474			
		311	<	IN =	13749	<	746			
		3510	>	OUT =	13749	>	5404			
					3560	^	6313			

FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2020

					124	v	409			
		20	<	IN =	1175	<	102			
		665	>	OUT =	1177	>	535			
					213	^	284			

FUTURE PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.28

PHF FOR TRUCKS: 0.25

					921	v	1355			
		92	<	IN =	4143	<	234			
		1149	>	OUT =	4144	>	1647			
					1050	^	1839			

RAW GROWTH (PCE'S): 2000 TO 2030

CONVERSION OF TRUCKS TO: 2030

FACTOR = 1.50

					708	v	1161			
		39	<			<	189			
		1136	>			>	1466			
					743	^	1375			

ADJUSTED GROWTH (PCE'S): 2000 TO 2030

10 MINIMUM GROWTH %

					710	v	1160			
		40	<	IN =	3410	<	190			
		1140	>	OUT =	3410	>	1470			
					740	^	1370			

OPENING YEAR GROWTH: 2010 TO 2012

2 YEARS

					50	v	80			
		0	<			<	10			
		80	>			>	100			
					50	^	90			

INITIAL OPENING YEAR VOLUMES:

2012

					900	v	1000			
		170	<	IN =	2780	<	300			
		440	>	OUT =	2770	>	310			
					1290	^	1140			

BALANCED OPENING YEAR VOLUMES:

2012

					900	v	1000			
		170	<	IN =	2780	<	300			
		440	>	OUT =	2770	>	310			
					1290	^	1140			

ETIWANDA AVENUE (NS) / VALLEY BOULEVARD (EW)

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

OPENING YEAR (2012) TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	OPENING YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	OPENING YEAR TOTAL
NORTH	LEFT	**195**	SOUTH LEG		NORTH	LEFT	**92**	SOUTH LEG	
BOUND	THRU	**615**	IN ...	**940**	BOUND	THRU	**832**	IN ...	**1,140**
	RIGHT	**104**	OUT ...	**910**		RIGHT	**122**	OUT ...	**1,290**
SOUTH	LEFT	**28**	NORTH LEG		SOUTH	LEFT	**25**	NORTH LEG	
BOUND	THRU	**635**	IN ...	**770**	BOUND	THRU	**814**	IN ...	**900**
	RIGHT	**57**	OUT ...	**710**		RIGHT	**13**	OUT ...	**1,000**
EAST	LEFT	**6**	WEST LEG		EAST	LEFT	**41**	WEST LEG	
BOUND	THRU	**39**	IN ...	**110**	BOUND	THRU	**65**	IN ...	**440**
	RIGHT	**61**	OUT ...	**350**		RIGHT	**254**	OUT ...	**170**
WEST	LEFT	**146**	EAST LEG		WEST	LEFT	**174**	EAST LEG	
BOUND	THRU	**47**	IN ...	**320**	BOUND	THRU	**65**	IN ...	**300**
	RIGHT	**45**	OUT ...	**170**		RIGHT	**46**	OUT ...	**310**

OPENING YEAR (2012) TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	OPENING YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	OPENING YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**195**	**208**	NORTH LEG	NORTH	LEFT	**92**	**87**	NORTH LEG
BOUND	THRU	**615**	**637**	RATIO **6.9%**	BOUND	THRU	**832**	**890**	RATIO **8.9%**
	RIGHT	**104**	**98**	ADT 21,300		RIGHT	**122**	**164**	ADT 21,300
SOUTH	LEFT	**28**	**31**	SOUTH LEG	SOUTH	LEFT	**25**	**39**	SOUTH LEG
BOUND	THRU	**635**	**666**	RATIO **6.8%**	BOUND	THRU	**814**	**840**	RATIO **8.9%**
	RIGHT	**57**	**72**	ADT 27,400		RIGHT	**13**	**14**	ADT 27,400
EAST	LEFT	**6**	**7**	EAST LEG	EAST	LEFT	**41**	**54**	EAST LEG
BOUND	THRU	**39**	**41**	RATIO **7.8%**	BOUND	THRU	**65**	**107**	RATIO **9.7%**
	RIGHT	**61**	**61**	ADT 6,300		RIGHT	**254**	**276**	ADT 6,300
WEST	LEFT	**146**	**183**	WEST LEG	WEST	LEFT	**174**	**174**	WEST LEG
BOUND	THRU	**47**	**71**	RATIO **7.1%**	BOUND	THRU	**65**	**69**	RATIO **9.3%**
	RIGHT	**45**	**66**	ADT 6,500		RIGHT	**46**	**56**	ADT 6,500

ETIWANDA AVENUE (NS) / VALLEY BOULEVARD (EW)

MORNING PEAK HOUR

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS):

2010

				54	385	12		
				<	v	>		
		4	^				^	17
		22	>				<	19
		32	v				v	77
				<	^	>		
				148	407	59		

EXISTING PEAK HOUR COUNT YEAR (AUTOS):

2010

					451	428		
					v	^		
		221	<	IN =	1236	<		113
		58	>	OUT =	1236	>		93
					v	^		
					494	614		

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCE'S):

				3	250	16		
				<	v	>		
		2	^				^	28
		17	>				<	28
		29	v				v	69
PCE FACTORS BY AXLE:				<	^	>		
2: 1.5 3: 2.0 4+: 3.0				47	208	45		

TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCES):

2010

				57	635	28		
				<	v	>		
		6	^				^	45
		39	>				<	47
		61	v				v	146
				<	^	>		
				195	615	104		

EXISTING PEAK PERIOD MODEL YEAR (AUTO):

2000

					443	439		
					v	^		
		134	<	IN =	1460	<		339
		51	>	OUT =	1460	>		98
					v	^		
					789	627		

EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2000

					53	21		
					v	^		
		0	<	IN =	74	<		0
		0	>	OUT =	74	>		0
					v	^		
					53	21		

EXISTING PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.38
PHF FOR TRUCKS: 0.333

					186	174		
					v	^		
		51	<	IN =	579	<		129
		19	>	OUT =	579	>		37
					v	^		
					317	245		

FUTURE PEAK PERIOD MODEL YEAR (AUTO):

2030

					2155	1765		
					v	^		
		1506	<	IN =	6700	<		2806
		113	>	OUT =	6700	>		188
					v	^		
					3241	1626		

FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2020

					292	95		
					v	^		
		428	<	IN =	848	<		393
		13	>	OUT =	843	>		49
					v	^		
					271	150		

FUTURE PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.38
PHF FOR TRUCKS: 0.333

					916	702		
					v	^		
		715	<	IN =	2828	<		1197
		47	>	OUT =	2827	>		88
					v	^		
					1322	668		

RAW GROWTH (PCE'S): 2000 TO 2030
CONVERSION OF TRUCKS TO. 2030
FACTOR = 1.50

					770	541		
					v	^		
		735	<			<		1134
		30	>			>		59
					v	^		
					1041	444		

ADJUSTED GROWTH (PCE'S): 2000 TO 2030
10 MINIMUM GROWTH %

					770	540		
					v	^		
		740	<	IN =	2370	<		1130
		30	>	OUT =	2380	>		60
					v	^		
					1040	440		

YEAR 2035 GROWTH: 2010 TO 2035
25 YEARS

					640	450		
					v	^		
		620	<			<		940
		30	>			>		50
					v	^		
					870	370		

INITIAL YEAR 2035 VOLUMES:

2035

					1360	1120		
					v	^		
		920	<	IN =	3960	<		1180
		140	>	OUT =	3970	>		220
					v	^		
					1710	1280		

BALANCED YEAR 2035 VOLUMES:

2035

					1360	1120		
					v	^		
		920	<	IN =	3960	<		1180
		140	>	OUT =	3970	>		220
					v	^		
					1710	1280		

EVENING PEAK HOUR

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS):

2010

				13	615	14		
				<	v	>		
		38	^				^	37
		53	>				<	59
		216	v				v	111
				<	^	>		
				73	645	63		

EXISTING PEAK HOUR COUNT YEAR (AUTOS):

2010

					642	720		
					v	^		
		145	<	IN =	1937	<		207
		307	>	OUT =	1937	>		130
					v	^		
					942	781		

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCE'S):

				0	199	11		
				<	v	>		
		3	^				^	9
		12	>				<	6
		38	v				v	63
PCE FACTORS BY AXLE:				<	^	>		
2: 1.5 3: 2 4+: 3.0				19	187	59		

TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCES):

2010

				13	814	25		
				<	v	>		
		41	^				^	46
		65	>				<	65
		254	v				v	174
				<	^	>		
				92	832	122		

EXISTING PEAK PERIOD MODEL YEAR (AUTO):

2000

					737	811		
					v	^		
		199	<	IN =	3006	<		208
		342	>	OUT =	3005	>		885
					v	^		
					1110	1719		

EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2000

					61	48		
					v	^		
		0	<	IN =	109	<		0
		0	>	OUT =	109	>		0
					v	^		
					61	48		

EXISTING PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.28
PHF FOR TRUCKS: 0.25

					222	239		
					v	^		
		56	<	IN =	869	<		58
		96	>	OUT =	869	>		248
					v	^		
					326	493		

FUTURE PEAK PERIOD MODEL YEAR (AUTO):

2030

					3180	4474		
					v	^		
		311	<	IN =	13749	<		746
		3510	>	OUT =	13749	>		5404
					v	^		
					3560	6313		

FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2020

					124	409		
					v	^		
		20	<	IN =	1175	<		102
		665	>	OUT =	1177	>		535
					v	^		
					213	284		

FUTURE PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.28
PHF FOR TRUCKS: 0.25

					921	1355		
					v	^		
		92	<	IN =	4143	<		234
		1149	>	OUT =	4144	>		1647
					v	^		
					1050	1839		

RAW GROWTH (PCE'S): 2000 TO 2030
CONVERSION OF TRUCKS TO: 2030
FACTOR = 1.50

					708	1161		
					v	^		
		39	<			<		189
		1136	>			>		1466
					v	^		
					743	1375		

ADJUSTED GROWTH (PCE'S): 2000 TO 2030
10 MINIMUM GROWTH %

					710	1160		
					v	^		
		40	<	IN =	3410	<		190
		1140	>	OUT =	3410	>		1470
					v	^		
					740	1370		

YEAR 2035 GROWTH: 2010 TO 2035
25 YEARS

					590	970		
					v	^		
		30	<			<		160
		950	>			>		1230
					v	^		
					620	1140		

INITIAL YEAR 2035 VOLUMES:

2035

					1440	1890		
					v	^		
		200	<	IN =	5390	<		450
		1310	>	OUT =	5390	>		1440
					v	^		
					1860	2190		

BALANCED YEAR 2035 VOLUMES:

2035

					1440	1890		
					v	^		
		200	<	IN =	5390	<		450
		1310	>	OUT =	5390	>		1440
					v	^		
					1860	2190		

ETIWANDA AVENUE (NS) / VALLEY BOULEVARD (EW)

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2035 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	OPENING YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	OPENING YEAR TOTAL
NORTH	LEFT	**195**	SOUTH LEG		NORTH	LEFT	**92**	SOUTH LEG	
BOUND	THRU	**615**	IN ...	**1,280**	BOUND	THRU	**832**	IN ...	**2,190**
	RIGHT	**104**	OUT ...	**1,710**		RIGHT	**122**	OUT ...	**1,860**
SOUTH	LEFT	**28**	NORTH LEG		SOUTH	LEFT	**25**	NORTH LEG	
BOUND	THRU	**635**	IN ...	**1,360**	BOUND	THRU	**814**	IN ...	**1,440**
	RIGHT	**57**	OUT ...	**1,120**		RIGHT	**13**	OUT ...	**1,890**
EAST	LEFT	**6**	WEST LEG		EAST	LEFT	**41**	WEST LEG	
BOUND	THRU	**39**	IN ...	**140**	BOUND	THRU	**65**	IN ...	**1,310**
	RIGHT	**61**	OUT ...	**920**		RIGHT	**254**	OUT ...	**200**
WEST	LEFT	**146**	EAST LEG		WEST	LEFT	**174**	EAST LEG	
BOUND	THRU	**47**	IN ...	**1,180**	BOUND	THRU	**65**	IN ...	**450**
	RIGHT	**45**	OUT ...	**220**		RIGHT	**46**	OUT ...	**1,440**

YEAR 2035 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2035 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2035 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**195**	**344**	NORTH LEG	NORTH	LEFT	**92**	**83**	NORTH LEG
BOUND	THRU	**615**	**837**	RATIO **7.8%**	BOUND	THRU	**832**	**1,572**	RATIO **10.4%**
	RIGHT	**104**	**105**	ADT 31,900		RIGHT	**122**	**550**	ADT 31,900
SOUTH	LEFT	**28**	**58**	SOUTH LEG	SOUTH	LEFT	**25**	**214**	SOUTH LEG
BOUND	THRU	**635**	**1,095**	RATIO **7.5%**	BOUND	THRU	**814**	**1,192**	RATIO **10.2%**
	RIGHT	**57**	**207**	ADT 39,800		RIGHT	**13**	**22**	ADT 39,800
EAST	LEFT	**6**	**12**	EAST LEG	EAST	LEFT	**41**	**179**	EAST LEG
BOUND	THRU	**39**	**56**	RATIO **10.2%**	BOUND	THRU	**65**	**676**	RATIO **13.8%**
	RIGHT	**61**	**73**	ADT 13,700		RIGHT	**254**	**453**	ADT 13,700
WEST	LEFT	**146**	**543**	WEST LEG	WEST	LEFT	**174**	**215**	WEST LEG
BOUND	THRU	**47**	**368**	RATIO **9.2%**	BOUND	THRU	**65**	**94**	RATIO **13.1%**
	RIGHT	**45**	**272**	ADT 11,500		RIGHT	**46**	**139**	ADT 11,500

COMMERCE DRIVE (NS) / VALLEY BOULEVARD (EW)

MORNING PEAK HOUR

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS):

2010

				16	43	15		
				<	v	>		
		2	^				^	5
		75	>				<	101
		6	v				v	145
				<	^	>		
				13	95	351		

EXISTING PEAK HOUR COUNT YEAR (AUTOS):

2010

					74	102		
					v	^		
		130	<	IN =	867	<	251	
		83	>	OUT =	867	>	441	
					v	^		
					194	459		

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCE'S):

				17	78	5		
				<	v	>		
		21	^				^	30
		54	>				<	65
		12	v				v	237
PCE FACTORS BY AXLE:				<	^	>		
2: 1.5 3: 2.0 4+: 3.0				29	94	200		

TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCES):

2010

				33	121	20		
				<	v	>		
		23	^				^	35
		129	>				<	166
		18	v				v	382
				<	^	>		
				42	189	551		

EXISTING PEAK PERIOD MODEL YEAR (AUTO):

2000

					0	0		
					v	^		
		339	<	IN =	437	<	339	
		98	>	OUT =	437	>	98	
					v	^		
					0	0		

EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2000

					0	0		
					v	^		
		86	<	IN =	102	<	86	
		16	>	OUT =	102	>	16	
					v	^		
					0	0		

EXISTING PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.38
PHF FOR TRUCKS: 0.333

					0	0		
					v	^		
		157	<	IN =	200	<	157	
		43	>	OUT =	200	>	43	
					v	^		
					0	0		

FUTURE PEAK PERIOD MODEL YEAR (AUTO):

2030

					0	0		
					v	^		
		2806	<	IN =	2994	<	2806	
		188	>	OUT =	2994	>	188	
					v	^		
					0	0		

FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2020

					7	0		
					v	^		
		393	<	IN =	443	<	387	
		49	>	OUT =	442	>	49	
					v	^		
					0	0		

FUTURE PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.38
PHF FOR TRUCKS: 0.333

					2	0		
					v	^		
		1197	<	IN =	1285	<	1195	
		88	>	OUT =	1285	>	88	
					v	^		
					0	0		

RAW GROWTH (PCE'S): 2000 TO 2030
CONVERSION OF TRUCKS TO: 2030
FACTOR = 1.50

					3	0		
					v	^		
		1091	<			<	1088	
		51	>			>	51	
					v	^		
					0	0		

ADJUSTED GROWTH (PCE'S): 2000 TO 2030
10 MINIMUM GROWTH %

					20	20		
					v	^		
		1090	<	IN =	1190	<	1090	
		50	>	OUT =	1210	>	70	
					v	^		
					30	30		

OPENING YEAR GROWTH: 2010 TO 2012
2 YEARS

					0	0		
					v	^		
		70	<			<	70	
		0	>			>	0	
					v	^		
					0	0		

INITIAL OPENING YEAR VOLUMES:

2012

					170	250		
					v	^		
		310	<	IN =	1770	<	650	
		170	>	OUT =	1780	>	700	
					v	^		
					520	780		

BALANCED OPENING YEAR VOLUMES:

2012

					170	250		
					v	^		
		310	<	IN =	1770	<	650	
		170	>	OUT =	1780	>	700	
					v	^		
					520	780		

EVENING PEAK HOUR

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS):

2010

				9	90	9		
				<	v	>		
		14	^				^	10
		141	>				<	156
		12	v				v	275
				<	^	>		
				5	131	407		

EXISTING PEAK HOUR COUNT YEAR (AUTOS):

2010

					108	155		
					v	^		
		170	<	IN =	1259	<	441	
		167	>	OUT =	1259	>	557	
					v	^		
					377	543		

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCE'S):

				5	24	17		
				<	v	>		
		10	^				^	5
		44	>				<	53
		16	v				v	160
PCE FACTORS BY AXLE:				<	^	>		
2: 1.5 3: 2 4+: 3.0				12	134	250		

TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCES):

2010

				14	114	26		
				<	v	>		
		24	^				^	15
		185	>				<	209
		28	v				v	435
				<	^	>		
				17	265	657		

EXISTING PEAK PERIOD MODEL YEAR (AUTO):

2000

					0	0		
					v	^		
		208	<	IN =	1093	<	208	
		885	>	OUT =	1093	>	885	
					v	^		
					0	0		

EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2000

					0	0		
					v	^		
		35	<	IN =	184	<	35	
		149	>	OUT =	184	>	149	
					v	^		
					0	0		

EXISTING PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.28
PHF FOR TRUCKS: 0.25

					0	0		
					v	^		
		67	<	IN =	352	<	67	
		285	>	OUT =	352	>	285	
					v	^		
					0	0		

FUTURE PEAK PERIOD MODEL YEAR (AUTO):

2030

					0	0		
					v	^		
		746	<	IN =	6167	<	746	
		5404	>	OUT =	6167	>	5421	
					v	^		
					0	17		

FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2020

					0	29		
					v	^		
		102	<	IN =	676	<	102	
		535	>	OUT =	680	>	549	
					v	^		
					0	39		

FUTURE PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.28
PHF FOR TRUCKS: 0.25

					0	7		
					v	^		
		234	<	IN =	1896	<	234	
		1647	>	OUT =	1897	>	1655	
					v	^		
					0	15		

RAW GROWTH (PCE'S): 2000 TO 2030
CONVERSION OF TRUCKS TO: 2030
FACTOR = 1.50

					0	11		
					v	^		
		176	<			<	176	
		1410	>			>	1420	
					v	^		
					0	19		

ADJUSTED GROWTH (PCE'S): 2000 TO 2030
10 MINIMUM GROWTH %

					20	30		
					v	^		
		180	<	IN =	1650	<	180	
		1410	>	OUT =	1650	>	1420	
					v	^		
					20	40		

OPENING YEAR GROWTH: 2010 TO 2012
2 YEARS

					0	0		
					v	^		
		10	<			<	10	
		90	>			>	90	
					v	^		
					0	0		

INITIAL OPENING YEAR VOLUMES:

2012

					150	300		
					v	^		
		250	<	IN =	2090	<	670	
		330	>	OUT =	2090	>	960	
					v	^		
					580	940		

BALANCED OPENING YEAR VOLUMES:

2012

					150	300		
					v	^		
		250	<	IN =	2090	<	670	
		330	>	OUT =	2090	>	960	
					v	^		
					580	940		

COMMERCE DRIVE (NS) / VALLEY BOULEVARD (EW)

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

OPENING YEAR (2012) TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	OPENING YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	OPENING YEAR TOTAL
NORTH	LEFT	**42**	SOUTH LEG		NORTH	LEFT	**17**	SOUTH LEG	
BOUND	THRU	**189**	IN ...	**780**	BOUND	THRU	**265**	IN ...	**940**
	RIGHT	**551**	OUT ...	**520**		RIGHT	**657**	OUT ...	**580**
SOUTH	LEFT	**20**	NORTH LEG		SOUTH	LEFT	**26**	NORTH LEG	
BOUND	THRU	**121**	IN ...	**170**	BOUND	THRU	**114**	IN ...	**150**
	RIGHT	**33**	OUT ...	**250**		RIGHT	**14**	OUT ...	**300**
EAST	LEFT	**23**	WEST LEG		EAST	LEFT	**24**	WEST LEG	
BOUND	THRU	**129**	IN ...	**170**	BOUND	THRU	**185**	IN ...	**330**
	RIGHT	**18**	OUT ...	**310**		RIGHT	**28**	OUT ...	**250**
WEST	LEFT	**382**	EAST LEG		WEST	LEFT	**435**	EAST LEG	
BOUND	THRU	**166**	IN ...	**650**	BOUND	THRU	**209**	IN ...	**670**
	RIGHT	**35**	OUT ...	**700**		RIGHT	**15**	OUT ...	**960**

OPENING YEAR (2012) TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	OPENING YEAR FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	OPENING YEAR FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**42**	**49**	NORTH LEG	NORTH	LEFT	**17**	**17**	NORTH LEG
BOUND	THRU	**189**	**187**	RATIO **7.9%**	BOUND	THRU	**265**	**253**	RATIO **8.5%**
	RIGHT	**551**	**548**	ADT 5,300		RIGHT	**657**	**671**	ADT 5,300
SOUTH	LEFT	**20**	**20**	SOUTH LEG	SOUTH	LEFT	**26**	**27**	SOUTH LEG
BOUND	THRU	**121**	**111**	RATIO **7.5%**	BOUND	THRU	**114**	**109**	RATIO **8.7%**
	RIGHT	**33**	**39**	ADT 17,500		RIGHT	**14**	**14**	ADT 17,500
EAST	LEFT	**23**	**23**	EAST LEG	EAST	LEFT	**24**	**32**	EAST LEG
BOUND	THRU	**129**	**131**	RATIO **7.4%**	BOUND	THRU	**185**	**262**	RATIO **8.9%**
	RIGHT	**18**	**17**	ADT 18,200		RIGHT	**28**	**37**	ADT 18,200
WEST	LEFT	**382**	**392**	WEST LEG	WEST	LEFT	**435**	**434**	WEST LEG
BOUND	THRU	**166**	**221**	RATIO **7.9%**	BOUND	THRU	**209**	**219**	RATIO **9.5%**
	RIGHT	**35**	**40**	ADT 6,100		RIGHT	**15**	**15**	ADT 6,100

COMMERCE DRIVE (NS) / VALLEY BOULEVARD (EW)

MORNING PEAK HOUR

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS):

2010

				16	43	15			
				<	v	>			
		2	^				^	5	
		75	>				<	101	
		6	v				v	145	
				<	^	>			
				13	95	351			

EXISTING PEAK HOUR COUNT YEAR (AUTOS):

2010

					74	102			
					v	^			
		130	<	IN =		867	<	251	
		83	>	OUT =		867	>	441	
					v	^			
					194	459			

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCE'S):

				17	78	5			
				<	v	>			
		21	^				^	30	
		54	>				<	65	
		12	v				v	237	
PCE FACTORS BY AXLE:				<	^	>			
2: 1.5 3: 2.0 4+: 3.0				29	94	200			

TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCES):

2010

				33	121	20			
				<	v	>			
		23	^				^	35	
		129	>				<	166	
		18	v				v	382	
				<	^	>			
				42	189	551			

EXISTING PEAK PERIOD MODEL YEAR (AUTO):

2000

					0	0			
					v	^			
		339	<	IN =		437	<	339	
		98	>	OUT =		437	>	98	
					v	^			
					0	0			

EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2000

					0	0			
					v	^			
		86	<	IN =		102	<	86	
		16	>	OUT =		102	>	16	
					v	^			
					0	0			

EXISTING PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.38
PHF FOR TRUCKS: 0.333

					0	0			
					v	^			
		157	<	IN =		200	<	157	
		43	>	OUT =		200	>	43	
					v	^			
					0	0			

FUTURE PEAK PERIOD MODEL YEAR (AUTO):

2030

					0	0			
					v	^			
		2806	<	IN =		2994	<	2806	
		188	>	OUT =		2994	>	188	
					v	^			
					0	0			

FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2020

					7	0			
					v	^			
		393	<	IN =		443	<	387	
		49	>	OUT =		442	>	49	
					v	^			
					0	0			

FUTURE PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.38
PHF FOR TRUCKS: 0.333

					2	0			
					v	^			
		1197	<	IN =		1285	<	1195	
		88	>	OUT =		1285	>	88	
					v	^			
					0	0			

RAW GROWTH (PCE'S): 2000 TO 2030
CONVERSION OF TRUCKS TO: 2030
FACTOR = 1.50

					3	0			
					v	^			
		1091	<				<	1088	
		51	>				>	51	
					v	^			
					0	0			

ADJUSTED GROWTH (PCE'S): 2000 TO 2030
10 MINIMUM GROWTH %

					20	20			
					v	^			
		1090	<	IN =		1190	<	1090	
		50	>	OUT =		1210	>	70	
					v	^			
					30	30			

YEAR 2035 GROWTH: 2010 TO 2035
25 YEARS

					20	20			
					v	^			
		910	<				<	910	
		40	>				>	60	
					v	^			
					30	30			

INITIAL YEAR 2035 VOLUMES:

2035

					190	270			
					v	^			
		1150	<	IN =		2700	<	1490	
		210	>	OUT =		2730	>	760	
					v	^			
					550	810			

BALANCED YEAR 2035 VOLUMES:

2035

					190	270			
					v	^			
		1150	<	IN =		2730	<	1510	
		210	>	OUT =		2730	>	760	
					v	^			
					550	820			

EVENING PEAK HOUR

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (AUTOS):

2010

				9	90	9			
				<	v	>			
		14	^				^	10	
		141	>				<	156	
		12	v				v	275	
				<	^	>			
				5	131	407			

EXISTING PEAK HOUR COUNT YEAR (AUTOS):

2010

					108	155			
					v	^			
		170	<	IN =		1259	<	441	
		167	>	OUT =		1259	>	557	
					v	^			
					377	543			

EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (TRUCKS IN PCE'S):

				5	24	17			
				<	v	>			
		10	^				^	5	
		44	>				<	53	
		16	v				v	160	
PCE FACTORS BY AXLE:				<	^	>			
2: 1.5 3: 2 4+: 3.0				12	134	250			

TOTAL EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES (PCES):

2010

				14	114	26			
				<	v	>			
		24	^				^	15	
		185	>				<	209	
		28	v				v	435	
				<	^	>			
				17	265	657			

EXISTING PEAK PERIOD MODEL YEAR (AUTO):

2000

					0	0			
					v	^			
		208	<	IN =		1093	<	208	
		885	>	OUT =		1093	>	885	
					v	^			
					0	0			

EXISTING PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2000

					0	0			
					v	^			
		35	<	IN =		184	<	35	
		149	>	OUT =		184	>	149	
					v	^			
					0	0			

EXISTING PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.28
PHF FOR TRUCKS: 0.25

					0	0			
					v	^			
		67	<	IN =		352	<	67	
		285	>	OUT =		352	>	285	
					v	^			
					0	0			

FUTURE PEAK PERIOD MODEL YEAR (AUTO):

2030

					0	0			
					v	^			
		746	<	IN =		6167	<	746	
		5404	>	OUT =		6167	>	5421	
					v	^			
					0	17			

FUTURE PEAK PERIOD MODEL YEAR (TRUCKS IN PCE'S):

2020

					0	29			
					v	^			
		102	<	IN =		676	<	102	
		535	>	OUT =		680	>	549	
					v	^			
					0	39			

FUTURE PEAK HOUR MODEL YEAR (PCE'S):

PHF FOR CARS: 0.28
PHF FOR TRUCKS: 0.25

					0	7			
					v	^			
		234	<	IN =		1896	<	234	
		1647	>	OUT =		1897	>	1655	
					v	^			
					0	15			

RAW GROWTH (PCE'S): 2000 TO 2030
CONVERSION OF TRUCKS TO: 2030
FACTOR = 1.50

					0	11			
					v	^			
		176	<				<	176	
		1410	>				>	1420	
					v	^			
					0	19			

ADJUSTED GROWTH (PCE'S): 2000 TO 2030
10 MINIMUM GROWTH %

					20	30			
					v	^			
		180	<	IN =		1650	<	180	
		1410	>	OUT =		1650	>	1420	
					v	^			
					20	40			

YEAR 2035 GROWTH: 2010 TO 2035
25 YEARS

					20	30			
					v	^			
		150	<				<	150	
		1180	>				>	1180	
					v	^			
					20	30			

INITIAL YEAR 2035 VOLUMES:

2035

					170	330			
					v	^			
		390	<	IN =		3370	<	810	
		1420	>	OUT =		3370	>	2050	
					v	^			
					600	970			

BALANCED YEAR 2035 VOLUMES:

2035

					170	330			
					v	^			
		390	<	IN =		3370	<	810	
		1420	>	OUT =		3370	>	2050	
					v	^			
					600	970			

COMMERCE DRIVE (NS) / VALLEY BOULEVARD (EW)

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255

YEAR 2035 TRAFFIC CONDITIONS									
MORNING PEAK HOUR INPUT DATA					EVENING PEAK HOUR INPUT DATA				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	OPENING YEAR TOTAL	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	APPROACH	OPENING YEAR TOTAL
NORTH	LEFT	**42**	SOUTH LEG		NORTH	LEFT	**17**	SOUTH LEG	
BOUND	THRU	**189**	IN ...	**820**	BOUND	THRU	**265**	IN ...	**970**
	RIGHT	**551**	OUT ...	**550**		RIGHT	**657**	OUT ...	**600**
SOUTH	LEFT	**20**	NORTH LEG		SOUTH	LEFT	**26**	NORTH LEG	
BOUND	THRU	**121**	IN ...	**190**	BOUND	THRU	**114**	IN ...	**170**
	RIGHT	**33**	OUT ...	**270**		RIGHT	**14**	OUT ...	**330**
EAST	LEFT	**23**	WEST LEG		EAST	LEFT	**24**	WEST LEG	
BOUND	THRU	**129**	IN ...	**210**	BOUND	THRU	**185**	IN ...	**1,420**
	RIGHT	**18**	OUT ...	**1,150**		RIGHT	**28**	OUT ...	**390**
WEST	LEFT	**382**	EAST LEG		WEST	LEFT	**435**	EAST LEG	
BOUND	THRU	**166**	IN ...	**1,510**	BOUND	THRU	**209**	IN ...	**810**
	RIGHT	**35**	OUT ...	**760**		RIGHT	**15**	OUT ...	**2,050**

YEAR 2035 TRAFFIC CONDITIONS									
MORNING PEAK HOUR RESULTS					EVENING PEAK HOUR RESULTS				
APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2035 FORECAST	PEAK - DAILY RELATIONSHIP	APPROACH	TURNING MOVEMENT	BASE YEAR COUNT	YEAR 2035 FORECAST	PEAK - DAILY RELATIONSHIP
NORTH	LEFT	**42**	**94**	NORTH LEG	NORTH	LEFT	**17**	**16**	NORTH LEG
BOUND	THRU	**189**	**165**	RATIO **7.9%**	BOUND	THRU	**265**	**203**	RATIO **8.6%**
	RIGHT	**551**	**562**	ADT 5,800		RIGHT	**657**	**760**	ADT 5,800
SOUTH	LEFT	**20**	**26**	SOUTH LEG	SOUTH	LEFT	**26**	**49**	SOUTH LEG
BOUND	THRU	**121**	**72**	RATIO **7.2%**	BOUND	THRU	**114**	**97**	RATIO **8.3%**
	RIGHT	**33**	**93**	ADT 19,100		RIGHT	**14**	**21**	ADT 19,100
EAST	LEFT	**23**	**26**	EAST LEG	EAST	LEFT	**24**	**106**	EAST LEG
BOUND	THRU	**129**	**173**	RATIO **9.0%**	BOUND	THRU	**185**	**1,240**	RATIO **11.2%**
	RIGHT	**18**	**11**	ADT 25,300		RIGHT	**28**	**84**	ADT 25,300
WEST	LEFT	**382**	**467**	WEST LEG	WEST	LEFT	**435**	**418**	WEST LEG
BOUND	THRU	**166**	**963**	RATIO **10.4%**	BOUND	THRU	**209**	**353**	RATIO **13.9%**
	RIGHT	**35**	**79**	ADT 13,100		RIGHT	**15**	**21**	ADT 13,100

APPENDIX D

Explanation and Calculation of Intersection Delay

EXPLANATION AND CALCULATION OF INTERSECTION LEVEL OF SERVICE USING DELAY METHODOLOGY

The levels of service at the unsignalized and signalized intersections are calculated using the delay methodology in the 2000 Highway Capacity Manual. This methodology views an intersection as consisting of several lane groups. A lane group is a set of lanes serving a movement. If there are two northbound left turn lanes, then the lane group serving the northbound left turn movement has two lanes. Similarly, there may be three lanes in the lane group serving the northbound through movement, one lane in the lane group serving the northbound right turn movement, and so forth. It is also possible for one lane to serve two lane groups. A shared lane might result in there being 1.5 lanes in the northbound left turn lane group and 2.5 lanes in the northbound through lane group.

For each lane group, there is a capacity. That capacity is calculated by multiplying the number of lanes in the lane group times a theoretical maximum lane capacity per lane time's 12 adjustment factors.

Each of the 12 adjustment factors has a value of approximately 1.00. A value less than 1.00 is generally assigned when a less than desirable condition occurs.

The 12 adjustment factors are as follows:

1. Peak hour factor (to account for peaking within the peak hour)
2. Lane utilization factor (to account for not all lanes loading equally)
3. Lane width
4. Percent of heavy trucks
5. Approach grade
6. Parking
7. Bus stops at intersections
8. Area type (CBD or other)
9. Right turns
10. Left turns

11. Pedestrian activity

12. Signal progression

The maximum theoretical lane capacity and the 12 adjustment factors for it are all unknowns for which approximate estimates have been recommended in the 2000 HCM. For the most part, the recommended values are not based on statistical analysis but rather on educated estimates. However, it is possible to use the delay method and get reasonable results as will be discussed below.

Once the lane group volume is known and the lane group capacity is known, a volume to capacity ratio can be calculated for the lane group.

With a volume to capacity ratio calculated, average delay per vehicle in a lane group can be estimated. The average delay per vehicle in a lane group is calculated using a complex formula provided by the 2000 HCM, which can be simplified and described as follows:

Delay per vehicle in a lane group is a function of the following:

1. Cycle length

2. Amount of red time faced by a lane group

3. Amount of yellow time for that lane group

4. The volume to capacity ratio of the lane group

The average delay per vehicle for each lane group is calculated, and eventually an overall average delay for all vehicles entering the intersection is calculated. This average delay per vehicle is then used to judge Level of Service. The Level of Services are defined in the table that follows this discussion.

Experience has shown that when a maximum lane capacity of 1,900 vehicles per hour is used (as recommended in the 2000 Highway Capacity Manual), little or no yellow time penalty is used, and none of the 12 penalty factors are applied, calculated delay is realistic. The delay calculation for instance assumes that yellow time is totally unused. Yet experience shows that most of the yellow time is used.

An idiosyncrasy of the delay methodology is that it is possible to add traffic to an intersection and reduce the average total delay per vehicle. If the average total delay is 30 seconds per vehicle for all vehicles traveling through an intersection, and traffic is

added to a movement that has an average total delay of 15 seconds per vehicle, then the overall average total delay is reduced.

The delay calculation for a lane group is based on a concept that the delay is a function of the amount of unused capacity available. As the volume approaches capacity and there is no more unused capacity available, then the delay rapidly increases. Delay is not proportional to volume, but rather increases rapidly as the unused capacity approaches zero.

Because delay is not linearly related to volumes, the delay does not reflect how close an intersection is to overloading. If an intersection is operating at Level of Service C and has an average total delay of 18 seconds per vehicle, you know very little as to what percent the traffic can increase before Level of Service E is reached.

LEVEL OF SERVICE DESCRIPTION[1]

Level Of Service	Description	Average Total 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

[1] Source: Highway Capacity Manual Special Report 209, Transportation Research Board, National Research Council, Washington, D.C., 2000.

Existing

Valley Boulevard/Commerce Drive Project
Existing
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Etiwanda Avenue (NS) at Valley Boulevard (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.332
Loss Time (sec):	8 (Y+R=3.0 sec)	Average Delay (sec/veh):	31.1
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Ignore			Include		
Min. Green:	10	27	27	10	27	27	10	38	38	10	38	38
Lanes:	2 0	2 0	1	1 0	2 1	0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	195	615	104	28	635	57	6	39	61	146	47	45
Growth 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
Initial Bse:	195	615	104	28	635	57	6	39	61	146	47	45
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.83	0.83	0.00	0.84	0.84	0.84	0.66	0.66	0.00	0.72	0.72	0.72
PHF Volume:	235	741	0	33	759	68	9	60	0	203	65	63
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	235	741	0	33	759	68	9	60	0	203	65	63
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	235	741	0	33	759	68	9	60	0	203	65	63
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.75	0.25	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	3600	1800	1700	4955	445	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.07	0.21	0.00	0.02	0.15	0.15	0.01	0.02	0.00	0.06	0.02	0.03
Crit Moves:		****		****				****		****		
Green/Cycle:	0.12	0.34	0.00	0.10	0.32	0.32	0.10	0.38	0.00	0.10	0.38	0.38
Volume/Cap:	0.62	0.61	0.00	0.20	0.48	0.48	0.05	0.04	0.00	0.61	0.05	0.09
Delay/Veh:	45.2	28.7	0.0	41.9	27.6	27.6	40.8	19.6	0.0	46.2	19.4	19.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	45.2	28.7	0.0	41.9	27.6	27.6	40.8	19.6	0.0	46.2	19.4	19.8
LOS by Move:	D	C	A	D	C	C	D	B	A	D	B	B
HCM2kAvgQ:	5	10	0	1	7	7	0	1	0	4	1	1

Note: Queue reported is the number of cars per lane.

Valley Boulevard/Commerce Drive Project
Existing
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Etiwanda Avenue (NS) at Valley Boulevard (EW)

Cycle (sec):	105	Critical Vol./Cap.(X):	0.397
Loss Time (sec):	8 (Y+R=3.0 sec)	Average Delay (sec/veh):	31.3
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Ignore			Include		
Min. Green:	10	27	27	10	27	27	10	38	38	10	38	38
Lanes:	2 0 2	0	1	1 0 2	1	0	1 0 2	0	1	2 0 2	0	1
Volume Module:												
Base Vol:	92	832	122	25	814	13	41	65	254	174	65	46
Growth 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
Initial Bse:	92	832	122	25	814	13	41	65	254	174	65	46
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.00	0.84	0.84	0.84	0.69	0.69	0.00	0.85	0.85	0.85
PHF Volume:	103	931	0	30	974	16	60	95	0	206	77	54
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	103	931	0	30	974	16	60	95	0	206	77	54
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	103	931	0	30	974	16	60	95	0	206	77	54
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.95	0.05	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	3600	1800	1700	5315	85	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.03	0.26	0.00	0.02	0.18	0.18	0.04	0.03	0.00	0.06	0.02	0.03
Crit Moves:		****		****				****		****		
Green/Cycle:	0.13	0.37	0.00	0.10	0.34	0.34	0.10	0.36	0.00	0.10	0.36	0.36
Volume/Cap:	0.25	0.70	0.00	0.18	0.54	0.54	0.37	0.07	0.00	0.67	0.06	0.08
Delay/Veh:	41.8	29.6	0.0	44.3	28.3	28.3	46.0	22.0	0.0	51.8	21.9	22.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	41.8	29.6	0.0	44.3	28.3	28.3	46.0	22.0	0.0	51.8	21.9	22.1
LOS by Move:	D	C	A	D	C	C	D	C	A	D	C	C
HCM2kAvgQ:	2	14	0	1	9	9	2	1	0	5	1	1

Note: Queue reported is the number of cars per lane.

Valley Boulevard/Commerce Drive Project
Existing
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5 Commerce Drive (NS) at Valley Boulevard (EW)

Cycle (sec):	115	Critical Vol./Cap.(X):	0.334
Loss Time (sec):	8 (Y+R=3.0 sec)	Average Delay (sec/veh):	33.9
Optimal Cycle: OPTIMIZED		Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Include			Ignore		
Min. Green:	10	43	43	10	43	43	10	30	30	10	30	30
Lanes:	2 0	1 0	1	1 0	1	1 0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	42	189	551	20	121	33	23	129	18	382	166	35
Growth 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
Initial Bse:	42	189	551	20	121	33	23	129	18	382	166	35
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.85	0.85	0.00	0.81	0.81	0.81	0.89	0.89	0.89	0.91	0.91	0.00
PHF Volume:	50	223	0	25	150	41	26	146	20	420	183	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	223	0	25	150	41	26	146	20	420	183	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	50	223	0	25	150	41	26	146	20	420	183	0
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	1.57	0.43	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	1800	1800	1700	2829	771	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.02	0.12	0.00	0.01	0.05	0.05	0.02	0.04	0.01	0.13	0.05	0.00
Crit Moves:		****		****				****		****		
Green/Cycle:	0.09	0.37	0.00	0.09	0.37	0.37	0.12	0.26	0.26	0.21	0.35	0.00
Volume/Cap:	0.18	0.33	0.00	0.17	0.14	0.14	0.13	0.16	0.04	0.63	0.14	0.00
Delay/Veh:	49.0	26.0	0.0	49.2	23.8	23.8	45.8	32.8	31.8	43.4	25.5	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	49.0	26.0	0.0	49.2	23.8	23.8	45.8	32.8	31.8	43.4	25.5	0.0
LOS by Move:	D	C	A	D	C	C	D	C	C	D	C	A
HCM2kAvgQ:	1	6	0	1	2	2	1	2	1	8	2	0

Note: Queue reported is the number of cars per lane.

Valley Boulevard/Commerce Drive Project
Existing
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

****

Intersection #5 Commerce Drive (NS) at Valley Boulevard (EW)

****

Cycle (sec): 120 Critical Vol./Cap.(X): 0.426
Loss Time (sec): 8 (Y+R=3.0 sec) Average Delay (sec/veh): 35.4
Optimal Cycle: OPTIMIZED Level Of Service: D

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Include			Ignore		
Min. Green:	10	43	43	10	43	43	10	30	30	10	30	30
Lanes:	2 0	1 0	1	1 0	1 1	0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	17	265	657	26	114	14	24	185	28	435	209	15
Growth 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
Initial Bse:	17	265	657	26	114	14	24	185	28	435	209	15
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.94	0.94	0.00	0.73	0.73	0.73	0.92	0.92	0.92	0.83	0.83	0.00
PHF Volume:	18	281	0	36	157	19	26	202	31	525	252	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	18	281	0	36	157	19	26	202	31	525	252	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	18	281	0	36	157	19	26	202	31	525	252	0
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	1.78	0.22	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	1800	1800	1700	3206	394	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.01	0.16	0.00	0.02	0.05	0.05	0.02	0.06	0.02	0.16	0.07	0.00
Crit Moves:		****		****				****		****		
Green/Cycle:	0.08	0.36	0.00	0.08	0.36	0.36	0.12	0.25	0.25	0.24	0.37	0.00
Volume/Cap:	0.07	0.44	0.00	0.25	0.14	0.14	0.13	0.22	0.07	0.68	0.19	0.00
Delay/Veh:	50.8	29.7	0.0	52.4	26.0	26.0	47.2	35.9	34.4	43.7	25.8	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.8	29.7	0.0	52.4	26.0	26.0	47.2	35.9	34.4	43.7	25.8	0.0
LOS by Move:	D	C	A	D	C	C	D	D	C	D	C	A
HCM2kAvgQ:	0	8	0	2	2	2	1	3	1	11	3	0

****

Note: Queue reported is the number of cars per lane.

****

Opening Year (2012) Without Project

Valley Boulevard/Commerce Drive Project
Opening Year (2012) Without Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Etiwanda Avenue (NS) at Valley Boulevard (EW)

Cycle (sec):	90	Critical Vol./Cap.(X):	0.370
Loss Time (sec):	8 (Y+R=3.0 sec)	Average Delay (sec/veh):	32.8
Optimal Cycle: OPTIMIZED		Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Ignore			Include		
Min. Green:	10	27	27	10	27	27	10	38	38	10	38	38
Lanes:	2 0	2 0	1	1 0	2 1	0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	208	637	98	31	666	72	7	41	61	183	71	66
Growth 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
Initial Bse:	208	637	98	31	666	72	7	41	61	183	71	66
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.83	0.83	0.00	0.84	0.84	0.84	0.66	0.66	0.00	0.72	0.72	0.72
PHF Volume:	251	767	0	37	796	86	11	63	0	255	99	92
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	251	767	0	37	796	86	11	63	0	255	99	92
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	251	767	0	37	796	86	11	63	0	255	99	92
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.71	0.29	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	3600	1800	1700	4873	527	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.08	0.21	0.00	0.02	0.16	0.16	0.01	0.02	0.00	0.08	0.03	0.05
Crit Moves:	****				****			****		****		
Green/Cycle:	0.11	0.29	0.00	0.11	0.29	0.29	0.11	0.41	0.00	0.11	0.41	0.41
Volume/Cap:	0.73	0.73	0.00	0.20	0.56	0.56	0.06	0.04	0.00	0.74	0.07	0.12
Delay/Veh:	47.8	32.5	0.0	38.4	28.5	28.5	37.4	16.6	0.0	48.5	16.7	17.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.8	32.5	0.0	38.4	28.5	28.5	37.4	16.6	0.0	48.5	16.7	17.2
LOS by Move:	D	C	A	D	C	C	D	B	A	D	B	B
HCM2kAvgQ:	6	11	0	1	8	8	0	1	0	6	1	2

Note: Queue reported is the number of cars per lane.

Valley Boulevard/Commerce Drive Project
Opening Year (2012) Without Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

****

Intersection #1 Etiwanda Avenue (NS) at Valley Boulevard (EW)

****

Cycle (sec):	110	Critical Vol./Cap.(X):	0.444
Loss Time (sec):	8 (Y+R=3.0 sec)	Average Delay (sec/veh):	31.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Ignore			Include		
Min. Green:	10	27	27	10	27	27	10	38	38	10	38	38
Lanes:	2 0	2 0	1	1 0	2 1	0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	87	890	164	39	840	14	54	107	276	174	69	56
Growth 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
Initial Bse:	87	890	164	39	840	14	54	107	276	174	69	56
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.00	0.84	0.84	0.84	0.69	0.69	0.00	0.85	0.85	0.85
PHF Volume:	97	996	0	47	1005	17	79	156	0	206	82	66
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	97	996	0	47	1005	17	79	156	0	206	82	66
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	97	996	0	47	1005	17	79	156	0	206	82	66
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.95	0.05	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	3600	1800	1700	5311	89	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.03	0.28	0.00	0.03	0.19	0.19	0.05	0.04	0.00	0.06	0.02	0.04
Crit Moves:		****		****				****		****		
Green/Cycle:	0.13	0.40	0.00	0.09	0.36	0.36	0.09	0.35	0.00	0.09	0.35	0.35
Volume/Cap:	0.23	0.69	0.00	0.30	0.53	0.53	0.51	0.13	0.00	0.69	0.07	0.11
Delay/Veh:	43.0	29.0	0.0	47.8	28.3	28.3	50.3	24.7	0.0	55.4	24.0	24.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	43.0	29.0	0.0	47.8	28.3	28.3	50.3	24.7	0.0	55.4	24.0	24.4
LOS by Move:	D	C	A	D	C	C	D	C	A	E	C	C
HCM2kAvgQ:	2	15	0	2	9	9	3	2	0	5	1	1

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Opening Year (2012) Without Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5 Commerce Drive (NS) at Valley Boulevard (EW)

Cycle (sec): 115 Critical Vol./Cap.(X): 0.337
Loss Time (sec): 8 (Y+R=3.0 sec) Average Delay (sec/veh): 34.0
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Include			Ignore		
Min. Green:	10	43	43	10	43	43	10	30	30	10	30	30
Lanes:	2 0 1	0	1	1 0 1	1	0	1 0 2	0	1	2 0 2	0	1
Volume Module:												
Base Vol:	49	187	548	20	111	39	23	131	17	392	221	40
Growth 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
Initial Bse:	49	187	548	20	111	39	23	131	17	392	221	40
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.85	0.85	0.00	0.81	0.81	0.81	0.89	0.89	0.89	0.91	0.91	0.00
PHF Volume:	58	221	0	25	137	48	26	148	19	431	243	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	58	221	0	25	137	48	26	148	19	431	243	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	58	221	0	25	137	48	26	148	19	431	243	0
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	1.48	0.52	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	1800	1800	1700	2664	936	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.02	0.12	0.00	0.01	0.05	0.05	0.02	0.04	0.01	0.13	0.07	0.00
Crit Moves:		****		****				****		****		
Green/Cycle:	0.09	0.37	0.00	0.09	0.37	0.37	0.12	0.26	0.26	0.21	0.35	0.00
Volume/Cap:	0.21	0.33	0.00	0.17	0.14	0.14	0.13	0.16	0.04	0.65	0.19	0.00
Delay/Veh:	49.2	26.0	0.0	49.2	23.8	23.8	45.8	32.8	31.8	43.8	26.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	49.2	26.0	0.0	49.2	23.8	23.8	45.8	32.8	31.8	43.8	26.0	0.0
LOS by Move:	D	C	A	D	C	C	D	C	C	D	C	A
HCM2kAvgQ:	1	6	0	1	2	2	1	2	1	9	3	0

Note: Queue reported is the number of cars per lane.

Valley Boulevard/Commerce Drive Project
Opening Year (2012) Without Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

****

Intersection #5 Commerce Drive (NS) at Valley Boulevard (EW)

****

Cycle (sec): 120 Critical Vol./Cap.(X): 0.443
Loss Time (sec): 8 (Y+R=3.0 sec) Average Delay (sec/veh): 35.6
Optimal Cycle: OPTIMIZED Level Of Service: D

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Include			Ignore		
Min. Green:	10	43	43	10	43	43	10	30	30	10	30	30
Lanes:	2 0 1	0	1	1 0 1	1	0	1 0 2	0	1	2 0 2	0	1
Volume Module:												
Base Vol:	17	253	671	27	109	14	32	262	37	434	219	15
Growth 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
Initial Bse:	17	253	671	27	109	14	32	262	37	434	219	15
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.94	0.94	0.00	0.73	0.73	0.73	0.92	0.92	0.92	0.83	0.83	0.00
PHF Volume:	18	268	0	37	150	19	35	286	40	524	264	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	18	268	0	37	150	19	35	286	40	524	264	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	18	268	0	37	150	19	35	286	40	524	264	0
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	1.77	0.23	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	1800	1800	1700	3190	410	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.01	0.15	0.00	0.02	0.05	0.05	0.02	0.08	0.02	0.16	0.07	0.00
Crit Moves:		****		****				****		****		
Green/Cycle:	0.08	0.36	0.00	0.08	0.36	0.36	0.12	0.25	0.25	0.24	0.37	0.00
Volume/Cap:	0.07	0.42	0.00	0.26	0.13	0.13	0.17	0.32	0.09	0.68	0.20	0.00
Delay/Veh:	50.8	29.5	0.0	52.5	26.0	26.0	47.5	36.9	34.6	43.7	25.9	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.8	29.5	0.0	52.5	26.0	26.0	47.5	36.9	34.6	43.7	25.9	0.0
LOS by Move:	D	C	A	D	C	C	D	D	C	D	C	A
HCM2kAvgQ:	0	7	0	2	2	2	1	4	1	11	3	0

****

Note: Queue reported is the number of cars per lane.

****

Opening Year (2012) With Project

Valley Boulevard/Commerce Drive Project
Opening Year (2012) With Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

****

Intersection #1 Etiwanda Avenue (NS) at Valley Boulevard (EW)

****

Cycle (sec): 90 Critical Vol./Cap.(X): 0.372
Loss Time (sec): 8 (Y+R=3.0 sec) Average Delay (sec/veh): 32.9
Optimal Cycle: OPTIMIZED Level Of Service: C

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Ignore			Include		
Min. Green:	10	27	27	10	27	27	10	38	38	10	38	38
Lanes:	2 0	2 0	1	1 0	2 1	0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	208	637	98	31	666	72	7	41	61	183	71	66
Growth 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
Initial Bse:	208	637	98	31	666	72	7	41	61	183	71	66
Added Vol:	0	0	3	0	0	0	0	0	0	3	0	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	208	637	101	31	666	72	7	41	61	186	71	67
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.83	0.83	0.00	0.84	0.84	0.84	0.66	0.66	0.00	0.72	0.72	0.72
PHF Volume:	251	767	0	37	796	86	11	63	0	259	99	93
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	251	767	0	37	796	86	11	63	0	259	99	93
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	251	767	0	37	796	86	11	63	0	259	99	93
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.71	0.29	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	3600	1800	1700	4873	527	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.08	0.21	0.00	0.02	0.16	0.16	0.01	0.02	0.00	0.08	0.03	0.05
Crit Moves:	****				****			****		****		
Green/Cycle:	0.11	0.29	0.00	0.11	0.29	0.29	0.11	0.41	0.00	0.11	0.41	0.41
Volume/Cap:	0.73	0.73	0.00	0.20	0.56	0.56	0.06	0.04	0.00	0.75	0.07	0.13
Delay/Veh:	47.8	32.5	0.0	38.4	28.5	28.5	37.4	16.6	0.0	49.3	16.7	17.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.8	32.5	0.0	38.4	28.5	28.5	37.4	16.6	0.0	49.3	16.7	17.2
LOS by Move:	D	C	A	D	C	C	D	B	A	D	B	B
HCM2kAvgQ:	6	11	0	1	8	8	0	1	0	6	1	2

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Opening Year (2012) With Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

****

Intersection #1 Etiwanda Avenue (NS) at Valley Boulevard (EW)

****

Cycle (sec): 110 Critical Vol./Cap.(X): 0.446
Loss Time (sec): 8 (Y+R=3.0 sec) Average Delay (sec/veh): 31.9
Optimal Cycle: OPTIMIZED Level Of Service: C

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Ignore			Include		
Min. Green:	10	27	27	10	27	27	10	38	38	10	38	38
Lanes:	2 0	2 0	1	1 0	2 1	0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	87	890	164	39	840	14	54	107	276	174	69	56
Growth 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
Initial Bse:	87	890	164	39	840	14	54	107	276	174	69	56
Added Vol:	0	0	1	0	0	0	0	0	0	6	0	3
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	890	165	39	840	14	54	107	276	180	69	59
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.00	0.84	0.84	0.84	0.69	0.69	0.00	0.85	0.85	0.85
PHF Volume:	97	996	0	47	1005	17	79	156	0	213	82	70
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	97	996	0	47	1005	17	79	156	0	213	82	70
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	97	996	0	47	1005	17	79	156	0	213	82	70
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.95	0.05	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	3600	1800	1700	5311	89	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.03	0.28	0.00	0.03	0.19	0.19	0.05	0.04	0.00	0.07	0.02	0.04
Crit Moves:		****		****				****		****		
Green/Cycle:	0.13	0.40	0.00	0.09	0.36	0.36	0.09	0.35	0.00	0.10	0.35	0.35
Volume/Cap:	0.23	0.70	0.00	0.30	0.53	0.53	0.50	0.13	0.00	0.70	0.06	0.11
Delay/Veh:	43.1	29.3	0.0	47.8	28.5	28.5	50.2	24.7	0.0	55.3	23.9	24.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	43.1	29.3	0.0	47.8	28.5	28.5	50.2	24.7	0.0	55.3	23.9	24.3
LOS by Move:	D	C	A	D	C	C	D	C	A	E	C	C
HCM2kAvgQ:	2	15	0	2	9	9	3	2	0	5	1	2

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Opening Year (2012) With Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #2 Project West Driveway (NS) at Valley Boulevard (EW)

****

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: A[8.9]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0	0	0 0 0	0	1	0 0 3	0	0	0 0 2	1	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	171	0	0	320	0
Growth 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
Initial Bse:	0	0	0	0	0	0	0	171	0	0	320	0
Added Vol:	0	0	0	0	0	4	0	3	0	0	0	8
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	4	0	174	0	0	320	8
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	0	0	4	0	183	0	0	337	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	4	0	183	0	0	337	8
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	116	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	920	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	920	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			8.9			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Opening Year (2012) With Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #2 Project West Driveway (NS) at Valley Boulevard (EW)

****

Average Delay (sec/veh): 0.1 Worst Case Level Of Service: A[8.9]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 0 0 1			0 0 3 0 0			0 0 2 1 0		
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	331	0	0	299	0
Growth 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
Initial Bse:	0	0	0	0	0	0	0	331	0	0	299	0
Added Vol:	0	0	0	0	0	8	0	2	0	0	0	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	8	0	333	0	0	299	4
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	0	0	8	0	351	0	0	315	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	8	0	351	0	0	315	4
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	107	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	933	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	933	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	8.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			8.9			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Opening Year (2012) With Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #3 Project East Driveway (NS) at Valley Boulevard (EW)

****

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 0 0 1			0 0 2 0 0			0 0 2 1 0		
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	171	0	0	320	0
Growth 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
Initial Bse:	0	0	0	0	0	0	0	171	0	0	320	0
Added Vol:	0	0	0	0	0	0	0	3	0	0	8	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	174	0	0	328	0
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	0	0	0	0	183	0	0	345	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	0	0	183	0	0	345	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	115	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	922	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	922	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Opening Year (2012) With Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #3 Project East Driveway (NS) at Valley Boulevard (EW)

****

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0	0 0		0 0 0	0 1		0 0 2	0 0		0 0 2	1 0	
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	331	0	0	299	0
Growth 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
Initial Bse:	0	0	0	0	0	0	0	331	0	0	299	0
Added Vol:	0	0	0	0	0	0	0	2	0	0	4	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	333	0	0	303	0
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	0	0	0	0	351	0	0	319	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	0	0	351	0	0	319	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	106	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	934	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	934	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Opening Year (2012) With Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #4 Commerce Drive (NS) at Project Driveway (EW)

****

Average Delay (sec/veh): 10.1 Worst Case Level Of Service: B[10.6]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 1	1	0	0 0 0	0	1	0 0 0	0	0
Volume Module:												
Base Vol:	0 250	0		0 170	0		0 0 0	0		0 0 0	0	
Growth 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 1.00	1.00	
Initial Bse:	0 250	0		0 170	0		0 0 0	0		0 0 0	0	
Added Vol:	5 0	0		0 2	1		0 0 4	0		0 0 0	0	
PasserByVol:	0 0	0		0 0	0		0 0 0	0		0 0 0	0	
Initial Fut:	5 250	0		0 172	1		0 0 4	0		0 0 0	0	
User 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 1.00	1.00	
PHF Adj:	0.95 0.95	0.95		0.95 0.95	0.95		0.95 0.95 0.95	0.95		0.95 0.95 0.95	0.95	
PHF Volume:	5 263	0		0 181	1		0 0 4	0		0 0 0	0	
Reduct Vol:	0 0	0		0 0	0		0 0 0	0		0 0 0	0	
FinalVolume:	5 263	0		0 181	1		0 0 4	0		0 0 0	0	
Critical Gap Module:												
Critical Gp:	7.1 6.5	xxxxx	xxxxx	6.5	6.2	xxxxx	xxxx xxxxx	xxxxx	xxxx	xxxxx		
FollowUpTim:	3.5 4.0	xxxxx	xxxxx	4.0	3.3	xxxxx	xxxx xxxxx	xxxxx	xxxx	xxxxx		
Capacity Module:												
Cnflict Vol:	91 0	xxxxx	xxxx	4	0	xxxx	xxxx xxxxx	xxxx	xxxx	xxxxx		
Potent Cap.:	899 900	xxxxx	xxxx	895	900	xxxx	xxxx xxxxx	xxxx	xxxx	xxxxx		
Move Cap.:	758 900	xxxxx	xxxx	895	900	xxxx	xxxx xxxxx	xxxx	xxxx	xxxxx		
Volume/Cap:	0.01 0.29	xxxx	xxxx	0.20	0.00	xxxx	xxxx xxxx	xxxx	xxxx	xxxx	xxxx	
Level Of Service Module:												
2Way95thQ:	0.0 1.2	xxxxx	xxxx	0.3	xxxxx	xxxx	xxxx xxxxx	xxxx	xxxx	xxxxx		
Control Del:	9.8 10.6	xxxxx	xxxxx	9.5	xxxxx	xxxxx	xxxx xxxxx	xxxxx	xxxx	xxxxx		
LOS by Move:	A B	*	*	A	*	*	* *	*	*	*		
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx xxxxx			xxxx xxxx	895		xxxx xxxx xxxxx			xxxx xxxx xxxxx		
SharedQueue:	xxxxx xxxx xxxxx			xxxxx xxxx	0.3		xxxxx xxxx xxxxx			xxxxx xxxx xxxxx		
Shrd ConDel:	xxxxx xxxx xxxxx			xxxxx xxxx	9.5		xxxxx xxxx xxxxx			xxxxx xxxx xxxxx		
Shared LOS:	* *	*	*	*	A		* *	*	*	*		
ApproachDel:	10.6			9.5			xxxxxx			xxxxxx		
ApproachLOS:	B			A			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Opening Year (2012) With Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #4 Commerce Drive (NS) at Project Driveway (EW)

****

Average Delay (sec/veh): 10.4 Worst Case Level Of Service: B[11.1]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0 0		0 0 1	1 0		0 0 0	0 1		0 0 0	0 0	
Volume Module:												
Base Vol:	0	300	0	0	150	0	0	0	0	0	0	0
Growth 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
Initial Bse:	0	300	0	0	150	0	0	0	0	0	0	0
Added Vol:	3	0	0	0	1	1	0	0	8	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	3	300	0	0	151	1	0	0	8	0	0	0
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	3	316	0	0	159	1	0	0	8	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	3	316	0	0	159	1	0	0	8	0	0	0
Critical Gap Module:												
Critical Gp:	7.1	6.5	xxxxx	xxxxx	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	3.5	4.0	xxxxx	xxxxx	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	79	0	xxxxx	xxxx	8	0	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	914	900	xxxxx	xxxx	891	900	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	788	900	xxxxx	xxxx	891	900	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	0.00	0.35	xxxx	xxxx	0.18	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	0.0	1.6	xxxxx	xxxx	0.3	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	9.6	11.1	xxxxx	xxxxx	9.4	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	A	B	*	*	A	*	*	*	*	*	*	*
Movement:	LT - LTR	- RT		LT - LTR	- RT		LT - LTR	- RT		LT - LTR	- RT	
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	891	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	0.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	A	*	*	*	*	*	*
ApproachDel:	11.1			9.4			xxxxxx			xxxxxx		
ApproachLOS:	B			A			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Opening Year (2012) With Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

****

Intersection #5 Commerce Drive (NS) at Valley Boulevard (EW)

****

Cycle (sec): 115 Critical Vol./Cap.(X): 0.339
Loss Time (sec): 8 (Y+R=3.0 sec) Average Delay (sec/veh): 34.0
Optimal Cycle: OPTIMIZED Level Of Service: C

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Include			Ignore		
Min. Green:	10	43	43	10	43	43	10	30	30	10	30	30
Lanes:	2 0	1 0	1	1 0	1	1 0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	49	187	548	20	111	39	23	131	17	392	221	40
Growth 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
Initial Bse:	49	187	548	20	111	39	23	131	17	392	221	40
Added Vol:	3	3	0	0	3	2	3	0	0	0	1	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	52	190	548	20	114	41	26	131	17	392	222	41
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.85	0.85	0.00	0.81	0.81	0.81	0.89	0.89	0.89	0.91	0.91	0.00
PHF Volume:	61	225	0	25	141	51	29	148	19	431	244	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	61	225	0	25	141	51	29	148	19	431	244	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	61	225	0	25	141	51	29	148	19	431	244	0
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	1.47	0.53	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	1800	1800	1700	2648	952	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.02	0.12	0.00	0.01	0.05	0.05	0.02	0.04	0.01	0.13	0.07	0.00
Crit Moves:		****		****				****		****		
Green/Cycle:	0.09	0.37	0.00	0.09	0.37	0.37	0.12	0.26	0.26	0.21	0.35	0.00
Volume/Cap:	0.22	0.33	0.00	0.17	0.14	0.14	0.15	0.16	0.04	0.65	0.19	0.00
Delay/Veh:	49.3	26.0	0.0	49.2	23.9	23.9	45.9	32.8	31.8	43.8	26.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	49.3	26.0	0.0	49.2	23.9	23.9	45.9	32.8	31.8	43.8	26.0	0.0
LOS by Move:	D	C	A	D	C	C	D	C	C	D	C	A
HCM2kAvgQ:	1	6	0	1	2	2	1	2	1	9	3	0

****

Note: Queue reported is the number of cars per lane.

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Valley Boulevard/Commerce Drive Project
Opening Year (2012) With Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

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Intersection #5 Commerce Drive (NS) at Valley Boulevard (EW)

****

Cycle (sec):	120	Critical Vol./Cap.(X):	0.446
Loss Time (sec):	8 (Y+R=3.0 sec)	Average Delay (sec/veh):	35.6
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Include			Ignore		
Min. Green:	10	43	43	10	43	43	10	30	30	10	30	30
Lanes:	2 0 1	0	1	1 0 1	1	0	1 0 2	0	1	2 0 2	0	1
Volume Module:												
Base Vol:	17	253	671	27	109	14	32	262	37	434	219	15
Growth 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
Initial Bse:	17	253	671	27	109	14	32	262	37	434	219	15
Added Vol:	2	2	0	1	7	1	2	0	0	0	1	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	19	255	671	28	116	15	34	262	37	434	220	15
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.94	0.94	0.00	0.73	0.73	0.73	0.92	0.92	0.92	0.83	0.83	0.00
PHF Volume:	20	270	0	39	160	21	37	286	40	524	265	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	20	270	0	39	160	21	37	286	40	524	265	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	20	270	0	39	160	21	37	286	40	524	265	0
Saturation Flow Module:												
Sat/Lane:	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Adjustment:	0.89	1.00	1.00	0.94	1.00	1.00	0.94	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	1.77	0.23	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	1800	1800	1700	3188	412	1700	3600	1800	3200	3600	1800
Capacity Analysis Module:												
Vol/Sat:	0.01	0.15	0.00	0.02	0.05	0.05	0.02	0.08	0.02	0.16	0.07	0.00
Crit Moves:		****		****				****		****		
Green/Cycle:	0.08	0.36	0.00	0.08	0.36	0.36	0.12	0.25	0.25	0.24	0.37	0.00
Volume/Cap:	0.08	0.42	0.00	0.27	0.14	0.14	0.18	0.32	0.09	0.68	0.20	0.00
Delay/Veh:	50.9	29.5	0.0	52.6	26.1	26.1	47.6	36.9	34.6	43.7	25.9	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.9	29.5	0.0	52.6	26.1	26.1	47.6	36.9	34.6	43.7	25.9	0.0
LOS by Move:	D	C	A	D	C	C	D	D	C	D	C	A
HCM2kAvgQ:	0	8	0	2	2	2	1	4	1	11	3	0

****

Note: Queue reported is the number of cars per lane.

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Year 2035 Without Project

Valley Boulevard/Commerce Drive Project
Year 2035 Without Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Etiwanda Avenue (NS) at Valley Boulevard (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.568
Loss Time (sec):	8 (Y+R=3.0 sec)	Average Delay (sec/veh):	44.2
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Ignore			Include		
Min. Green:	10	27	27	10	27	27	10	38	38	10	38	38
Lanes:	2 0	2 0	1	1 0	2 1	0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	344	837	105	58	1095	207	12	56	73	543	368	272
Growth 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
Initial Bse:	344	837	105	58	1095	207	12	56	73	543	368	272
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.00	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	362	881	0	61	1153	218	13	59	0	572	387	286
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	362	881	0	61	1153	218	13	59	0	572	387	286
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	362	881	0	61	1153	218	13	59	0	572	387	286
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.52	0.48	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3400	3800	1900	1800	4794	906	1800	3800	1900	3400	3800	1900
Capacity Analysis Module:												
Vol/Sat:	0.11	0.23	0.00	0.03	0.24	0.24	0.01	0.02	0.00	0.17	0.10	0.15
Crit Moves:	****				****			****		****		
Green/Cycle:	0.13	0.31	0.00	0.11	0.29	0.29	0.11	0.32	0.00	0.20	0.41	0.41
Volume/Cap:	0.84	0.76	0.00	0.31	0.84	0.84	0.07	0.05	0.00	0.84	0.25	0.37
Delay/Veh:	68.2	41.6	0.0	53.2	45.1	45.1	48.7	27.7	0.0	57.6	20.9	23.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	68.2	41.6	0.0	53.2	45.1	45.1	48.7	27.7	0.0	57.6	20.9	23.1
LOS by Move:	E	D	A	D	D	D	D	C	A	E	C	C
HCM2kAvgQ:	10	15	0	2	18	18	0	1	0	14	4	6

Note: Queue reported is the number of cars per lane.

Valley Boulevard/Commerce Drive Project
Year 2035 Without Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Etiwanda Avenue (NS) at Valley Boulevard (EW)

Cycle (sec):	130	Critical Vol./Cap.(X):	0.791
Loss Time (sec):	8 (Y+R=3.0 sec)	Average Delay (sec/veh):	54.5
Optimal Cycle: OPTIMIZED		Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Ignore			Include		
Min. Green:	10	27	27	10	27	27	10	38	38	10	38	38
Lanes:	2 0 2	0	1	1 0 2	1	0	1 0 2	0	1	2 0 2	0	1
Volume Module:												
Base Vol:	83	1572	550	214	1192	22	179	676	453	215	94	139
Growth 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
Initial Bse:	83	1572	550	214	1192	22	179	676	453	215	94	139
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.00	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	87	1655	0	225	1255	23	188	712	0	226	99	146
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	87	1655	0	225	1255	23	188	712	0	226	99	146
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	87	1655	0	225	1255	23	188	712	0	226	99	146
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.95	0.05	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3400	3800	1900	1800	5597	103	1800	3800	1900	3400	3800	1900
Capacity Analysis Module:												
Vol/Sat:	0.03	0.44	0.00	0.13	0.22	0.22	0.10	0.19	0.00	0.07	0.03	0.08
Crit Moves:		****		****			****					****
Green/Cycle:	0.14	0.42	0.00	0.12	0.41	0.41	0.10	0.31	0.00	0.08	0.29	0.29
Volume/Cap:	0.18	1.03	0.00	1.03	0.55	0.55	1.03	0.60	0.00	0.81	0.09	0.26
Delay/Veh:	50.3	63.0	0.0	125.9	27.3	27.3	132.9	39.2	0.0	80.7	33.3	36.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.3	63.0	0.0	125.9	27.3	27.3	132.9	39.2	0.0	80.7	33.3	36.1
LOS by Move:	D	E	A	F	C	C	F	D	A	F	C	D
HCM2kAvgQ:	2	42	0	14	11	11	13	11	0	7	1	4

Note: Queue reported is the number of cars per lane.

Valley Boulevard/Commerce Drive Project
Year 2035 Without Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5 Commerce Drive (NS) at Valley Boulevard (EW)

Cycle (sec): 130 Critical Vol./Cap.(X): 0.319
Loss Time (sec): 8 (Y+R=3.0 sec) Average Delay (sec/veh): 34.6
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Include			Ignore		
Min. Green:	10	43	43	10	43	43	10	30	30	10	30	30
Lanes:	2 0 1	0	1	1 0 1	1	0	1 0 2	0	1	2 0 2	0	1
Volume Module:												
Base Vol:	94	165	562	26	72	93	26	173	11	467	963	79
Growth 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
Initial Bse:	94	165	562	26	72	93	26	173	11	467	963	79
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.95	0.95	0.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00
PHF Volume:	99	174	0	27	76	98	27	182	12	492	1014	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	99	174	0	27	76	98	27	182	12	492	1014	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	99	174	0	27	76	98	27	182	12	492	1014	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3400	1900	1900	1800	1900	1900	1800	3800	1900	3400	3800	1900
Capacity Analysis Module:												
Vol/Sat:	0.03	0.09	0.00	0.02	0.04	0.05	0.02	0.05	0.01	0.14	0.27	0.00
Crit Moves:		****		****				****		****		
Green/Cycle:	0.08	0.33	0.00	0.08	0.33	0.33	0.12	0.23	0.23	0.30	0.41	0.00
Volume/Cap:	0.38	0.28	0.00	0.20	0.12	0.16	0.13	0.21	0.03	0.48	0.65	0.00
Delay/Veh:	61.2	31.9	0.0	59.4	29.3	29.8	52.5	40.9	38.8	38.3	29.1	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	61.2	31.9	0.0	59.4	29.3	29.8	52.5	40.9	38.8	38.3	29.1	0.0
LOS by Move:	E	C	A	E	C	C	D	D	D	D	C	A
HCM2kAvgQ:	2	4	0	1	2	2	1	3	0	8	15	0

Note: Queue reported is the number of cars per lane.

Valley Boulevard/Commerce Drive Project
Year 2035 Without Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5 Commerce Drive (NS) at Valley Boulevard (EW)

Cycle (sec): 130 Critical Vol./Cap.(X): 0.654
Loss Time (sec): 8 (Y+R=3.0 sec) Average Delay (sec/veh): 44.5
Optimal Cycle: OPTIMIZED Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Include			Ignore		
Min. Green:	10	43	43	10	43	43	10	30	30	10	30	30
Lanes:	2 0 1	0	1	1 0 1	1	0	1 0 2	0	1	2 0 2	0	1
Volume Module:												
Base Vol:	16	203	760	49	97	21	106	1240	84	418	353	21
Growth 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
Initial Bse:	16	203	760	49	97	21	106	1240	84	418	353	21
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.95	0.95	0.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00
PHF Volume:	17	214	0	52	102	22	112	1305	88	440	372	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	17	214	0	52	102	22	112	1305	88	440	372	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	17	214	0	52	102	22	112	1305	88	440	372	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	1.64	0.36	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3400	1900	1900	1800	3124	676	1800	3800	1900	3400	3800	1900
Capacity Analysis Module:												
Vol/Sat:	0.00	0.11	0.00	0.03	0.03	0.03	0.06	0.34	0.05	0.13	0.10	0.00
Crit Moves:		****		****				****		****		
Green/Cycle:	0.08	0.33	0.00	0.08	0.33	0.33	0.13	0.39	0.39	0.15	0.40	0.00
Volume/Cap:	0.06	0.34	0.00	0.37	0.10	0.10	0.47	0.89	0.12	0.89	0.25	0.00
Delay/Veh:	56.1	33.0	0.0	64.5	29.1	29.1	58.6	42.6	23.7	75.4	23.8	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	56.1	33.0	0.0	64.5	29.1	29.1	58.6	42.6	23.7	75.4	23.8	0.0
LOS by Move:	E	C	A	E	C	C	E	D	C	E	C	A
HCM2kAvgQ:	0	6	0	2	1	1	5	26	2	13	4	0

Note: Queue reported is the number of cars per lane.

Year 2035 With Project

Valley Boulevard/Commerce Drive Project
Year 2035 With Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Etiwanda Avenue (NS) at Valley Boulevard (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.569
Loss Time (sec): 8 (Y+R=3.0 sec) Average Delay (sec/veh): 44.2
Optimal Cycle: OPTIMIZED Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Ignore			Include		
Min. Green:	10	27	27	10	27	27	10	38	38	10	38	38
Lanes:	2 0	2 0	1	1 0	2 1	0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	344	837	105	58	1095	207	12	56	73	543	368	272
Growth 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
Initial Bse:	344	837	105	58	1095	207	12	56	73	543	368	272
Added Vol:	0	0	3	0	0	0	0	0	0	3	0	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	344	837	108	58	1095	207	12	56	73	546	368	273
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.00	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	362	881	0	61	1153	218	13	59	0	575	387	287
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	362	881	0	61	1153	218	13	59	0	575	387	287
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	362	881	0	61	1153	218	13	59	0	575	387	287
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.52	0.48	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3400	3800	1900	1800	4794	906	1800	3800	1900	3400	3800	1900
Capacity Analysis Module:												
Vol/Sat:	0.11	0.23	0.00	0.03	0.24	0.24	0.01	0.02	0.00	0.17	0.10	0.15
Crit Moves:	****				****			****		****		
Green/Cycle:	0.13	0.31	0.00	0.11	0.29	0.29	0.11	0.32	0.00	0.20	0.41	0.41
Volume/Cap:	0.84	0.76	0.00	0.31	0.84	0.84	0.06	0.05	0.00	0.84	0.25	0.37
Delay/Veh:	68.4	41.8	0.0	53.3	45.2	45.2	48.7	27.7	0.0	57.6	20.9	23.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	68.4	41.8	0.0	53.3	45.2	45.2	48.7	27.7	0.0	57.6	20.9	23.0
LOS by Move:	E	D	A	D	D	D	D	C	A	E	C	C
HCM2kAvgQ:	10	15	0	2	18	18	0	1	0	14	4	6

Note: Queue reported is the number of cars per lane.

Valley Boulevard/Commerce Drive Project
Year 2035 With Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Etiwanda Avenue (NS) at Valley Boulevard (EW)

Cycle (sec):	130	Critical Vol./Cap.(X):	0.793
Loss Time (sec):	8 (Y+R=3.0 sec)	Average Delay (sec/veh):	54.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Ignore			Include		
Min. Green:	10	27	27	10	27	27	10	38	38	10	38	38
Lanes:	2 0 2	0	1	1 0 2	1	0	1 0 2	0	1	2 0 2	0	1
Volume Module:												
Base Vol:	83	1572	550	214	1192	22	179	676	453	215	94	139
Growth 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
Initial Bse:	83	1572	550	214	1192	22	179	676	453	215	94	139
Added Vol:	0	0	1	0	0	0	0	0	0	6	0	3
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	83	1572	551	214	1192	22	179	676	453	221	94	142
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.00	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	87	1655	0	225	1255	23	188	712	0	233	99	149
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	87	1655	0	225	1255	23	188	712	0	233	99	149
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	87	1655	0	225	1255	23	188	712	0	233	99	149
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	2.00	1.00	1.00	2.95	0.05	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3400	3800	1900	1800	5597	103	1800	3800	1900	3400	3800	1900
Capacity Analysis Module:												
Vol/Sat:	0.03	0.44	0.00	0.13	0.22	0.22	0.10	0.19	0.00	0.07	0.03	0.08
Crit Moves:		****		****			****					****
Green/Cycle:	0.14	0.42	0.00	0.12	0.41	0.41	0.10	0.31	0.00	0.08	0.29	0.29
Volume/Cap:	0.18	1.03	0.00	1.03	0.55	0.55	1.03	0.60	0.00	0.83	0.09	0.27
Delay/Veh:	50.3	63.0	0.0	125.9	27.3	27.3	132.9	39.2	0.0	83.2	33.3	36.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.3	63.0	0.0	125.9	27.3	27.3	132.9	39.2	0.0	83.2	33.3	36.2
LOS by Move:	D	E	A	F	C	C	F	D	A	F	C	D
HCM2kAvgQ:	2	42	0	14	11	11	13	11	0	7	1	4

Note: Queue reported is the number of cars per lane.

Valley Boulevard/Commerce Drive Project
Year 2035 With Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #2 Project West Driveway (NS) at Valley Boulevard (EW)

****

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: B[11.2]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 0 0 1			0 0 3 0 0			0 0 2 1 0		
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	219	0	0	1183	0
Growth 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
Initial Bse:	0	0	0	0	0	0	0	219	0	0	1183	0
Added Vol:	0	0	0	0	0	4	0	3	0	0	0	8
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	4	0	222	0	0	1183	8
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	0	0	4	0	234	0	0	1245	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	4	0	234	0	0	1245	8
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	419	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	588	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	588	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	11.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	B	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			11.2			xxxxxx			xxxxxx		
ApproachLOS:	*			B			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Year 2035 With Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #2 Project West Driveway (NS) at Valley Boulevard (EW)

****

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[9.2]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 0 0 1			0 0 3 0 0			0 0 2 1 0		
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	1440	0	0	448	0
Growth 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
Initial Bse:	0	0	0	0	0	0	0	1440	0	0	448	0
Added Vol:	0	0	0	0	0	8	0	2	0	0	0	4
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	8	0	1442	0	0	448	4
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	0	0	8	0	1518	0	0	472	4
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	8	0	1518	0	0	472	4
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	159	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	864	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	864	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	0.0	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	A	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			9.2			xxxxxx			xxxxxx		
ApproachLOS:	*			A			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Year 2035 With Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #3 Project East Driveway (NS) at Valley Boulevard (EW)

****

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 0 0 1			0 0 2 0 0			0 0 2 1 0		
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	219	0	0	1183	0
Growth 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
Initial Bse:	0	0	0	0	0	0	0	219	0	0	1183	0
Added Vol:	0	0	0	0	0	0	0	3	0	0	8	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	222	0	0	1191	0
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	0	0	0	0	234	0	0	1254	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	0	0	234	0	0	1254	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	418	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	589	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	589	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

****

Note: Queue reported is the number of cars per lane.

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Valley Boulevard/Commerce Drive Project
Year 2035 With Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #3 Project East Driveway (NS) at Valley Boulevard (EW)

****

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 0 0			0 0 0 0 1			0 0 2 0 0			0 0 2 1 0		
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	1440	0	0	448	0
Growth 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
Initial Bse:	0	0	0	0	0	0	0	1440	0	0	448	0
Added Vol:	0	0	0	0	0	0	0	2	0	0	4	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	1442	0	0	452	0
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	0	0	0	0	1518	0	0	476	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	0	0	0	0	0	0	1518	0	0	476	0
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
FollowUpTim:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	xxxx	xxxx	159	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Potent Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	865	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Move Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	865	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			xxxxxx		
ApproachLOS:	*			*			*			*		

****

Note: Queue reported is the number of cars per lane.

****

Valley Boulevard/Commerce Drive Project
Year 2035 With Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

****

Intersection #4 Commerce Drive (NS) at Project Driveway (EW)

****

Average Delay (sec/veh): 10.2 Worst Case Level Of Service: B[10.8]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 1	1	0	0 0 0	0	1	0 0 0	0	0
Volume Module:												
Base Vol:	0 270	0		0 191	0		0 0	0		0 0	0	
Growth 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	
Initial Bse:	0 270	0		0 191	0		0 0	0		0 0	0	
Added Vol:	5 0	0		0 2	1		0 0	4		0 0	0	
PasserByVol:	0 0	0		0 0	0		0 0	0		0 0	0	
Initial Fut:	5 270	0		0 193	1		0 0	4		0 0	0	
User 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	
PHF Adj:	0.95 0.95	0.95		0.95 0.95	0.95		0.95 0.95	0.95		0.95 0.95	0.95	
PHF Volume:	5 284	0		0 203	1		0 0	4		0 0	0	
Reduct Vol:	0 0	0		0 0	0		0 0	0		0 0	0	
FinalVolume:	5 284	0		0 203	1		0 0	4		0 0	0	
Critical Gap Module:												
Critical Gp:	7.1 6.5	xxxxx	xxxxx	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
FollowUpTim:	3.5 4.0	xxxxx	xxxxx	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
Capacity Module:												
Cnflict Vol:	102 0	xxxxx	xxxx	4	0	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Potent Cap.:	884 900	xxxxx	xxxx	895	900	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Move Cap.:	729 900	xxxxx	xxxx	895	900	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Volume/Cap:	0.01 0.32	xxxx	xxxx	0.23	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	
Level Of Service Module:												
2Way95thQ:	0.0 1.3	xxxxx	xxxx	0.4	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	10.0 10.8	xxxxx	xxxxx	9.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A B	*	*	A	*	*	*	*	*	*	*	
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx	xxxxx	xxxx	xxxx	895	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx xxxx	xxxxx	xxxxx	xxxx	0.4	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx xxxx	xxxxx	xxxxx	xxxx	9.5	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
Shared LOS:	* *	*	*	*	A	*	*	*	*	*	*	
ApproachDel:	10.8			9.5		xxxxxx			xxxxxx			
ApproachLOS:	B			A		*			*			

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Note: Queue reported is the number of cars per lane.

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Valley Boulevard/Commerce Drive Project
Year 2035 With Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

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Intersection #4 Commerce Drive (NS) at Project Driveway (EW)

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Average Delay (sec/veh): 10.6 Worst Case Level Of Service: B[11.5]

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Rights:	Include			Include			Include			Include		
Lanes:	1 0 2	0	0	0 0 1	1	0	0 0 0	0	1	0 0 0	0	0
Volume Module:												
Base Vol:	0 330	0	0	167	0	0	0	0	0	0	0	0
Growth 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	1.00
Initial Bse:	0 330	0	0	167	0	0	0	0	0	0	0	0
Added Vol:	3 0	0	0	1	1	0	0	0	8	0	0	0
PasserByVol:	0 0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	3 330	0	0	168	1	0	0	0	8	0	0	0
User 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	1.00
PHF Adj:	0.95 0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	3 347	0	0	177	1	0	0	0	8	0	0	0
Reduct Vol:	0 0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	3 347	0	0	177	1	0	0	0	8	0	0	0
Critical Gap Module:												
Critical Gp:	7.1 6.5	xxxxx	xxxxx	6.5	6.2	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
FollowUpTim:	3.5 4.0	xxxxx	xxxxx	4.0	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
Capacity Module:												
Cnflict Vol:	88 0	xxxxx	xxxx	8	0	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Potent Cap.:	902 900	xxxxx	xxxx	891	900	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Move Cap.:	763 900	xxxxx	xxxx	891	900	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Volume/Cap:	0.00 0.39	xxxx	xxxx	0.20	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	
Level Of Service Module:												
2Way95thQ:	0.0 1.8	xxxxx	xxxx	0.3	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
Control Del:	9.7 11.5	xxxxx	xxxxx	9.5	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
LOS by Move:	A B	*	*	A	*	*	*	*	*	*	*	
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx xxxx	xxxxx	xxxx	xxxx	891	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	
SharedQueue:	xxxxx xxxx	xxxxx	xxxxx	xxxx	0.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
Shrd ConDel:	xxxxx xxxx	xxxxx	xxxxx	xxxx	9.5	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	
Shared LOS:	* *	*	*	*	A	*	*	*	*	*	*	
ApproachDel:	11.5			9.5		xxxxxx			xxxxxx			
ApproachLOS:	B			A		*			*			

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Note: Queue reported is the number of cars per lane.

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Valley Boulevard/Commerce Drive Project
Year 2035 With Project
Morning Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #5 Commerce Drive (NS) at Valley Boulevard (EW)

Cycle (sec): 130 Critical Vol./Cap.(X): 0.321
Loss Time (sec): 8 (Y+R=3.0 sec) Average Delay (sec/veh): 34.6
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Include			Ignore		
Min. Green:	10	43	43	10	43	43	10	30	30	10	30	30
Lanes:	2 0	1 0	1	1 0	1	1 0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	94	165	562	26	72	93	26	173	11	467	963	79
Growth 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
Initial Bse:	94	165	562	26	72	93	26	173	11	467	963	79
Added Vol:	3	3	0	0	3	2	3	0	0	0	1	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	97	168	562	26	75	95	29	173	11	467	964	80
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.95	0.95	0.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00
PHF Volume:	102	177	0	27	79	100	31	182	12	492	1015	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	102	177	0	27	79	100	31	182	12	492	1015	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	102	177	0	27	79	100	31	182	12	492	1015	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3400	1900	1900	1800	1900	1900	1800	3800	1900	3400	3800	1900
Capacity Analysis Module:												
Vol/Sat:	0.03	0.09	0.00	0.02	0.04	0.05	0.02	0.05	0.01	0.14	0.27	0.00
Crit Moves:		****		****				****		****		
Green/Cycle:	0.08	0.33	0.00	0.08	0.33	0.33	0.12	0.23	0.23	0.30	0.41	0.00
Volume/Cap:	0.39	0.28	0.00	0.20	0.13	0.16	0.14	0.21	0.03	0.48	0.65	0.00
Delay/Veh:	61.4	32.0	0.0	59.4	29.4	29.8	52.8	40.9	38.8	38.3	29.1	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	61.4	32.0	0.0	59.4	29.4	29.8	52.8	40.9	38.8	38.3	29.1	0.0
LOS by Move:	E	C	A	E	C	C	D	D	D	D	C	A
HCM2kAvgQ:	3	4	0	1	2	2	1	3	0	8	15	0

Note: Queue reported is the number of cars per lane.

Valley Boulevard/Commerce Drive Project
Year 2035 With Project
Evening Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

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Intersection #5 Commerce Drive (NS) at Valley Boulevard (EW)

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Cycle (sec): 130 Critical Vol./Cap.(X): 0.656
Loss Time (sec): 8 (Y+R=3.0 sec) Average Delay (sec/veh): 44.5
Optimal Cycle: OPTIMIZED Level Of Service: D

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Include			Include			Ignore		
Min. Green:	10	43	43	10	43	43	10	30	30	10	30	30
Lanes:	2 0	1 0	1	1 0	1	1 0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	16	203	760	49	97	21	106	1240	84	418	353	21
Growth 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
Initial Bse:	16	203	760	49	97	21	106	1240	84	418	353	21
Added Vol:	2	2	0	1	7	1	2	0	0	0	1	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	18	205	760	50	104	22	108	1240	84	418	354	21
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.95	0.95	0.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00
PHF Volume:	19	216	0	53	109	23	114	1305	88	440	373	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	19	216	0	53	109	23	114	1305	88	440	373	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	19	216	0	53	109	23	114	1305	88	440	373	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.89	1.00	1.00
Lanes:	2.00	1.00	1.00	1.00	1.65	0.35	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3400	1900	1900	1800	3137	663	1800	3800	1900	3400	3800	1900
Capacity Analysis Module:												
Vol/Sat:	0.01	0.11	0.00	0.03	0.03	0.03	0.06	0.34	0.05	0.13	0.10	0.00
Crit Moves:		****		****				****		****		
Green/Cycle:	0.08	0.33	0.00	0.08	0.33	0.33	0.13	0.39	0.39	0.15	0.40	0.00
Volume/Cap:	0.07	0.34	0.00	0.38	0.11	0.11	0.48	0.89	0.12	0.89	0.25	0.00
Delay/Veh:	56.2	33.0	0.0	64.8	29.1	29.1	58.8	42.6	23.7	75.4	23.8	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	56.2	33.0	0.0	64.8	29.1	29.1	58.8	42.6	23.7	75.4	23.8	0.0
LOS by Move:	E	C	A	E	C	C	E	D	C	E	C	A
HCM2kAvgQ:	0	6	0	2	2	2	5	26	2	13	4	0

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Note: Queue reported is the number of cars per lane.

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