

Woodlyn Road - Woodlyn Road is an east-west street located to the north of the project site. A total of two travel lanes are provided along Woodlyn Road divided by a striped double yellow median. On-street parking is prohibited along the north side of the street between Del Rey Avenue and Vinedo Avenue.

Cooley Place - Cooley Place is an east-west street located to the south of the project site. A total of two travel lanes are provided along Cooley Place and on-street parking is provided. Public bus stops are provided at the intersection of Cooley Place and Altadena Drive.

Mountain Street - Mountain Street is an east-west street located to the south and west of the project site. A total of two travel lanes are provided along Mountain Street and on-street parking is provided. The posted speed limit along Mountain Street is 30 miles per hour.

Orange Grove Boulevard - Orange Grove Boulevard is an east-west street located to the south of the project site. Within the study area, Orange Grove Boulevard provides a total of four travel lanes divided by a two-way center left-turn lane. On-street parking is provided along both sides of the street and the posted speed limit is 40 miles per hour. In the vicinity of the project site, public bus stops are provided at the intersections of Orange Grove Boulevard/Altadena Drive and Orange Grove Boulevard/Sierra Madre Boulevard.

Existing Transit Operations

The Metropolitan Transportation Authority (MTA) operates several bus lines within the study area. In addition, the City of Pasadena Area Rapid Transit Service (ARTS) provides service near the project site. Description of the transit service is provided below.

Metropolitan Transportation Authority

MTA Line 264 - Line 264 provides service between Pasadena and the City of Montebello. Within the study area, Line 264 travels along Altadena Drive providing stops at Washington Boulevard, Brigden Road, Cooley Place, Paloma Street, and Orange Grove Boulevard. Line 264 serves all stops along the designated route on the weekdays only; no weekend service is provided.

MTA Line 268 - Line 268 provides service between Jet Propulsion Laboratory and the El Monte Bus Station. Within the study area, this route travels along Orange Grove Boulevard, Altadena Drive, and Washington Boulevard. Near the project site, Line 268 provides a stop at Washington Boulevard/Altadena Drive, in addition to the same stops mentioned above for Line 264. Service is provided on weekdays, weekend and holidays.

MTA Line 487 - Line 487 provides service between Downtown Los Angeles and Sierra Madre. Within the study area, this route travels along Sierra Madre Boulevard and provides stops near the project site at Orange Grove Boulevard and Washington Boulevard/Eaton Drive. Line 487 provides service on the weekdays, weekends and holidays.

Pasadena Area Rapid Transit System (ARTS)

Routes 31 and 32 - The City of Pasadena ARTS Route 31 and Route 32 provide service along Altadena Drive and Washington Boulevard within the study area. In the vicinity of the project site, Route 31 provides stops along Altadena Drive at Washington Boulevard, Brigden Road, Cooley Place, Paloma Street, and Orange Grove Boulevard. Route 32 provides stops along Altadena Drive at Washington Boulevard and Garfias Drive. Service on both routes is provided on weekdays and weekends.

Traffic Operations Analysis Methodology

Traffic operating conditions in the vicinity of the project were analyzed using two methodologies. Per the City of Pasadena's guidelines, at the signalized intersections, the "Intersection Capacity Utilization" (ICU) methodology was used while the Highway Capacity Manual (HCM) methodology for unsignalized locations was utilized at the stop-controlled intersections.

The efficiency of traffic operations at a location is measured in terms of Level of Service (LOS). Level of service is a description of traffic performance at intersections. The level of service concept is a measure of average operating conditions at intersections during an hour. It is based on a volume-to-capacity (V/C) ratio for signalized locations and delay (in seconds) for stop-controlled intersections. Levels range from A to F with A representing excellent (free-flow) conditions and F representing extreme congestion. The ICU methodology compares the amount of traffic a through or turn lane is able to process (the capacity) to the level of traffic during the peak hours (volume). The critical V/C ratios are combined along with a clearance factor to determine the ICU value (V/C ratio) for the entire intersection. The HCM method for stop-controlled intersections calculates the average delay, in seconds, per vehicle for each approach and for the intersection as a whole. The delay for the intersection corresponds to a LOS value which describes the intersection operations. Intersections with vehicular volumes which are at or near capacity, experience greater congestion and longer vehicle delays.

Table 1 describes the level of service concept and the operating conditions expected under each level of service for signalized and stop-controlled intersections.

Existing Traffic Operations Analysis

The morning and evening peak hour level of service analyses were conducted for the five study intersections based on the measured traffic volumes and the methodologies described previously. All intersection analyses are performed using the TRAFFIX (Traffic Impact Analysis) software program. The existing conditions level of service analysis results are summarized in **Table 2** for the morning and evening peak hours.

Level of service D is generally considered to be the lowest acceptable LOS in an urban or suburban area. Level of service E and F are considered to be unacceptable operating conditions which warrant mitigation. The results shown in **Table 2** indicate that four of the five analyzed intersections are currently operating at LOS D or better during both peak hours. The stop-controlled intersection of Altadena Drive and Mountain Street is currently operating at LOS E during both peak hours. The detailed level of service worksheets for the analyzed intersections are included in Appendix A.

**TABLE 1
INTERSECTION LEVEL OF SERVICE DEFINITIONS**

LOS	Interpretation	Signalized Intersection Volume to Capacity Ratio	Stop-Controlled Intersection Average Stop Delay (HCM)
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	0.000 - 0.600	≤10 seconds
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	0.601 - 0.700	>10 and ≤15 sec
C	Good operation. Occasionally backups may develop behind turning vehicles. Most drivers feel somewhat restricted.	0.701 - 0.800	>15 and ≤25 sec
D	Fair operation. There are no long-standing traffic queues. This level is typically associated with design practice for peak periods.	0.801 - 0.900	>25 and ≤35 sec
E	Poor operation. Some long standing vehicular queues develop on critical approaches.	0.901 - 1.000	>35 and ≤50 sec
F	Forced flow. Represents jammed conditions. Backups from locations downstream or on the cross street may restrict or prevent movements of vehicles out of the intersection approach lanes, therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	Over 1.000	>50 seconds
Source: Highway Capacity Manual, Special Report 209, Transportation Research Board, Washington D.C., 2000.			

**TABLE 2
1000 ROSE AVENUE RESIDENTIAL PROJECT
EXISTING LEVEL OF SERVICE SUMMARY**

Intersection	Existing Conditions			
	AM Peak Hour		PM Peak Hour	
	V/C or delay	LOS	V/C or delay	LOS
1 Altadena Dr and Cooley Pl	0.521	A	0.407	A
2 Altadena Dr and Mountain St [a]	45.4	E	37.8	E
3 Altadena Dr and Orange Grove Blvd	0.731	C	0.711	C
4 Washington Blvd and Woodlyn Rd [a]	15.3	C	11.1	B
5 Washington Blvd and Sierra Madre Blvd	0.627	B	0.627	B

Note:

[a] Intersection controlled by stop sign(s). Value represents average delay per vehicle for most constrained movement.

CURRENT (FUTURE WITHOUT PROJECT) CONDITIONS

To evaluate the potential impact of the proposed project on local traffic conditions, it is first necessary to develop a forecast of future traffic volumes in the study area under conditions without the proposed project. The City of Pasadena refers to this scenario as Current conditions. This provides a basis against which to measure the potential significant impacts of the proposed project.

The anticipated buildout year of the proposed project is expected to be 2007. The projection of Current (future without project) traffic consists of existing traffic plus ambient traffic growth (general background regional growth) plus growth in traffic generated by specific cumulative projects expected to be completed by the year 2007. The following describes the two growth components.

Ambient Traffic Growth

Ambient traffic growth is the traffic growth that will occur in the study area due to general employment growth, housing growth and growth in regional through trips in southern California. Even if there was no change in housing or employment in the City of Pasadena, there will be some background (ambient) traffic growth in the region. Per the City of Pasadena, a one and one-half percent (1.5%) per year growth rate was assumed as a conservative estimate of traffic increase in the study area. Existing 2005 traffic volumes were increased by a factor of 1.03 to account for ambient traffic growth to the year 2007.

Cumulative Project Growth

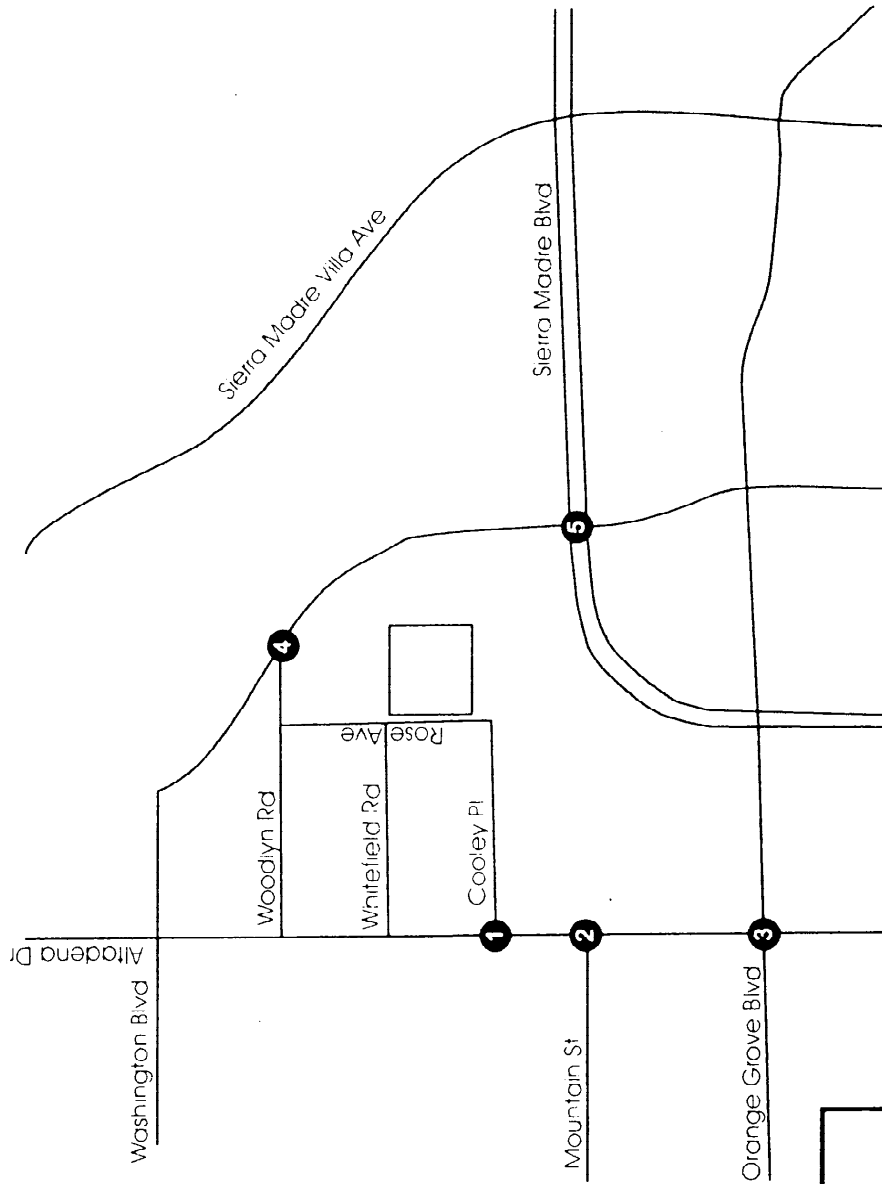
Cumulative project traffic growth which is growth due to specific, known development projects in the study area is also typically included in the analysis of the future without project conditions. However, based on information from the City of Pasadena, there are no projects within the study area that would likely impact the study locations.

Current (Future Without Project) Traffic Analysis

As mentioned above, the proposed project is anticipated to be complete by 2007, therefore Current (future conditions without the project) were assessed for this year. The Current traffic projections were developed and operating conditions were analyzed at the five study intersections for the morning and evening peak hours, taking into account the addition of the background ambient traffic growth. **Figure 5** illustrates the Current (future without project) morning and evening peak hour traffic volumes at the five study intersections.

Based on the Current traffic forecasts, the levels of service at the analyzed intersections were calculated for the morning and evening peak hours. **Table 3** summarizes the peak hour level of service results. As shown in **Table 3**, one of the five analyzed intersections is projected to operate at LOS E during the both peak hours. This intersection is located at Altadena Drive and Mountain Street. The poor level of service is a result of delays experienced by the eastbound stop-controlled vehicles.

The remaining four study intersections are projected to operate at LOS C or better during both peak hours under current (future without project) conditions.



4 Washington Bl/Woodyln Rd

← 2(3)	→ 41(34)
← 1(0)	→ 386(278)
← 4(1)	→ 10
← 1(3)	→ 73(69)
← 460(640)	→ 0(1)
← 22(7)	→ 0(1)

5 Washington Bl/Sierra Madre B

← 358(270)	→ 106(3)
← 693(390)	→ 24(23)
← 4(2)	→ 9(1)
← 278(540)	→ 374(805)
← 250(126)	→ 15(72)
← 70(72)	→ 155(8)

1 Aladena Dr/Cooley Pl

← 102(5)	→ 5(5)
← 1(0)	→ 629(825)
← 178(40)	→ 161(71)
← 89(8)	→ 10(1687)
← 7(4)	→ 10(1687)

2 Aladena Dr/Mountain St

← 2(8)	→ 777(7)
← 0(0)	→ 877(908)
← 2(9)	→ 0(0)
← 183(736)	→ 121(9)
← 54(20)	→ 0(2)
← 118(114)	→ 118(114)

3 Aladena Dr/Orange Grove Bl

← 40(50)	→ 63(123)
← 678(743)	→ 106(102)
← 3(118)	← 625(433)
← 87(38)	← 136(108)
← 106(1637)	← 106(1637)
← 385(848)	← 50(86)
← 72(50)	← 72(50)

Legend

- # Study Intersection
- Project Site
- #(AM) AM(PM)



NOT TO SCALE

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1000 Rose Avenue Residential Project
Traffic Impact Study

FIGURE 5
Current (Future without Project) Peak Hour Volumes

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TABLE 3
1000 ROSE AVENUE RESIDENTIAL PROJECT
CURRENT (FUTURE WITHOUT PROJECT) LEVEL OF SERVICE SUMMARY

Intersection	Current (Future Without Project) Conditions			
	AM Peak Hour		PM Peak Hour	
	V/C or delay	LOS	V/C or delay	LOS
1 Altadena Dr and Cooley Pl	0.534	A	0.416	A
2 Altadena Dr and Mountain St [a]	50.0	E	41.2	E
3 Altadena Dr and Orange Grove Blvd	0.750	C	0.730	C
4 Washington Blvd and Woodlyn Rd [a]	15.6	C	11.3	B
5 Washington Blvd and Sierra Madre Blvd	0.643	B	0.632	B

Note:

[a] Intersection controlled by stop sign(s). Value represents average delay per vehicle for most constrained movement.

CURRENT PLUS PROJECT CONDITIONS

Project Trip Generation

The first step in analyzing the future traffic conditions with the project is to estimate the number of new trips expected to be generated by the proposed project. This section of the report describes the estimation of future traffic generation of the proposed project.

As described previously, the proposed project would consist of 35 single-family residential units. Utilizing trip generation rate data contained in the Institute of Transportation Engineers' (ITE) *Trip Generation, 7th Edition*, the estimated trips for the proposed project were calculated. The resulting trip generation estimates are summarized in **Table 4**. As shown, the proposed project is expected to generate a total of approximately 335 daily trips of which approximately 25 trips are expected to occur during the morning peak hour and approximately 35 trips during the evening peak hour.

Project Trip Distribution and Assignment

The next step in the forecast of project traffic is the anticipated distribution of the trip estimates. The trip distribution assumptions are used to determine the origin and destination of the new vehicle trips associated with the project. The geographic distribution of the project trips is based on the locations of employment and service centers, the street system that serves the site, and recent traffic data collected in the project study area. Based on these factors and in conjunction with the City of Pasadena Department of Transportation, a general distribution pattern was developed for the project and is shown on **Figure 6**. Utilizing the project trip generation and the trip distribution pattern, the project only traffic volumes were assigned to the street network. **Figure 7** illustrates the resulting project only morning and evening peak hour traffic volumes at the analyzed intersections.

Current Plus Project Traffic Analysis

The project only peak hour traffic volumes shown on **Figure 7** were then added to the Current (future without project) traffic volumes. The resulting year 2007 Current Plus Project morning and evening peak hour traffic volumes are shown on **Figure 8**.

Threshold of Significance

Significant traffic impacts are determined based on threshold of significance set by respective agencies. The City of Pasadena Department of Transportation has established threshold criteria, which are used to determine if a project has a significant traffic impact. Using the City's standard, a project impact would be considered significant if the following conditions are met:

Intersection Level of Service Under Current Conditions	Increase in Intersection Level of Service Due to Project Traffic Considered Significant
<u>LOS</u>	
A	equal to or greater than 0.060
B	equal to or greater than 0.050
C	equal to or greater than 0.040
D	equal to or greater than 0.030
E	equal to or greater than 0.020
F	equal to or greater than 0.010

TABLE 4
 1000 ROSE AVENUE RESIDENTIAL PROJECT
 TRIP GENERATION ESTIMATES

Land Use	Size	ITE code	Daily Trips	AM Peak Hour		PM Peak Hour	
				In	Out	In	Out
Single-family residential	35 dus	210	335	7	20	22	13
				Total	26	Total	
							35

Note:
 Source: ITE Trip Generation, 7th Edition

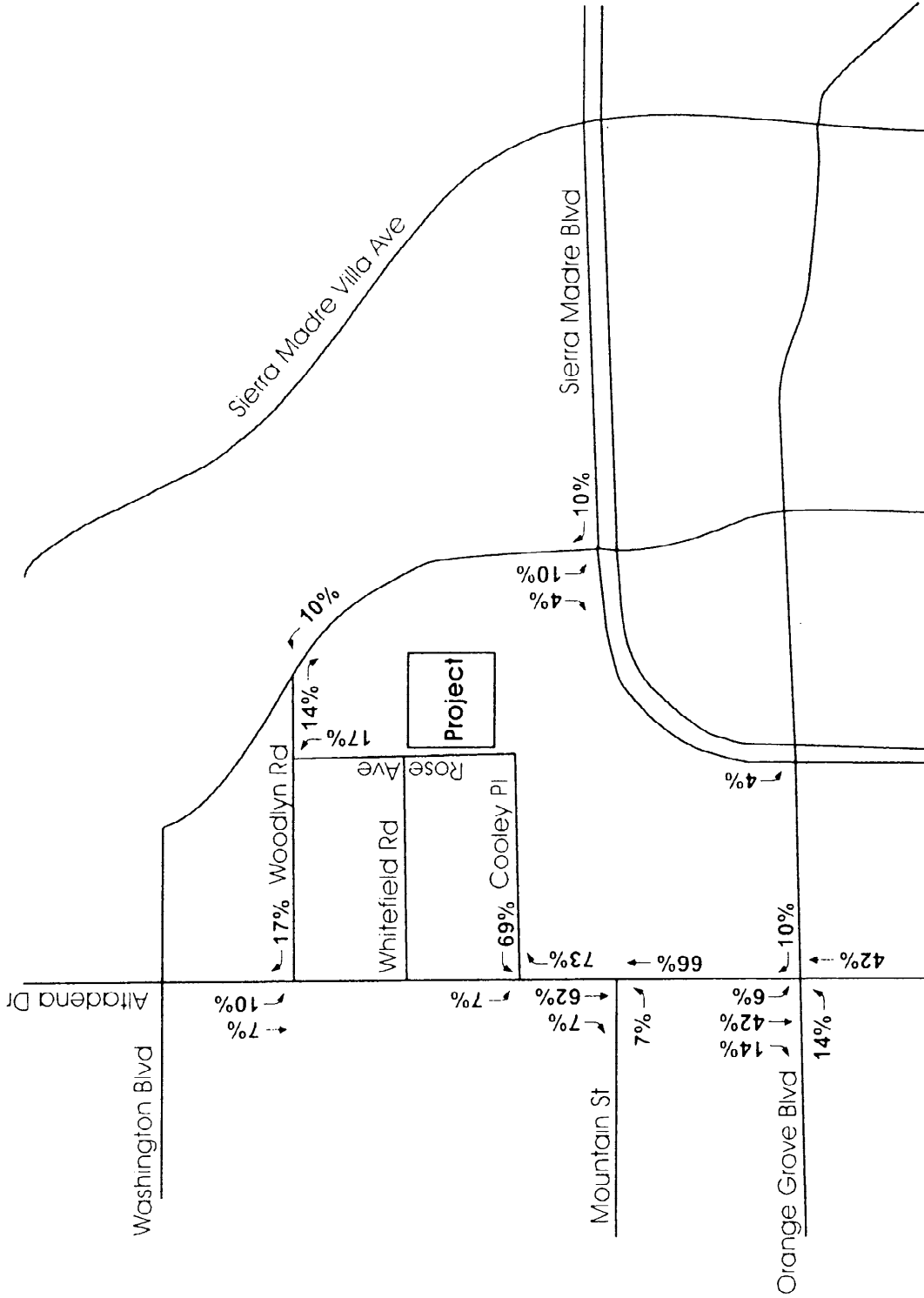
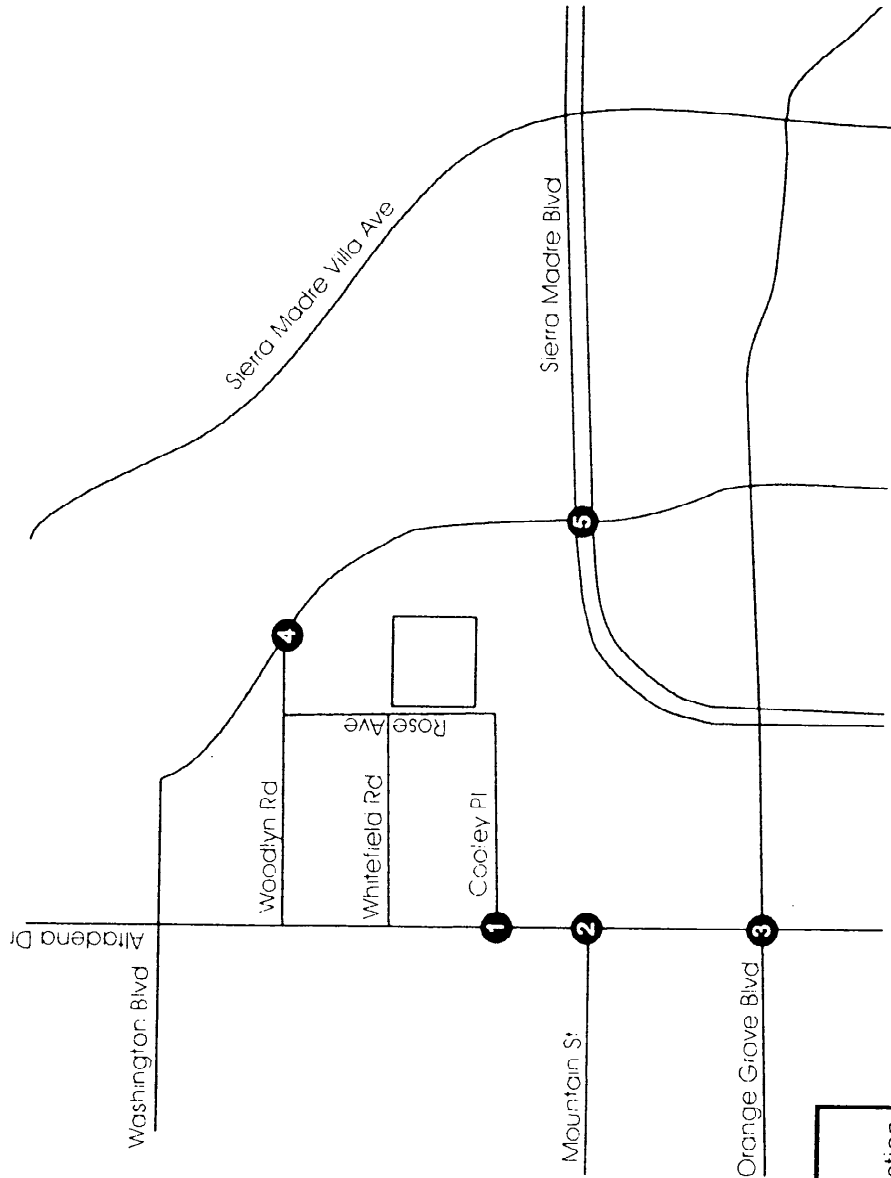


FIGURE 6
Project Trip Distribution

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4 Washington Bl/Woodlyn Rd

Washington Bl	3(2)
Woodlyn Rd	1(2)

5 Washington Bl Sierra Madre Bl

Washington Bl	1(2)
Sierra Madre Bl	2(1)

1 Alladene Dr Cookey Pl

Alladene Dr	5(16)
Cookey Pl	1(9)

2 Alladene Dr Mountain St

Alladene Dr	0(2)
Mountain St	5(15)

3 Alladene Dr Orange Grove Bl

Alladene Dr	1(3)
Orange Grove Bl	3(9)

Legend

- # Study Intersection
- Project Site
- #(##) AM(PM)

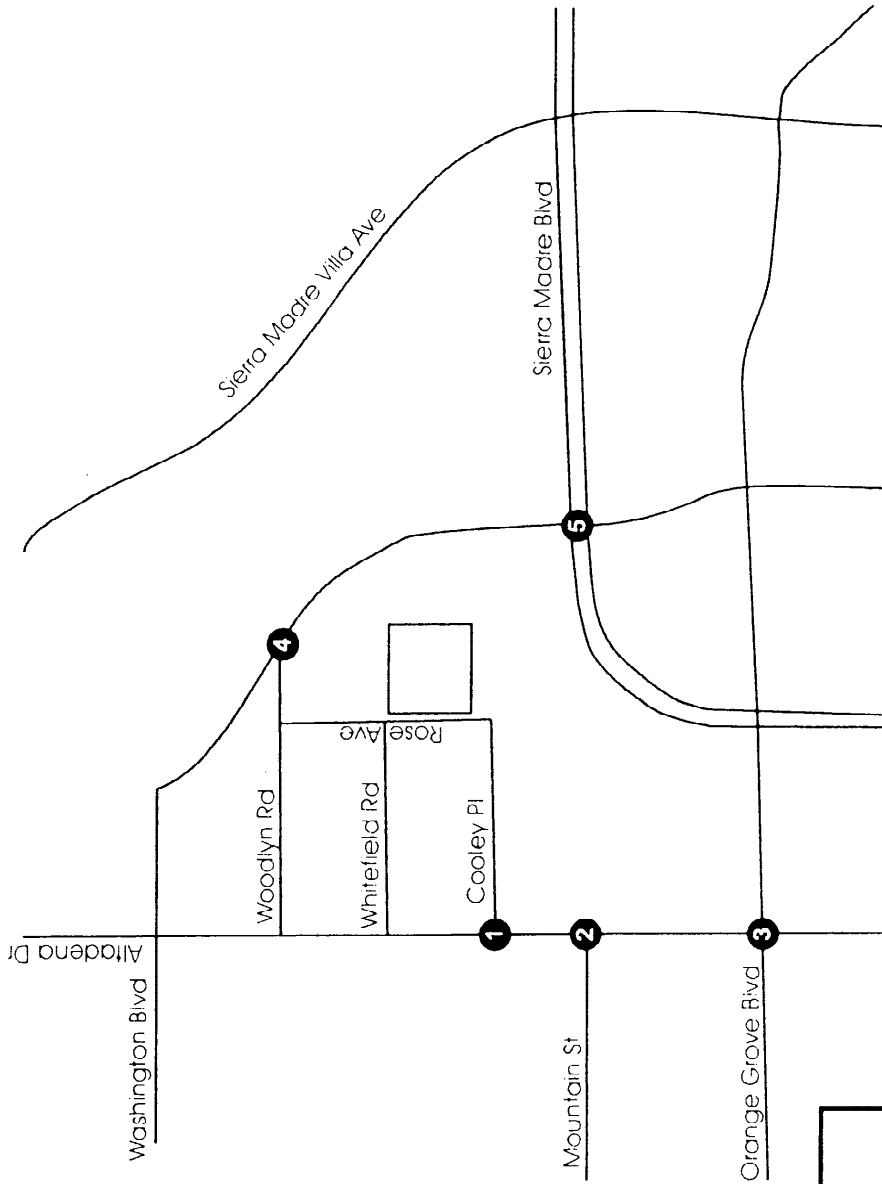


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**1000 Rose Avenue Residential Project
 Traffic Impact Study**

**FIGURE 7
 Project Only Peak Hour Volumes**

10/15/2015 10:00 AM 10/15/2015 10:00 AM 10/15/2015 10:00 AM



← 2(3)	→ 42(36)
← 1(0)	→ 386(278)
← 19(149)	→ 4(11)
← 1(3)	→ 22(7)
← 460(640)	→ 0(1)
← 76(711)	→ 0(1)
← 76(711)	→ 0(1)
← 166(87)	→ 5(5)
← 629(825)	→ 166(87)
← 89(18)	→ 7(4)
← 1015(687)	→ 1015(687)

← 359(272)	→ 106(3)
← 693(390)	→ 24(23)
← 4(2)	→ 9(11)
← 280(54)	→ 155(81)
← 251(127)	→ 374(805)
← 15(72)	→ 15(72)
← 882(923)	→ 0(0)
← 77(77)	→ 77(77)
← 0(0)	→ 0(0)
← 2(8)	→ 2(8)
← 0(10)	→ 55(121)
← 1195(744)	→ 1195(744)

← 107(104)	→ 40(59)
← 625(433)	→ 681(752)
← 311(181)	→ 631(23)
← 137(109)	→ 1069(642)
← 90(40)	→ 386(848)
← 61(99)	→ 72(50)
← 1069(642)	→ 1069(642)
← 137(109)	→ 137(109)
← 90(40)	→ 90(40)
← 61(99)	→ 61(99)
← 107(104)	→ 107(104)

← 121(114)	→ 882(923)
← 0(21)	→ 77(77)
← 118(114)	→ 0(0)
← 55(121)	→ 2(8)
← 1195(744)	→ 0(0)
← 0(10)	→ 2(8)
← 55(121)	→ 0(0)
← 1195(744)	→ 2(8)
← 0(10)	→ 0(0)
← 55(121)	→ 0(0)
← 1195(744)	→ 0(0)
← 0(10)	→ 0(0)

Legend

- # Study Intersection
- Project Site
- #(AM) AM(PM)



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1000 Rose Avenue Residential Project
Traffic Impact Study

FIGURE 8
Current Plus Project Peak Hour Volumes

3. U:\GIS\2010-05 XXXXX TIC\1000-Residential Traffic Impact Study

The City's criteria were applied to determine potential significant traffic impacts associated with the project at the five study locations.

Intersection Traffic Impact Analysis

The intersection volume-to-capacity ratios and average delay and corresponding levels of service for Current Plus Project conditions were calculated and the results summarized in **Table 5** for each of the five analyzed locations. The resultant change in V/C ratio comparing the Current Plus Project to the Current (Future Without Project) conditions is also presented in the table. It should be noted that the two stop-controlled intersections were analyzed assuming signalized conditions in order to determine the increase in the V/C ratio. The City's significant impact criteria were then applied to determine if the project's impacts at these locations were significant. As shown on **Table 5**, the project is not expected to generate significant impacts at any of the analyzed intersections.

Street Segment Analysis

In addition to the intersection impact analysis described above, the project traffic impacts were also assessed along five street segments near the project site. The analyzed street segments include:

- Altadena Drive north of Cordova Street
- Cooley Place east of Altadena Drive
- Woodlyn Road west of Washington Boulevard
- Sierra Madre Boulevard east of Washington Boulevard
- Rose Avenue between Cooley Place and Whitefield Road

Daily traffic counts were conducted along each of these street segments and are summarized in **Table 6**. The Current and Current Plus Project daily volumes were also developed in a similar manner to the intersection peak hour volumes along the five analyzed street segments. These projections are also shown on **Table 6**. The City of Pasadena has street segment ADT impact thresholds that determine the type of traffic mitigation based on the growth in daily traffic attributed by the project. The thresholds are summarized in Appendix B.

As shown on **Table 6**, the project is expected to have a minimal effect on Altadena Drive and Sierra Madre Boulevard with increases in daily traffic volumes of one percent or less. Along Woodlyn Road (west of Washington Boulevard) daily traffic volumes are expected to grow by 4.3% due to the proposed project. As shown on the table, the project is expected to add approximately 232 daily trips along Cooley Place, representing a 10.5% increase. Under the City's street segment thresholds, the growth would require physical mitigations, however it should be noted that given the physical characteristics of Cooley Place and the future daily volumes projected along this street, the increase is expected to be acceptable and the overall daily volumes below the street's capacity. The project would increase the daily two-way daily volumes along Rose Avenue by approximately 232 daily trips (24.8% growth). The projected growth along this segment of Rose Avenue would also require mitigation under the City's thresholds, however similar to Cooley Place, the increase in the daily volumes is expected to be acceptable along Rose Avenue given the projected daily volumes and the overall daily volumes would not be expected to exceed the street's carrying capacity.

Mitigation Measures

As described above, the proposed 1000 Rose Avenue residential project would generate street segment impacts which would require mitigation. Based on conversations with the City of Pasadena Department of Transportation staff, the following mitigation measures would be required in order to mitigate the proposed project's street segment impacts.

TABLE 5
1000 ROSE AVENUE RESIDENTIAL PROJECT
FUTURE LEVEL OF SERVICE SUMMARY

Intersection	AM Peak Hour				PM Peak Hour				Significant impact?	
	Current (Future w/o Project)		Current + Project		Current (Future w/o Project)		Current + Project			
	V/C or delay	LOS	V/C or delay	LOS	V/C or delay	LOS	V/C or delay	LOS		
1 Altadena Dr and Cooley Pl	0.534	A	0.542	A	0.416	A	0.427	A	0.011	No
2 Altadena Dr and Mountain St [a]	50.0	E	51.0	F	41.2	E	42.6	E	-	N/A
Altadena Dr and Mountain St [b]	0.618	B	0.622	B	0.480	A	0.485	A	0.006	No
3 Altadena Dr and Orange Grove Blvd	0.750	C	0.754	C	0.730	C	0.733	C	0.003	No
4 Washington Blvd and Woodlyn Rd [a]	15.6	C	15.7	C	11.3	B	11.3	B	-	N/A
Washington Blvd and Woodlyn Rd [b]	0.325	A	0.327	A	0.368	A	0.371	A	0.003	No
5 Washington Blvd and Sierra Madre Blvd	0.643	B	0.645	B	0.632	B	0.634	B	0.002	No

Notes:

[a] intersection controlled by stop sign(s). Value represents average delay per vehicle for most constrained movement

[b] intersection analyzed as T signalized to determine significant impact

**TABLE 6
1000 ROSE AVENUE RESIDENTIAL PROJECT
STREET SEGMENT ANALYSIS**

Street Segment	Daily Volumes (Two-way)				% Growth Due to Project
	Existing	Current (Future w/o Project)	Project Only	Current + Project	
1 Altadena Dr n/o Orange Grove Blvd	21,804	22,240	217	22,457	1.0%
2 Cooley Pl e/o Altadena Dr	2,156	2,199	232	2,431	10.5% [a]
3 Woodlyn Rd w/o Washington Blvd	1,310	1,336	58	1,394	4.3%
4 Sierra Madre Blvd e/o Washington Blvd	18,387	18,755	34	18,789	0.2%
5 Rose Av b/w Cooley Pl and Whitefield Rd	916	934	232	1,166	24.8% [a]

Note

[a] The projected growth along this segment would require mitigation under the City's thresholds, however the total future daily volumes along this street segment would not be expected to exceed the street's capacity.

Pasadena High School Pick Up and Drop Off Plan – This improvement has been identified in the City’s Capital Improvement Plan (CIP) and is listed as Project Number 75505. The improvements would include median modifications along Sierra Madre Boulevard in front of Pasadena High School and the installation of two new traffic signals. One of the traffic signals would be located at Sierra Madre Boulevard and Pasadena High School parking lot (traffic signal is in conjunction with the median improvements); the other signal would be installed along Washington Boulevard at the entrance of the Pasadena High School faculty parking lot.

With the implementation of the proposed mitigation measures, the project’s traffic impacts are expected to be mitigated to levels less than significant.

APPENDIX A
LEVEL OF SERVICE WORKSHEETS

1800 Rose Avenue
City of Pasadena
AM Existing

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

Intersection #1 Altadena Dr and Mountain St
Average Delay (sec/veh): 2.3 Worst Case Level of Service: E (45.4)
Critical Vol./Cap. (X1): 0.521
Loss Time (sec): 10 (Y+R = 4 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 35 Level of Service: A
Street Name: Altadena Dr Mountain St
Approach: North Bound South Bound East Bound West Bound
Movement: L T R L T R L T R L T R L T R
Control: Uncontrolled Uncontrolled Uncontrolled Uncontrolled Stop Sign Stop Sign
Rights: 1 0 2 0 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0
Lanes: 1 0 2 0 0 0 0 1 1 0 0 1 0 0 0 1 0 0 0 1 0 0

Volume Module:
Base Vol: 75 851 0 0 1149 52 12 0 115 2 0 2
Growth Adj: 1.00
Initial Bse: 75 851 0 0 1149 52 12 0 115 2 0 2
Added Vol: 0
PasserbyVol: 0
Initial Fut: 75 851 0 0 1149 52 12 0 115 2 0 2
User Adj: 1.00
PHF Adj: 1.00
PHF Volume: 75 851 0 0 1149 52 12 0 115 2 0 2
Reduced Vol: 0
Final Vol: 75 851 0 0 1149 52 12 0 115 2 0 2
Critical Gap Module:
Critical Gap: 4.1 xxxxx xxxxxx xxxxxx xxxxxx 7.5 xxxxx 6.9 7.5 xxxxx 6.9
FollowUpTim: 2.2 xxxxx xxxxxx xxxxxx xxxxxx 3.5 xxxxxx 3.3 3.5 xxxxx 3.3

Capacity Module:
Conflict Vol: 1201 xxxxx xxxxxx xxxxxx xxxxxx 1751 xxxxx 601 1576 xxxxx 425
Potential Cap: 568 xxxxx xxxxxx xxxxxx xxxxxx 56 xxxxx 449 75 xxxxx 583
Move Cap: 588 xxxxx xxxxxx xxxxxx xxxxxx 50 xxxxx 449 51 xxxxx 583
Volume/Cap: 0.13 xxxxx xxxxxx xxxxxx xxxxxx 0.24 xxxxx 0.26 0.04 xxxxx 0.00
Level of Service Module:
Queue: 0.4 xxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
Stopped Del: 12.0 xxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx xxxxxx
LOS by Move: B
Movement: LT LTR RT LT LTR RT LT LTR RT LT LTR RT LT LTR RT
Shared Cap: xxxxx xxxxx xxxxxx xxxxxx xxxxxx xxxxxx 256 xxxxx 93 xxxxx
Shared Queue: xxxxx xxxxx xxxxxx xxxxxx xxxxxx xxxxxx 2.5 xxxxx xxxxx 0.1 xxxxx
Shrd StpDel: xxxxx xxxxx xxxxxx xxxxxx xxxxxx xxxxxx 32.1 xxxxx xxxxx 45.4 xxxxx
Shared LOS: D
ApproachDel: xxxxxx xxxxxx 32.1 45.4
ApproachCLS: D E

1800 Rose Avenue
City of Pasadena
AM Existing

Level of Service Computation Report
TCU (Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #1 Altadena Dr and Cooley Pl
Cycle Time (sec): 100 Critical Vol./Cap. (X1): 0.521
Loss Time (sec): 10 (Y+R = 4 sec) Average Delay (sec/veh): xxxxxx
Optimal Cycle: 35 Level of Service: A
Street Name: Altadena Dr Cooley Pl
Approach: North Bound South Bound East Bound West Bound
Movement: L T R L T R L T R L T R
Control: Permitted Permitted Permitted Permitted Split Phase Split Phase
Rights: 1 0 1 0 1 0 1 0 1 0 0 0 0 0 1 0 0 1 0 0 1 0
Lanes: 1 0 1 0 1 0 1 0 1 0 0 0 0 0 1 0 0 1 0 0 1 0

Volume Module:
Base Vol: 5 611 156 86 985 7 0 0 0 173 1 99
Growth Adj: 1.00
Initial Bse: 5 611 156 86 985 7 0 0 0 173 1 99
Added Vol: 0
PasserbyVol: 0
Initial Fut: 5 611 156 86 985 7 0 0 0 173 1 99
User Adj: 1.00
PHF Adj: 1.00
PHF Volume: 5 611 156 86 985 7 0 0 0 173 1 99
Reduced Vol: 0
Final Vol: 5 611 156 86 985 7 0 0 0 173 1 99

Saturation Flow Module:
Sat/Lane: 1600
Adj/Segment: 1.00
Lanes: 1600 2549 651 1600 3177 23 0 0 0 1600 16 1584
Capacity Analysis Module:
Vol/Sat: 0.00 0.24 0.24 0.05 0.31 0.31 0.00 0.00 0.00 0.11 0.06 0.06
Crit Moves: *

Level of Service Computation Report
 Method (Future Volume Alternative)
 Intersection: Alhambra Dr and Orange Grove Blvd
 Critical Vol./Cap: (X) 0.73
 Loss Time (sec): 10 (V-R = 4 sec) Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 54 Level of Service: C
 Street Name: North Bound South Bound East Bound West Bound
 Approach: Alhambra Dr Orange Grove Blvd
 Movement: L T R L T R L T R L T R L T R L T R
 Control: Permitted Permitted Permitted Permitted Permitted Permitted
 Rights: Include Include Include Include Include Include
 Min Green: 0
 Lanes: 1 0 1 0 0 0 1 0 1 0 0 0 1 0 1 0 0 0 1 0 1 0 0 0 1 0 0 0

Volume Module:

Base Vol	39	658	61	132	1030	84	58	375	70	30	607	103
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	39	658	61	132	1030	84	58	375	70	30	607	103
Added Vol	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut	39	658	61	132	1030	84	58	375	70	30	607	103
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	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 Volume	39	658	61	132	1030	84	58	375	70	30	607	103
Reduced Vol	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol	39	658	61	132	1030	84	58	375	70	30	607	103
Critical Gap	0	0	0	0	0	0	0	0	0	0	0	0
Critical Gap Module	4.1	xxxx	xxxx	4.1	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
FollowUpTim	2.2	xxxx	xxxx	2.2	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Capacity Module												
Conflict Vol	158	xxxx	xxxx	376	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Potent Cap	1194	xxxx	xxxx	1194	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Move Cap	1194	xxxx	xxxx	1194	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Volume/Cap	0.94	xxxx	xxxx	0.60	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level of Service Module												
Queue	0.1	xxxx	xxxx	0.0	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Stopped Del	8.4	xxxx	xxxx	8.0	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
LOS by Move	A			A								
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Shared Cap	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Shared Queue	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Shared Stpbel	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Shared LOS												
ApproachDel	xxxxxx			xxxxxx			xxxxxx			xxxxxx		xxxxxx
ApproachLOS												

Level of Service Computation Report
 Method (Future Volume Alternative)
 Intersection: Alhambra Dr and Orange Grove Blvd
 Critical Vol./Cap: (X) 0.73
 Loss Time (sec): 10 (V-R = 4 sec) Average Delay (sec/veh): xxxxxx
 Optimal Cycle: 54 Level of Service: C
 Street Name: North Bound South Bound East Bound West Bound
 Approach: Alhambra Dr Orange Grove Blvd
 Movement: L T R L T R L T R L T R L T R L T R
 Control: Permitted Permitted Permitted Permitted Permitted Permitted
 Rights: Include Include Include Include Include Include
 Min Green: 0
 Lanes: 1 0 1 0 0 0 1 0 1 0 0 0 1 0 1 0 0 0 1 0 1 0 0 0 1 0 0 0

Volume Module:

Base Vol	39	658	61	132	1030	84	58	375	70	30	607	103
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	39	658	61	132	1030	84	58	375	70	30	607	103
Added Vol	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut	39	658	61	132	1030	84	58	375	70	30	607	103
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	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 Volume	39	658	61	132	1030	84	58	375	70	30	607	103
Reduced Vol	0	0	0	0	0	0	0	0	0	0	0	0
Final Vol	39	658	61	132	1030	84	58	375	70	30	607	103
Critical Gap	0	0	0	0	0	0	0	0	0	0	0	0
Critical Gap Module	4.1	xxxx	xxxx	4.1	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
FollowUpTim	2.2	xxxx	xxxx	2.2	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Capacity Module												
Conflict Vol	158	xxxx	xxxx	376	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Potent Cap	1194	xxxx	xxxx	1194	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Move Cap	1194	xxxx	xxxx	1194	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Volume/Cap	0.94	xxxx	xxxx	0.60	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Level of Service Module												
Queue	0.1	xxxx	xxxx	0.0	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Stopped Del	8.4	xxxx	xxxx	8.0	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
LOS by Move	A			A								
Movement	L	T	R	L	T	R	L	T	R	L	T	R
Shared Cap	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Shared Queue	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Shared Stpbel	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx
Shared LOS												
ApproachDel	xxxxxx			xxxxxx			xxxxxx			xxxxxx		xxxxxx
ApproachLOS												

1000 Rose Avenue
 City of Pasadena
 AM Existing
 Lane Geometry Report

Level of Service Computation Report
 ICU (Loss as Cycle Length % Method (Future Volume Alternative)
 Intersection #5 Washington Blvd and Sierra Madre Blvd

Node Intersection	LB	LT	RT	RB	LR	RR	WB
1 Altadena Dr and Cooley Pl	101100	101100	101100	101100	000000	000000	100100
2 Altadena Dr and Mountbain St	102000	101100	101100	101100	000001	000001	000001
3 Altadena Dr and Orange Grove Blvd	101100	101100	101100	101100	101100	101100	101100
4 Washington Blvd and Woodlyn Rd	101100	101100	101100	101100	000010	000010	000001
5 Washington Blvd and Sierra Madre Bl	100100	101010	102100	102100	102100	102100	100100

1000 Rose Avenue
 City of Pasadena
 AM Existing
 Lane Geometry Report

Level of Service Computation Report
 ICU (Loss as Cycle Length % Method (Future Volume Alternative)
 Intersection #5 Washington Blvd and Sierra Madre Blvd

Control	Protected	Protected	Protected	Protected	Protected	Protected	Protected					
Right	Include	Include	Include	Include	Include	Include	Include					
Min Green	1	0	1	0	1	0	1					
Lanes	1	0	1	0	1	0	1					
Volume Module	103	23	9	270	68	243	150	363	15	4	673	348
Base Vol	100	100	100	100	100	100	100	100	100	100	100	100
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	103	23	9	270	68	243	150	363	15	4	673	348
Added Vol	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut	103	23	9	270	68	243	150	363	15	4	673	348
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	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 Volume	103	23	9	270	68	243	150	363	15	4	673	348
Reduced Vol	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol	103	23	9	270	68	243	150	363	15	4	673	348
PCZ 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
MLF 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
Final Vol	103	23	9	270	68	243	150	363	15	4	673	348

Saturation Flow Module:
 Sat/Plane 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600
 Adjustment 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
 Lanes 1.00 0.72 0.28 1.00 1.00 1.00 1.00 2.88 0.12 1.00 3.00 1.00
 Final Sat 1600 1150 450 1600 1600 1600 1600 4610 190 1600 4800 1600

Capacity Analysis Module:
 Vol/Sat C 06 0 02 0.02 C 17 0 04 0.15 C 09 0 08 0.08 C 00 0 14 0.22
 Crit Moves ****

