SOUTHERN CALIFORNIA ASSOCIATION of GOVERNMENTS

La Cienega Boulevard Corridor Improvement Project

FINAL REPORT

Submitted by:

ITERIS® Innovation for better mobility

September 30, 2010

16-J10-1602

DOCUMENT VERSION CONTROL

Document Name	Submittal Date	Version No.
La Cienega Boulevard Corridor Improvement Project Draft Final Report	August 31, 2010	A.1
La Cienega Boulevard Corridor Improvement Project Final Report	September 30, 2010	A.2

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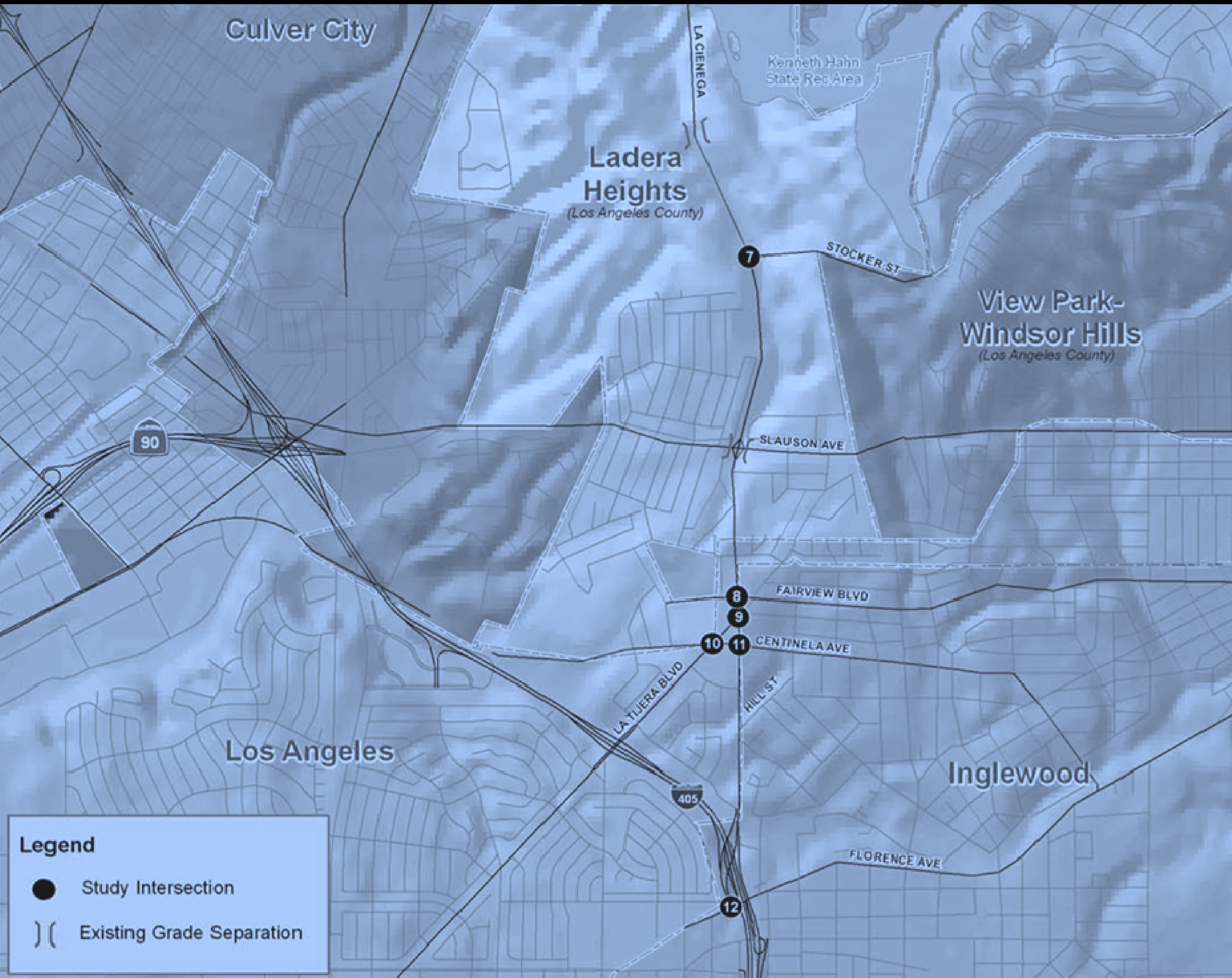


1.0 INTRODUCTION

The La Cienega Boulevard Corridor, between the I-10 (Santa Monica) Freeway and the I-405 (San Diego) Freeway, is a major north/south travel route in the central Los Angeles region. The corridor traverses portions of the Cities of Los Angeles, Culver City and Inglewood, and the County of Los Angeles in the Baldwin Hills and Ladera Heights areas, providing local access to each of these jurisdictions. The corridor also carries a high volume of regional through traffic. It connects population and employment centers in the South Bay to those in Mid-City Los Angeles, Century City, Beverly Hills and Hollywood. The corridor also serves as a major access route to Los Angeles International Airport (LAX) for travelers to/from these areas.

La Cienega Boulevard is a six-lane major arterial with daily traffic volumes over 85,000 vehicles per day. These volumes would generally be considered beyond the capacity of a six-lane arterial, but traffic in the corridor is heavy in both directions for many hours of the day, allowing it to carry higher volumes than a typical arterial. In some segments, the roadway functions as an expressway with grade separated interchanges (e.g., at Slauson Avenue). At both the north and south ends, it also has multiple streets tributary to it, with Fairfax Avenue branching off to the north and La Tijera branching off to the south.

Efforts have been made by the jurisdictions through which La Cienega Boulevard passes to upgrade its capacity and reduce the incidence of traffic diverting into adjacent neighborhoods. There are further opportunities for improved signal timing and coordination to enhance traffic flow, but there are relatively few opportunities for widening to provide additional travel lanes within the existing right-of-way. Alternative approaches to managing the traffic and adding capacity, will be necessary to allow the corridor to continue to function with ever increasing traffic demands.

1.1 Purpose of the Study

The purpose of this study is to improve traffic flow on La Cienega Boulevard and lessen the impact of regional traffic on local residents. As mentioned above, the project study area includes the approximately 4.5 miles of La Cienega Boulevard corridor between the I-10 and I-405 freeways. Because the major connection from the corridor to I-10 is via Fairfax Avenue, the project study area also incorporates Fairfax Avenue from Venice to La Cienega Boulevards.

The study identifies potential improvement strategies to facilitate traffic flow through the corridor, such as medians, additional turn lanes, and enhanced traffic signal coordination. The study also examines potential intersections that could benefit from the construction of grade separations (overpasses or underpasses) for through traffic on La Cienega Boulevard.

1.2 Related Planning Efforts

Several related planning studies have been conducted of the La Cienega Corridor and of the land uses along it. These planning efforts generated some transportation recommendations and are briefly summarized below.

Kenneth Hahn State Recreation Area General Plan Amendment (California Department of Parks and Recreation)

Kenneth Hahn State Recreation Area (KHSRA) is located within the Baldwin Hills portion of southwest Los Angeles County just east of La Cienega Boulevard. The park includes 387 acres of protected parkland, including the existing KHSRA and the newly acquired Vista Pacifica Scenic Site and County-owned parkland. A Class I bicycle path and a sound wall was proposed as a part of the general plan update.

Baldwin Hills Master Plan (Community Conservancy International, May 2002)

The Baldwin Hills encompass 450 acres of protected parkland, including the Kenneth Hahn State Recreation Area, the Ladera Ball Fields, the Vista Pacifica Scenic Site, Culver City Park and Norman O. Houston Park. The Baldwin Hills are the last, large undeveloped area of open space in urban Los Angeles County, covering over two square miles of dramatic ridgelines and steep canyons. Close to both downtown Los Angeles and the Pacific Ocean, the Baldwin Hills are easily accessible to millions of residents, and provide unparalleled opportunities for outdoor recreation in a natural setting. One of the goals of this master plan was to create a park entrance off of La Cienega Boulevard that will serve as one of the primary entry points into the park, and shall introduce park visitors to the wealth of natural resources of the Baldwin Hills.

La Cienega Boulevard Operations Plan (County of Los Angeles, Department of Public Works)

The purpose of this study was to review and analyze existing traffic conditions and system operations along La Cienega Boulevard from Sunset Boulevard to Stocker Street and to provide suggestions to improve traffic progression along the corridor. Thus, the study area of this analysis overlapped that of the present project from I-10 to Stocker Street.

The study resulted in the following recommendations:

- Develop time-space diagrams to be consistent with the actual average speed of vehicles in the corridor.
- Install protected-permissive left-turn signals at the intersection of La Cienega Boulevard/Jefferson Boulevard.
- Use a uniform 120-second cycle length throughout the corridor, and develop time-space diagrams to correspond to the directional traffic for the a.m. and p.m. peaks.
- Expand peak-hour parking restrictions to both sides of the streets for the a.m. and p.m. peaks.
- Examine the feasibility of widening portions of La Cienega Boulevard to accommodate three through-lanes and parking for each direction.

La Cienega Boulevard Grade Separated Route (City of Inglewood, Public Works Department, November 2007)

The purpose of this study was to develop preliminary design concepts to assess the feasibility of converting La Cienega Boulevard into a fully grade-separated facility between I-10 and I-405. The study developed concepts including a widening and realignment of the grade-separated roadway in the corridor from I-10 (via Fairfax Avenue) to Rodeo Road, with grade separated interchange ramps at La Tijera and Centinela Avenues and an underpass at Fairview Drive, and improvements to the I-405 interchange. Many of the concepts proposed would require acquisition of substantial amounts of right-of-way. The City of Inglewood initiated this feasibility study as the first step in developing a multi-jurisdictional approach to identifying capacity enhancements in this corridor.

Interstate 405 Corridor System Management Plan (Caltrans District 7, Southern California Association of Governments, and the Los Angeles County Metropolitan Transportation Authority)
The I-405 Corridor System Management Plan (CSMP) will assess current performance, identify causal factors for congestion, and propose the best mix of improvement for preserving the performance of the freeway corridor between I-110 in Torrance and I-5 in San Fernando for the next 20 years. The CSMP is expected to result in a multi-jurisdictional project proposal for competitive funding opportunities, strengthened partnership for corridor management and operations, better problem identification, and relief to freeway, arterial, and transit/rail networks through a more efficient system operation.

South Bay Measure R Implementation Plan (South Bay Council of Governments)
The Measure R Implementation Plan will identify eligible freeway and arterial projects that will result in operational improvements on I-405, I-110, I-105, and SR-91. The goal of the plan is to leverage the Measure R (½ cent sales tax) funds with other potential revenue sources to create a package of projects for early implementation. The plan will take a system approach to the corridors to ensure that maximum operational benefits are achieved for the investments being made.

1.3 Project Steering Committee

At the request of the City of Inglewood, the Southern California Association of Governments (SCAG) agreed to fund this corridor study. The present study was overseen by a project steering committee that meets monthly to review the progress of the study, provide feedback on the analyses of existing and future conditions, and guide the development and evaluation of improvement strategies. The project steering committee includes representatives of the agencies listed in **Table 1-1**.

Table 1-1: Project Steering Committee

Agency	Representative
SCAG	Philip Law
Metro	Cory Zelmer
LA County	Bill Winter
Caltrans	Wilford Melton
South Bay COG	Don Camph
Westside Cities COG	Terri Slimmer
Culver City	Charles Herbertson
Inglewood	Keith Lockard
Los Angeles	Sean Haeri

1.4 STUDY AREA

The list of study intersections for the traffic analysis was developed in conjunction with the steering committee and is intended to include all major signalized intersections along the corridor. The general boundary of the traffic study area is illustrated in **Figure 1-1.** Within the study area, fifteen intersections were selected for analysis, all of which are signalized. These intersections are identified in **Figure 1-2**. The intersection of La Cienega Boulevard/Washington Boulevard falls under the jurisdiction of Culver City. The intersection of La Cienega Boulevard/Stocker Street falls under the jurisdiction of Los Angeles County. The intersection of La Cienega Boulevard/Florence Avenue falls under the jurisdiction of City of Inglewood. The intersections of Fairfax Avenue/Washington Boulevard and Fairfax Avenue/Adams Boulevard are shared by the jurisdictions of Culver City and City of Los Angeles. The intersections of La Cienega Boulevard/La Tijera Boulevard and La Cienega Boulevard/Centinela Avenue are shared by the jurisdictions of City of Inglewood and City of Los Angeles. The rest of the study intersections fall under the jurisdiction of the City of Los Angeles.

FIGURE 1-1: PROJECT LOCATION

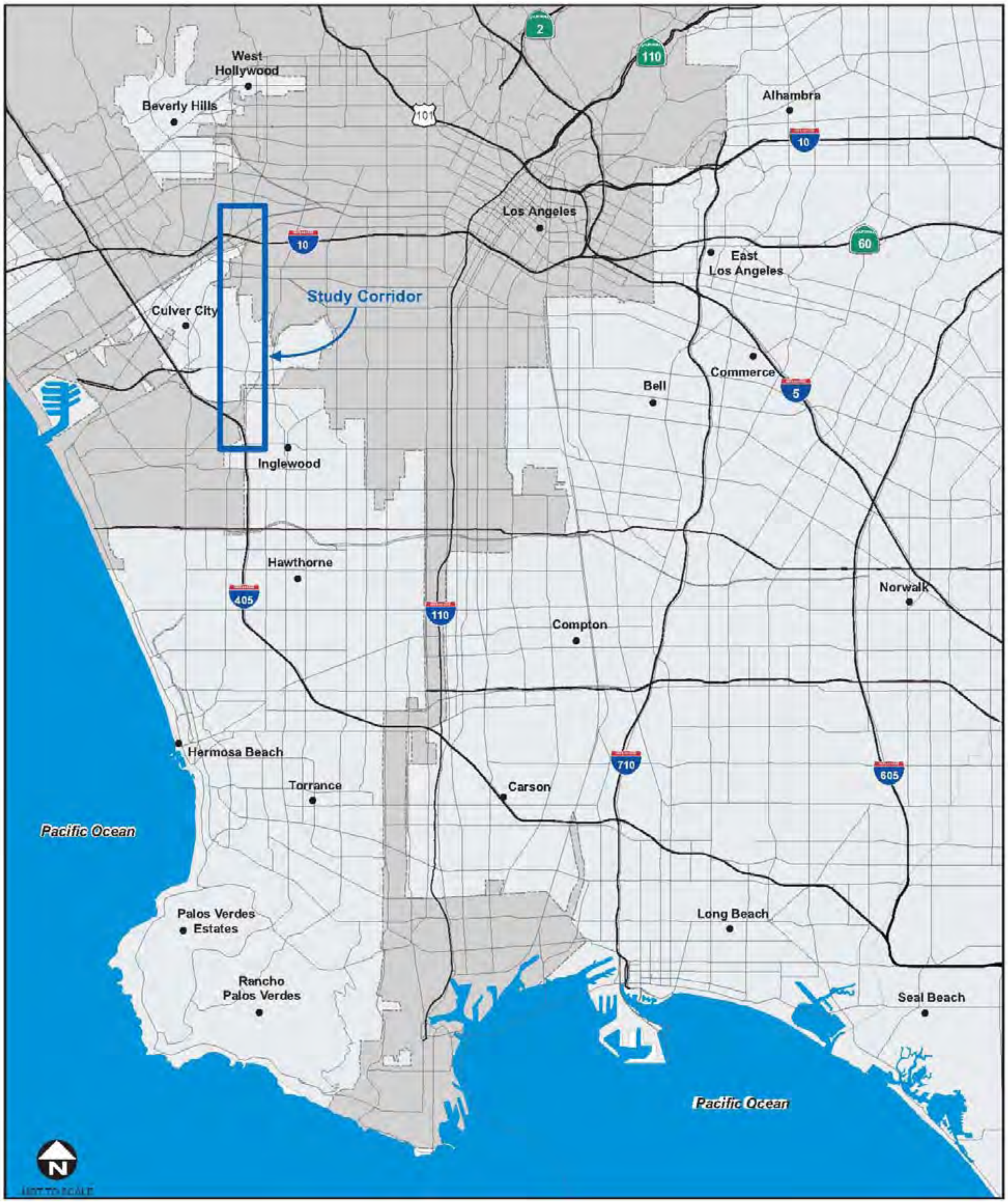
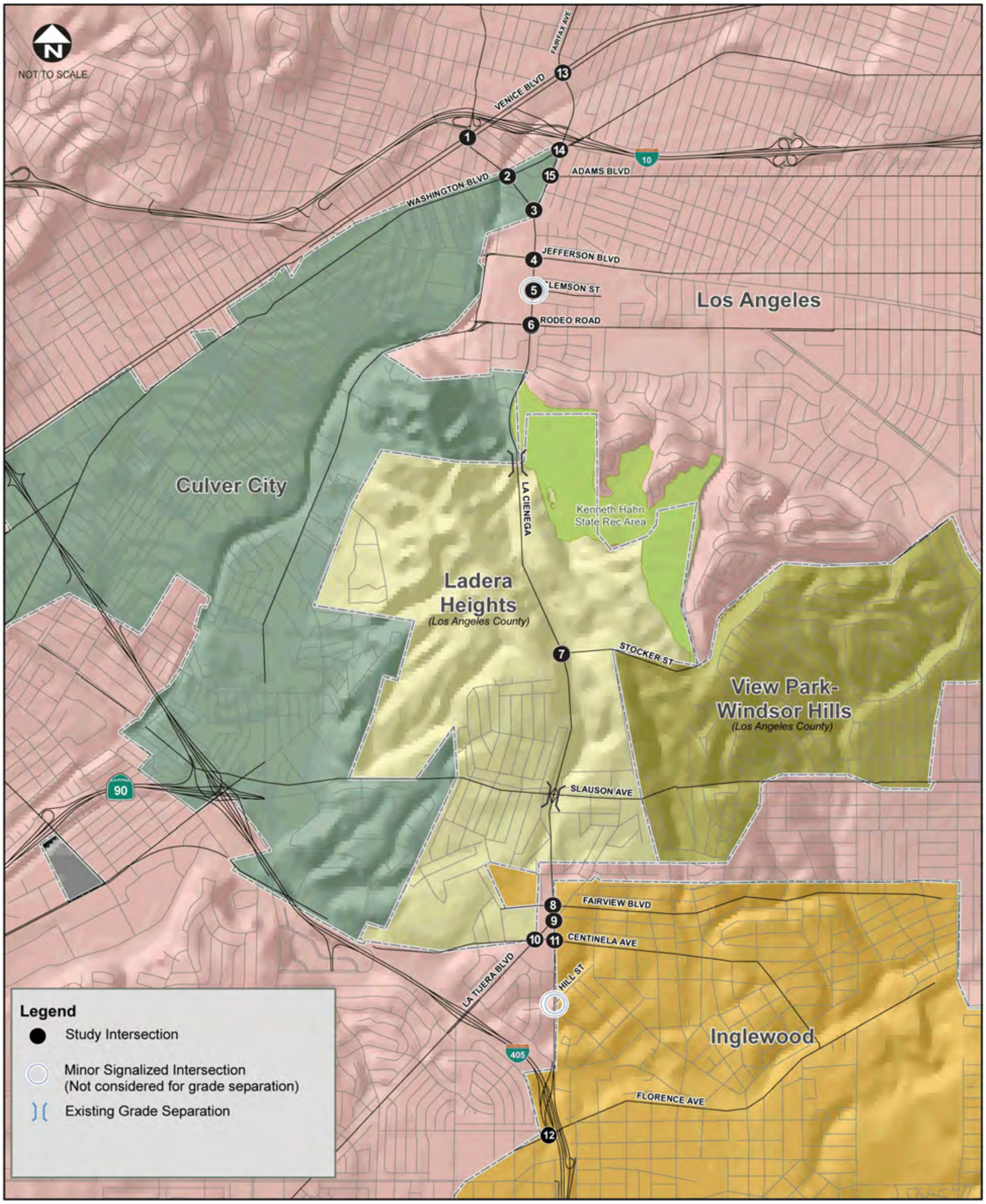


FIGURE 1-2: STUDY INTERSECTIONS



2.0 EXISTING CONDITIONS

2.1 ROADWAY DESCRIPTION

This section presents an overview of the transportation system in the vicinity of the La Cienega Boulevard corridor. The roadway system in the study area is irregular, located where the north-south grid of central Los Angeles meets the diagonal grid of the west side, and is further complicated by the irregular topography of the Baldwin Hills. Thus, there are few parallel roadways to the corridor, unevenly spaced cross streets and many diagonal intersections. La Cienega Boulevard itself is relatively flat between the I-10 freeway and Rodeo Road, climbs roughly 200 feet at an average grade of approximately 5% to a peak north of Stocker Street and then falls at a 6% grade for about half a mile and then more gradually at a 2% grade until just south of Centinela Avenue. The roadway then rises slightly to Hill Street and then gradually drops as it approaches the I-405 freeway before finally climbing up and over the freeway.

2.2 FREEWAY NETWORK

The following is a description of the freeway network that provides regional access to the study area.

The **Santa Monica Freeway (I-10)** is a major east-west freeway that intersects La Cienega Boulevard, north of the study area. This freeway is one of the busiest in the nation and carries some of the highest daily traffic volumes in the country. Based on annual counts conducted by the California Department of Transportation (Caltrans), the existing (2008) average daily traffic (ADT) on I-10 is approximately 265,000 vehicles near the study area. The I-10 Freeway varies between three and five general-purpose lanes in each direction, with several sections having additional lanes within the auxiliary lanes and/or collector/distributor roadways. Access ramps to/from the I-10 freeway serving the corridor are located at Washington Boulevard/Fairfax Avenue (ramps to/from the east) and at La Cienega Boulevard/Venice Boulevard (ramps to/from the west).

The **San Diego Freeway (I-405)** is a major north-south freeway that connects the San Fernando Valley and points north to the west side of Los Angeles and south to Long Beach and Orange County. Between the I-10 Freeway and La Cienega Boulevard, the I-405 freeway travels in a northwest/southeast direction. Therefore, in this area, it results in significant out-of-direction travel for true north/south trips. The freeway varies between four and five lanes in each direction with several sections having auxiliary lanes. Based on annual counts conducted by Caltrans, the existing (2008) ADT on I-405 ranges from 286,000 (north of La Tijera Boulevard) to 268,000 (south of Florence Avenue). The I-405 freeway has a high occupancy vehicle (HOV) lane southbound from Rinaldi Street in Granada Hills to Santa Monica Boulevard in the City of Los Angeles. HOV lanes are being added southbound between Santa Monica Boulevard and the SR-90 (Marina) freeway, and northbound between the SR-90 Freeway and the I-10 Freeway, as well as over the Sepulveda Pass.

Access to the I-405 freeway from the La Cienega Boulevard corridor is provided by an unusual interchange. Just south of Industrial Avenue, La Cienega Boulevard splits into separate one-way segments in each direction that cross over the I-405 freeway and merge again at Florence Avenue. The southbound segment merges with the southbound freeway on- and off-ramps before intersecting Florence Avenue. The northbound segment of La Cienega Boulevard merges with the northbound off-ramp before intersecting Industrial Avenue.

2.3 ARTERIAL NETWORK

Most daily travel (in terms of vehicle miles traveled, or VMT) in the study area occurs on surface streets. The corridor traverses the jurisdictions of the Cities of Los Angeles, Culver City and Inglewood, and the County of Los Angeles. Each jurisdiction has its own functional classifications for roadways. A brief description of each of these types of roadways is provided below.

City of Los Angeles

- A Major Highway (Class I) has three full-time through lanes in each direction, one part time parking lane in each direction and one median/left turn lane with 12’ sidewalks on both sides.
- A Major Highway (Class II) has two full-time through lanes in each direction, one part time parking lane in each direction and one median/left turn lane with 12’ sidewalks on both sides.
- A Secondary Highway has two full-time through lanes in each direction, all-day permitted parking and one median/left turn lane with 10’ sidewalks on both sides.
- A standard Collector Street has one full time lane in each direction, one full-time parking lane in each direction and 10’ sidewalks on both sides.

Culver City

- A Primary Artery serve as major cross-town thoroughfares and it is desirable that they have right-of-way widths of 95 feet or more; however, because of the constraints of existing development, many primary arteries have narrower rights-of-way. The number of lanes on primary arteries varies between four and six lanes plus left turn lanes.
- A Secondary Artery serve as links between collectors and primary arteries. It is desirable that right-of-way widths for secondary arteries. It is desirable that right-of-way widths for secondary arteries be in the range of 80 to 94 feet. The number of travel lanes also varies between two and four lanes.
- Collector streets provide a means for the movement of traffic from local streets to larger streets. Generally, right-of-way widths for collectors vary from 60 to 79 feet. Collectors are two-lane roadways. Currently no streets in Culver City are designated collector.
- Neighborhood Feeder streets are generally located within residential neighborhoods and provide the commonly used direct route between local residential streets and the adjacent arteries. They are not designed to attract traffic traveling through the neighborhood, however, historically many such streets have become bypass routes.
- Local Streets are the bridge by which vehicles travel between private parking and driveways to the large, non-local streets. Generally, local streets do not exceed 60 feet in right-of-way width and are found mostly in residential neighborhoods, although these streets can serve other non-residential land uses.

City of Inglewood

- A Major Arterial is typically designed to carry over 30,000 vehicles per day, which means they should have a minimum of two full-time through lanes in each direction in addition to a separate median lane to accommodate left turn movement.
- A Minor Arterial is typically designed to carry 15,000 to 30,000 vehicles per day, which means they should have a minimum of two travel lanes in each direction. A separate median lane to accommodate left turn movement is desirable if there is sufficient roadway width.
- A collector is transitional street between arterials and local streets. A collector is typically designed to carry 3,000 to 10,000 vehicles per day, which means they should have at least one travel lane in each direction.

Los Angeles County

- Major Highways are of countywide significance and which are projected to be the most heavily traveled routes. These roads generally require two or more lanes of moving traffic in each direction, channelized medians and, to the extent possible, access control and limits on intersecting streets. The normal right-of-way width for these highways is 100 feet.
- Secondary highways are planned to serve an area wide or countywide function, but are less heavily traveled then major highways. These roads normally have two moving lanes of traffic on 80 feet of right-of-way. Access control, especially to residential property and minor streets, is desirable along these roads.
- Limited Secondary routes are located in remote foothill, mountain and canyon areas. Their primary function is to provide access to low-density settlements, ranches and recreational areas. The standard improvement for limited secondary routes is one lane in each direction on a 64 feet of right-of-way.
- The Parkway classification is applied to urban and non-urban routes having park like features either within or adjacent to the roadway. The width of right-of-way varies as necessary to incorporate these features, but shall not be less than 80 feet.

These descriptions are the "ultimate" configuration expected for each roadway classification when fully built out. In practice, roadways are sometimes not built-out to their ultimate classification.

The existing configurations of the significant roadways within the study corridor are described below:

2.3.1 Major East/West Roadways

- ***Venice Boulevard*** is a major highway class I with three lanes in each direction. Within the City of Los Angeles limits, on-street parking is permitted on both sides of the street in most areas on Venice Boulevard near the study area. Venice Boulevard crosses La Cienega Boulevard with a signalized intersection which falls under the jurisdiction of City of Los Angeles. The traffic signal operates with a 'protected' left turn phase in the eastbound & westbound directions and 'permitted' left turn phase in the northbound & southbound directions.

- ***Washington Boulevard*** is a major highway class II with two lanes in each direction in most areas. Within the City of Los Angeles limits as well as Culver City, on-street parking is permitted on both sides of the street except during peak periods (7 a.m. to 9 a.m., 4 p.m. to 7 p.m.) in some areas on Washington Boulevard near the study area. Washington Boulevard crosses

La Cienega Boulevard with a signalized intersection which falls under the jurisdiction of Culver City. The traffic signal operates with a 'permitted' left turn phase in the eastbound & westbound directions and 'protected' left turn phase in the northbound & southbound directions.

- ***Adams Boulevard*** is a major highway class II that generally has two lanes in each direction. On-street parking is permitted on both sides of the street in some areas within the study area. Adams Boulevard does not cross La Cienega Boulevard but it crosses Fairfax Avenue within the study area with a signalized intersection which falls under the jurisdiction of City of Los Angeles. The traffic signal operates with a 'permitted' left turn phase in all the directions.

- ***Jefferson Boulevard*** is a major highway class II that generally has two lanes in each direction. On-street parking is permitted on both sides of the street in some areas within the study area. Jefferson Boulevard crosses La Cienega Boulevard with a signalized intersection which falls under the jurisdiction of City of Los Angeles. The traffic signal operates with a 'protected' left turn phase in the eastbound & westbound directions. Currently there is construction going on for the 'Exposition Light Rail' project (phase I) due to which left turns lanes are eliminated in the northbound and southbound directions as well as one lane is eliminated in the eastbound direction.

- ***Clemson Street*** is a secondary highway with two lanes in each direction. The west leg of the La Cienega Boulevard/Clemson Street intersection is a driveway to the 'Target' shopping center. On-street parking is permitted on both sides of the street. Clemson Street crosses La Cienega Boulevard with a signalized intersection which falls under the jurisdiction of City of Los Angeles. The traffic signal operates with a 'permitted' left turn phase in the eastbound, westbound and southbound directions and 'protected plus permitted' left turn phase in the northbound direction.

- ***Rodeo Road*** is a major highway class II with two lanes in each direction. Within the City of Los Angeles limits, on-street parking is permitted on both sides of the street in most areas on Rodeo Road within the study area. Rodeo Road crosses La Cienega Boulevard with a signalized intersection which falls under the jurisdiction of City of Los Angeles. The traffic signal operates with a 'protected plus permitted' left turn phase in the eastbound and westbound directions and 'protected' left turn phase in the northbound and southbound directions.

- ***Stocker Street*** is a secondary highway with two lanes in each direction. On-street parking is permitted on both sides of the street. Stocker Street crosses La Cienega Boulevard with a signalized intersection which falls under the jurisdiction of County of Los

'Florida T' Intersection at Stocker street.

Angeles. The traffic signal operates as a 'Florida-T Intersection' where southbound through traffic never stops. The southbound left turn phase is 'protected' whereas westbound and northbound right turns are 'Free' movements. Stocker Street serves as a major connector route between La Brea Avenue and La Cienega Boulevard. Fairfax Avenue, which is discontinuous over the Baldwin Hills, dead ends at Stocker Street, extending south into Inglewood, but not north through the oil fields.

- ***Slauson Avenue*** is a major highway class II with three lanes in each direction. On-street parking is permitted on both sides of the street in most areas on Slauson Avenue within the study area. Slauson Avenue does not intersect La Cienega Boulevard but it functions as a grade separated interchange with on ramp and off ramps on La Cienega Boulevard in both the northbound and southbound directions. At one point, Slauson Avenue was to have been the extension of the Route 90 (Marina freeway). There is a significant east-west movement of vehicles between Slauson Avenue and Stocker Street that must be made via short portion of La Cienega Boulevard. This results in a significant amount of weaving of traffic on southbound La Cienega by vehicles that have turned left off of Stocker that then must weave to the right to exit at Slauson. In the reverse direction, the weave is eliminated by the diamond interchange configuration on Slauson, which allows vehicles to enter La Cienega in the right lane and to proceed directly to the right turn onto Stocker.

Diamond Interchange at Slauson Avenue provides "freeway-like" capacity on La Cienega Boulevard.

- ***Fairview Boulevard*** is a collector street with one lane in each direction. On-street parking is permitted on both sides of the street on Fairview Boulevard within the study area. Fairview Boulevard crosses La Cienega Boulevard with a signalized intersection which falls under the jurisdiction of City of Los Angeles. The traffic signal operates with a 'split' through/left phase in the eastbound and westbound directions whereas left turns are prohibited in the northbound and southbound directions.
- ***Centinela Avenue*** is a major highway class II in the City of Los Angeles and a major arterial in the City of Inglewood with two lanes in each direction in most areas. Within the City of Inglewood limits, on-street parking is permitted on both sides of the street in some areas on Centinela Avenue within the study area. Centinela Avenue crosses La Cienega Boulevard with a signalized intersection which falls under the jurisdiction of City of Los Angeles. The traffic signal operates with a 'protected' left turn phase in the northbound and southbound directions and 'protected plus permitted' left turn phase in the westbound direction. Left turns are prohibited in the eastbound direction.

- ***Florence Avenue*** is a major highway class II in the City of Los Angeles and a major arterial in the City of Inglewood with two lanes in each direction in most areas. Within the City of Inglewood limits, on-street parking is permitted on both sides of the street in some areas on Florence Avenue within the study area. Florence Avenue crosses La Cienega Boulevard with a signalized intersection which falls under the jurisdiction of City of Los Angeles. The traffic signal operates with a ‘protected’ left turn phase in the eastbound and westbound directions and ‘split’ through/left phase in the northbound and southbound directions.

2.3.2 Major North/South Roadways

- ***La Cienega Boulevard*** is a major highway class II with three lanes in each direction in most areas. In some segments, it functions as an expressway with grade separated interchanges (e.g., at Slauson Avenue). Within the City of Los Angeles limits, on-street parking is permitted in the southbound direction on the portion of La Cienega Boulevard south of Knowlton Street, and there are only two southbound travel lanes.

- ***Fairfax Avenue*** is a major highway class II with two lanes in each direction in most areas. On-street parking is permitted on both sides of the street at some locations on Fairfax Avenue within the study area. Fairfax Avenue crosses La Cienega Boulevard and Washington Boulevard forming a multiple streets tributary, with signalized intersections that falls under the jurisdiction of City of Los Angeles. The traffic signal at La Cienega Boulevard operates with a ‘permitted’ left turn phase in all the directions and prohibited southbound left as well as eastbound through movements. Northbound right turn is a ‘Free’ movement with 2 lanes from La Cienega Boulevard to Fairfax Avenue.

- ***La Tijera Boulevard*** is a major highway class II with two lanes in each direction west of La Cienega Boulevard and a collector street with one lane in each direction east of La Cienega Boulevard. On-street parking is permitted on both sides of the street some areas on La Tijera Boulevard within the study area. La Tijera Boulevard crosses Centinela Avenue and La Cienega Boulevard forming a multiple streets tributary, with signalized intersections that falls under the jurisdiction of City of Los Angeles and City of Inglewood respectively. The traffic signal at La Cienega Boulevard operates with a ‘split’ through/left phase in the eastbound direction with three left turn lanes. The southbound and northbound left turn movements are prohibited. The westbound traffic from La Tijera Boulevard is also prohibited.

Three eastbound left turn lanes at La Cienega Boulevard and La Tijera Boulevard.

2.4 TRAFFIC OPERATIONS

The analysis of traffic operations at intersections in this study utilizes the *Highway Capacity Manual* (HCM) Operations Analysis Methodology to quantify existing conditions at all intersections. The Operations Analysis Methodology yields a Level of Service (LOS) rating of conditions at an intersection based on the average number of seconds of delay experienced by vehicles traveling through the intersection. Levels of service range from LOS A (free flow conditions) to LOS F (extreme congestion with very significant delay) as shown in **Table 2-1**.

TABLE 2-1: LOS CRITERIA FOR INTERSECTIONS

Level of Service	Control Delay Per Vehicle (sec) – Signalized Intersections
A	≤10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

2.4.1 Intersection Levels Of Service

A total of 15 intersections in the vicinity of the La Cienega Boulevard corridor were selected for detailed level of service analysis in this study. The intersections were chosen in consultation with the steering committee. They represent key intersections along the La Cienega Boulevard corridor. The existing lane configurations of these intersections are illustrated in **Figure 2-1.**

Weekday a.m. peak period (7:00-9:00 a.m.) and p.m. peak period (4:00-6:00 p.m.) turning movement traffic counts were collected at the study intersections in February 2010. Twenty-four hour segment counts were collected at two locations on La Cienega Boulevard, south of Fairfax Avenue and south of Centinela Avenue. These segment counts were classified into passenger vehicles, buses, 2-axle trucks, 3-axle trucks, and trucks with 4 or more axles. Based on the classification counts for these two segments, truck percentages were calculated for the a.m. and p.m. peak hours. The truck percentages south of Fairfax Avenue were 14.6% and 13.5% in the a.m. and p.m. peak hours, respectively. The truck percentages south of Centinela Avenue were 16.6% and 16.2% in the a.m. and p.m. peak hours, respectively. These percentages were applied to all of the intersection turning movement counts, and truck volumes were calculated and converted to passenger car equivalent (PCE) volumes. For the intersection of La Cienega Boulevard and Jefferson Boulevard, traffic count data from May 2008 was used because of the construction going on for the Expo Light Rail project at this intersection. Daily segment counts for the 2009 and 2008 years for La Cienega Boulevard and Jefferson Boulevard near the intersection were compared from the City of Los Angeles Department of Transportation (LADOT) traffic volume counts database, and no significant change in the traffic volume was found between the years. Traffic count sheets are included in **Appendix A**.

FIGURE 2-1: EXISTING LANE CONFIGURATIONS

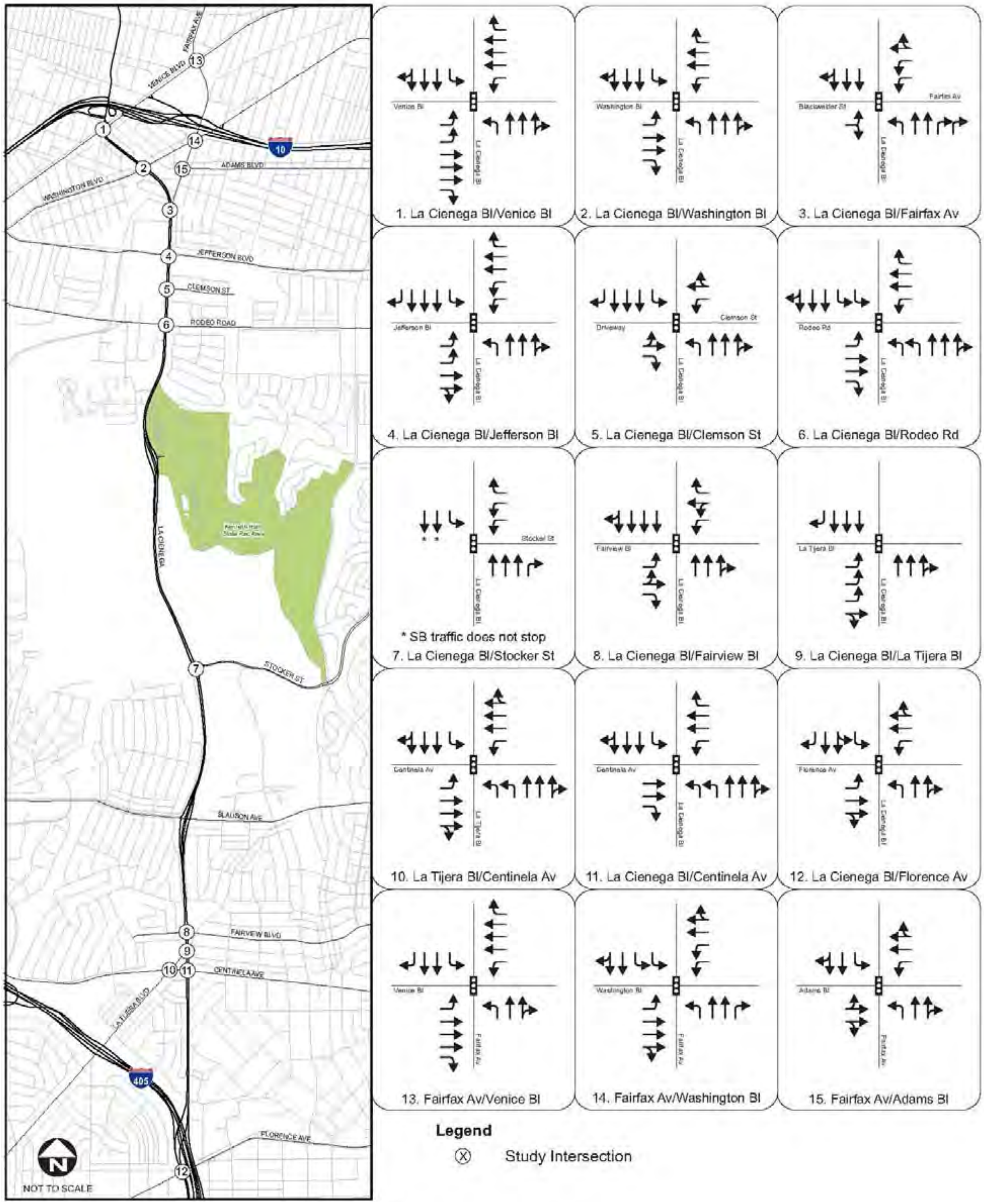


Figure 2-2 shows a graph of 24-hour counts at the two locations on La Cienega Boulevard. The highest peak throughout the day on La Cienega Boulevard south of Fairfax Avenue occurs between 7:30 a.m. and 8:30 a.m. in the northbound direction and between 4:00 p.m. and 5:00 p.m. in the southbound direction. At La Cienega Boulevard south of Centinela Avenue the highest peak throughout the day occurs between 7:30 a.m. and 8:30 a.m. in the northbound direction and between 4:30 p.m. and 5:30 p.m. in the southbound direction. In general the daily volume on La Cienega Boulevard near Fairfax Avenue is higher as compared to the daily volume near Centinela Avenue. **Figure 2-3** shows the existing peak hour volumes as well as the level of service at the study intersections.

FIGURE 2-2: 24-HOUR TRAFFIC VOLUME ON LA CIENEGA BOULEVARD

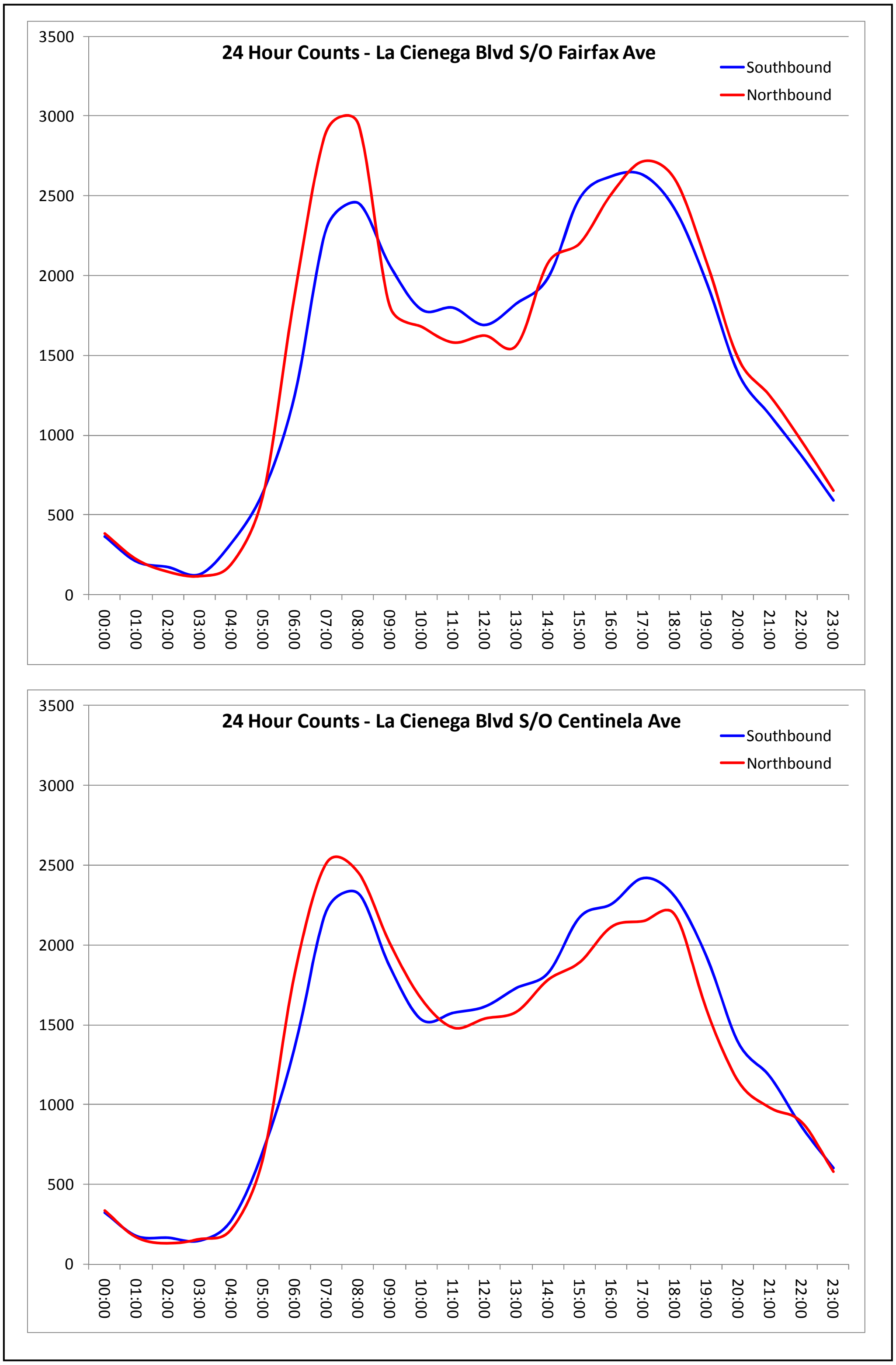
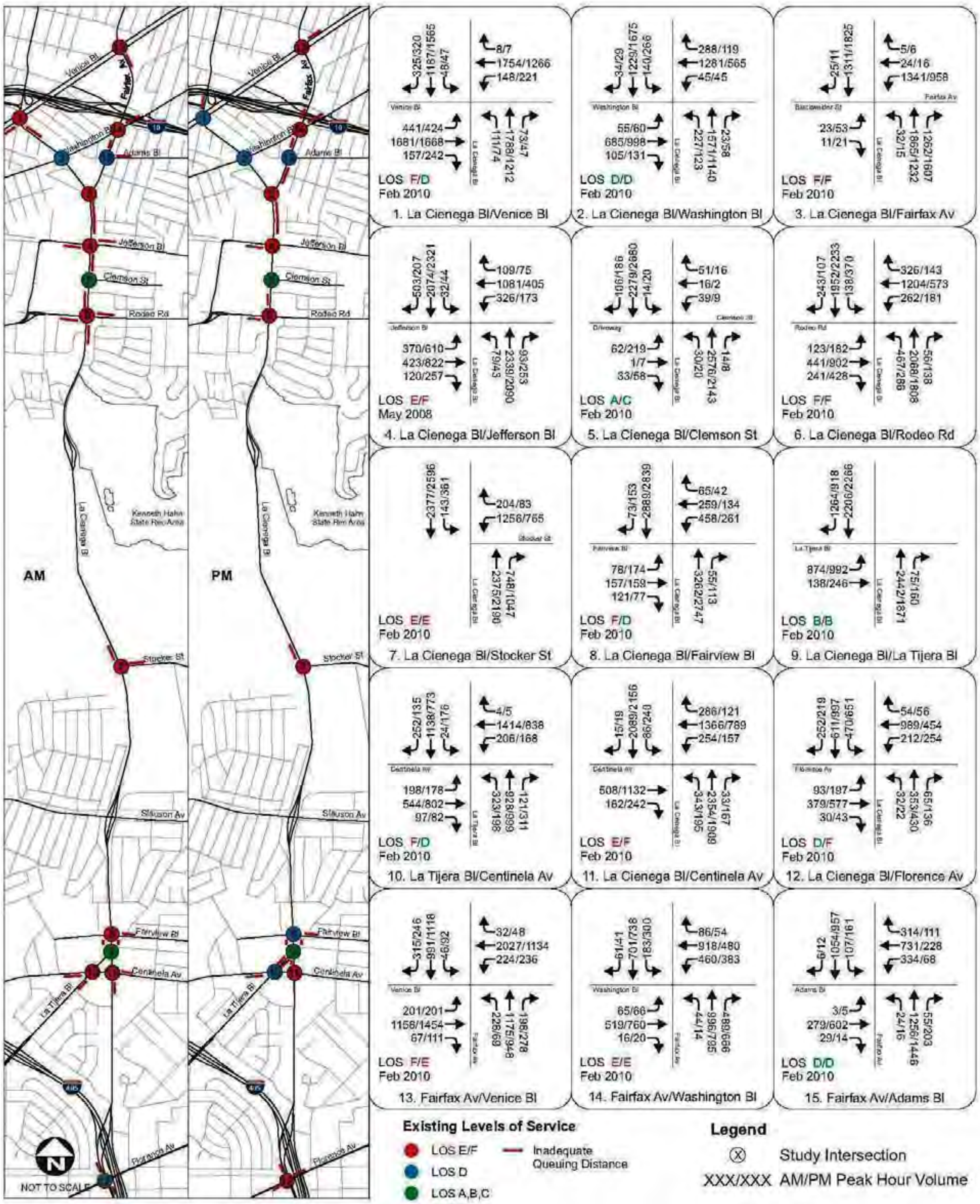


FIGURE 2-3: EXISTING PEAK HOUR VOLUMES



As part of the analysis, signal timing plans at all study intersections along La Cienega Boulevard were provided by LADOT, the County of Los Angeles, Culver City and the City of Inglewood. Intersection levels of service were calculated using the *Highway Capacity Manual* 2000 (HCM 2000) analysis methodologies, using the Synchro 7 software, which accounts for the effects of signal coordination and platoon formation on intersection operations. Peak hour factors at each intersection were calculated from existing count data. The peak hour factor defines the relationship between the peak 15 minutes of traffic volume within the peak hour and the traffic volume over the entire peak hour. Peak hour factors range from 0.25 (highly concentrated traffic within 15-minute peak period) to 1.00 (evenly spread out traffic over the course of the hour). For the study intersections the peak hour factors range from 0.930 to 0.975, during both a.m. and p.m. peak hours. Detailed level of service calculation sheets can be found in **Appendix B**. **Table 2-2** presents the existing 2010 intersection operating conditions for the a.m. and p.m. peak hours at the 15 study intersections.

TABLE 2-2: EXISTING INTERSECTION LOS

Intersection	Jurisdiction(s)	AM Peak Hour			PM Peak Hour		
		Delay (sec)	V/C	LOS	Delay (sec)	V/C	LOS
1. La Cienega Blvd & Venice Blvd	LA	123.0	1.50	F	46.9	1.04	D
2. La Cienega Blvd & Washington Blvd	LA,CC	35.2	0.91	D	41.2	0.91	D
3. La Cienega Blvd & Fairfax Ave	LA, CC	205.4	1.52	F	166.0	1.28	F
4. La Cienega Blvd & Jefferson Blvd	LA	64.6	1.42	E	93.2	1.08	F
5. La Cienega Blvd & Clemson St	LA	6.2	0.67	A	21.4	0.86	C
6. La Cienega Blvd & Rodeo Rd	LA	100.1	1.27	F	95.4	1.17	F
7. La Cienega Blvd & Stocker St	LA County	76.0	1.14	E	58.5	1.02	E
8. La Cienega Blvd & Fairview Blvd	LA, Inglewood	91.5	1.16	F	44.6	0.96	D
9. La Cienega Blvd & La Tijera Blvd	LA, Inglewood	14.9	0.86	B	10.1	0.74	B
10. La Tijera Blvd & Centinela Ave	LA, LA County	84.7	1.17	F	54.7	1.16	D
11. La Cienega Blvd & Centinela Ave	LA, Inglewood	70.8	1.13	E	112.5	1.30	F
12. La Cienega Blvd & Florence Ave	LA, Inglewood	49.7	0.87	D	132.6	1.08	F
13. Fairfax Ave & Venice Blvd	LA	81.6	1.17	F	67.3	1.17	E
14. Fairfax Ave & Washington Blvd	LA, CC	63.8	0.88	E	74.2	0.94	E
15. Fairfax Ave & Adams Blvd	LA,CC	42.6	1.19	D	40.8	1.56	D

Notes:
HCM 2000 Operations Methodology, Delay = Average Vehicle Delay (Seconds), V/C = Volume-to-Capacity Ratio, LOS = Level of Service

As can been seen in **Table 2-3** many of the study intersections currently operate at unsatisfactory levels of service during both the a.m. and p.m. peak hours. Ten of the 15 intersections are operating at capacity (LOS E or F) in the a.m. peak hour and 8 out of 15 are at capacity in the p.m. peak hour. Only the intersections at Clemson and La Tijera were operating at better than LOS D, and the La Tijera intersection operates relatively well due to the metering of traffic able to reach that intersection due to the close proximity of congested intersections on Centinela Avenue.

As shown in **Figure 2-3** several of the more closely spaced intersections also have inadequate queuing distance during both the a.m. and p.m. peak hours. Queues form that prevent both through traffic and left turning traffic from progressing through the corridor. These queues can also block traffic on cross streets if drivers do not keep the intersections clear.

The Slauson Avenue intersection on La Cienega Boulevard is not included as a study intersection because it is not an arterial intersection, like the others discussed above. The intersection is actually a diamond interchange, with Slauson Avenue traffic grade separated above La Cienega Boulevard and turning movements between the two roadways made at two signalized intersections on Slauson Avenue at the termini of connector ramps between the two roadways. This grade-separated intersection is a model of the type of improvement this study is intended to investigate at other major intersections along the corridor.

There is a second diamond interchange on the corridor at the access road to the Kenneth Hahn State Park. It provided access to/from La Cienega Boulevard in each direction via ramps to the park access road.

2.4.2 Travel Times

Travel time runs were conducted on La Cienega Boulevard between Cadillac Avenue, just north of I-10, and Florence Avenue, just south of I-405, on Wednesday, April 14, 2010. Three complete runs were conducted in each direction during the a.m. and p.m. peak hours, as well as during the mid-day period. **Tables 2-3** and **2-4** present the actual time required to travel each segment of the corridor compared to the travel time at the speed limit, for travel in the northbound and southbound directions, respectively. Average speeds vary from as low as 12 mph near Centinela Avenue to 45 mph in the vicinity of Stocker Street. Detailed travel time and speed data can be found in **Appendix C**.

As can be seen in the tables, northbound delay is greatest during the a.m. peak period, while southbound delay is greatest during the p.m. peak period. During the peak period, travel in the peak direction takes two to three times as long as it would at the speed limit. The detailed travel time data indicate that the greatest delays in both directions occur at the Jefferson Boulevard, Rodeo Road, and Centinela Avenue intersections. Some of the existing delay at the Jefferson Boulevard intersection is caused by the current construction activity for the Expo Light Rail line. The observed delay at Rodeo Road is consistent with community input that the intersection at Rodeo Road is a recurring bottleneck in the corridor.

2.4.3 Non-Motorized Transportation

There are no bicycle facilities on La Cienega Boulevard in the study area. A Class 1 bicycle route exists at the northern end of the corridor along the Ballona Creek. Plans have been discussed for a bicycle route over the Baldwin Hills through the Kenneth Hahn State Park, connecting to Fairfax Avenue on the south and Culver City on the north near the West L.A. College Campus, but no plan for implementation of this bicycle route is currently in place, as it would have to traverse the active oil drilling areas. Given right of way constraints and the high speed of traffic on La Cienega Boulevard, it would not be advisable to attempt to add bicycle lanes on La Cienega Boulevard, nor designate it as a bicycle route.

TABLE 2-3: NORTHBOUND TRAVEL TIME AND DELAY

Segment	Speed Limit (mph)	Travel Time at Speed Limit (sec.)	Travel Time (sec.)			Delay (sec.)		
			AM Peak	Mid-Day	PM Peak	AM Peak	Mid-Day	PM Peak
Florence to Centinela	40	98	333	217	297	235	119	199
Centinela to Stocker	40/55	108	180	155	120	72	47	12
Stocker to Rodeo	55	98	236	106	129	138	8	31
Rodeo to Fairfax	35	61	296	59	178	235	0	117
Fairfax to Cadillac	35	70	215	154	162	145	84	92
Total		**435**	**1,259**	**691**	**886**	**824**	**259**	**451**

TABLE 2-4: SOUTHBOUND TRAVEL TIME AND DELAY

Segment	Speed Limit (mph)	Travel Time at Speed Limit (sec.)	Travel Time (sec.)			Delay (sec.)		
			AM Peak	Mid-Day	PM Peak	AM Peak	Mid-Day	PM Peak
Cadillac to Fairfax	35	70	158	234	200	88	164	130
Fairfax to Rodeo	35	61	128	186	170	67	125	109
Rodeo to Stocker	55	98	105	108	108	7	10	10
Stocker to Centinela	55/40	108	158	108	303	50	0	195
Centinela to Florence	40	98	210	106	247	112	8	149
Total		**435**	**760**	**741**	**1,028**	**325**	**307**	**593**

Sidewalks exist along portions of the corridor at the northern and southern ends of the study area, but not in the middle section over the Baldwin Hills. Similar to the bicycle facilities, it would not be feasible, nor an attractive option, to attempt to add sidewalks to La Cienega Boulevard itself over the Baldwin Hills, but it would be desirable to have a pedestrian path through the State Park at some future date.

2.4.4 Driveways

In the northern and southern sections of the corridor, there are numerous driveways providing access to fronting properties along La Cienega Boulevard. In the northern segment, these are largely commercial properties. From just south of Rodeo Road to La Tijera Boulevard there are almost no driveways to fronting properties. One was recently added to serve a townhome complex on the west side of La Cienega between Rodeo and Wrightcrest Drive. South of La Tijera, there are scattered driveways, some commercial and several to residential properties. On the west side of the street, there are fronting residential properties that have access via a rear alley, so they do not have driveways on La Cienega Boulevard. The presence of driveways is one of the factors that affects corridor capacity as vehicles slow to turn in and out of driveways. Maintaining access to driveways is also an issue in designing potential grade separations, since driveways near intersections may be impacted by ramps connecting grade-separated streets.

2.4.5 On-Street Parking

There are few areas along the study corridor where on-street parking is allowed, due to the need to utilize the curb lane as a third travel lane to meet the travel demand in the corridor. Off-peak parking is permitted on both sides of the street between Venice Boulevard and Fairfax Avenue. In the southern portion of the corridor, full-time on-street parking is allowed south of Knowlton Street, on the west side of the street only.

2.4.6 Speed Limits

The speed limit along the La Cienega corridor varies by segment. In the northern segment it is 35 mph. Over the Baldwin Hills, where the roadway functions as an expressway, the speed limit increases to 55 mph. In the southern segment, south of Fairview Avenue, the speed limit is 40 mph.

2.4.7 Accident History

The accident data along La Cienega Boulevard within the study area was collected from the California Highway Patrol for the period from January 2006 through June 2009. A total of 552 accidents on La Cienega Boulevard were recorded within this time period. Of these accidents, 318 were injury accidents, resulting in injuries to a total of 462 people. Twelve were fatality accidents, resulting in a total of 12 fatalities.

Of the accidents on La Cienega Boulevard, 384 occurred within 250 feet of an intersection. The remaining 168 accidents occurred at mid-block locations. **Figure 2-4** shows the distribution of accidents occurring within 250 feet of an intersection. The greatest number of accidents occurs at signalized intersections in congested areas. **Figure 2-5** shows the major types of accidents occurring at each intersection. At most of the intersections, the large majority of accidents are rear-end collisions, which is typical of signalized intersections in congested areas, where traffic moving at or near the speed limit must come to a complete stop.

FIGURE 2-4: SEVERITY OF ACCIDENTS OCCURRING AT INTERSECTIONS

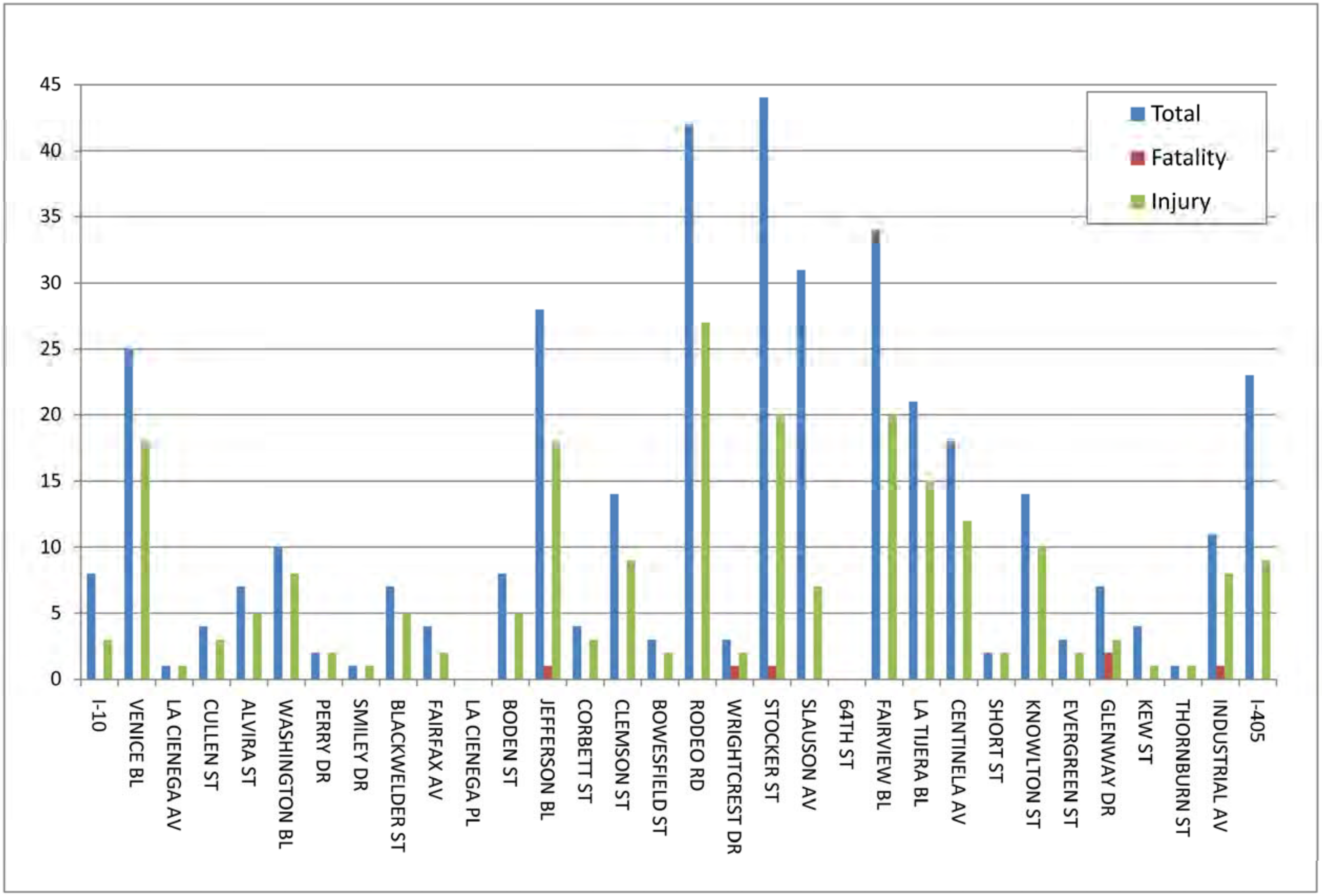


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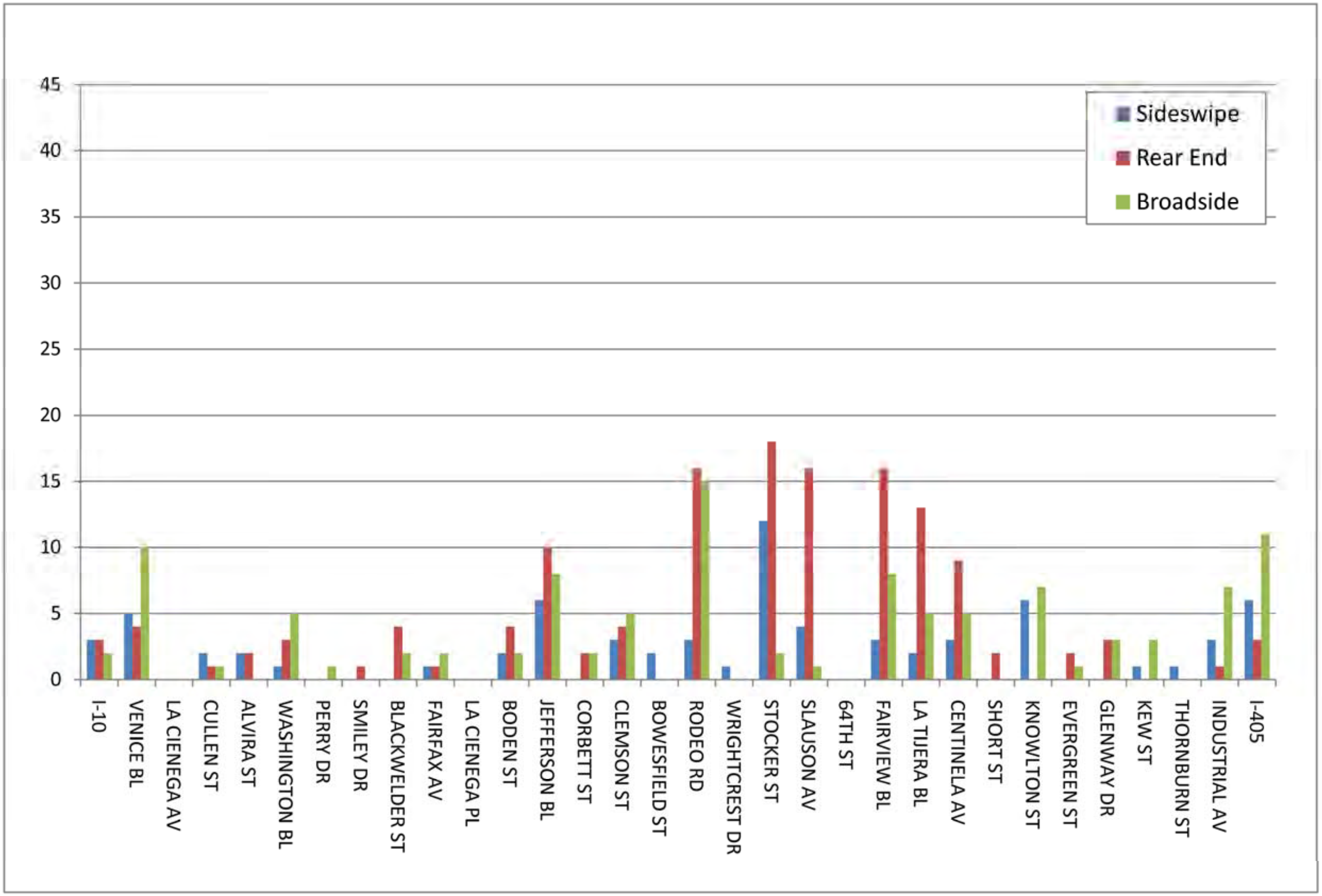
FIGURE 2-5: TYPES OF ACCIDENTS OCCURRING AT INTERSECTIONS



Several signalized intersections show unusual accident patterns. The intersections at Rodeo Road and at Venice Boulevard experience an unusually high number of broadside accidents. The accidents at Rodeo Road most likely occur because of vehicles descending from the Baldwin Hills at high speed failing to stop at the intersection. The accidents at Venice Boulevard may occur because the curvature of the road makes it difficult for vehicle making a southbound left turn to see oncoming traffic. The intersection of Stocker Street experiences an unusually high number of sideswipe accidents. These accidents most likely occur because of lane reductions in the southbound direction both before and after this intersection, forcing vehicles from two lanes to merge into a single lane at a high rate of speed. Further, detailed evaluation of the causes of each of the accidents at these locations would be required in order to identify definitive causes.

Several of the unsignalized intersections between Centinela Avenue and Interstate 405 experience relatively more broadside accidents than do the other intersections. The high speed of traffic to and from the freeway may contribute to difficulty in vehicles making safe turning movements to and from the streets served by these unsignalized intersections.

2.5 TRANSIT SERVICES

The transit system serving the study area is comprised of bus services provided by Metro and Culver City Municipal Bus Lines. Transit routes serving the study area corridor are illustrated in **Figure 2-6**. The following transit lines currently serving the study area are:

- Metro Local 33, 42, 42A, 105, 105, 217, 439
- Metro Rapid 705
- Culver City Bus 1, 4, 5

As shown in **Figure 2-6** there is only one route on La Cienega Boulevard connecting between Rodeo Road and Centinela Avenue. The frequencies of bus routes south of Rodeo Road are relatively less as compared to the bus routes north of Rodeo Road. There are no bus routes on La Cienega Boulevard, south of Centinela Avenue, in the study area.

2.6 UNDERGROUND UTILITIES

In order to identify constraints to roadway widening or intersection improvements, particularly grade separations that would depress roadway lanes, underground utilities such as sewer pipes and storm drains were identified. Sewer pipes and storm drains are illustrated in **Figures 2-7** and **2-8**, respectively. The largest underground utilities, the storm drains, are concentrated near the Ballona Creek at Fairfax Avenue, Jefferson Boulevard, and Rodeo Road.

2.7 OVERHEAD UTILITIES

There are many high-tension power lines as well as smaller electrical distribution lines along La Cienega Boulevard as well as Fairfax Avenue within the study area that might be a constraint to roadway widening or intersection improvements. The high-tension lines run along the east side of Fairfax Avenue and La Cienega Boulevard throughout the entire corridor.

FIGURE 2-6: METRO & CULVER CITY BUS ROUTES

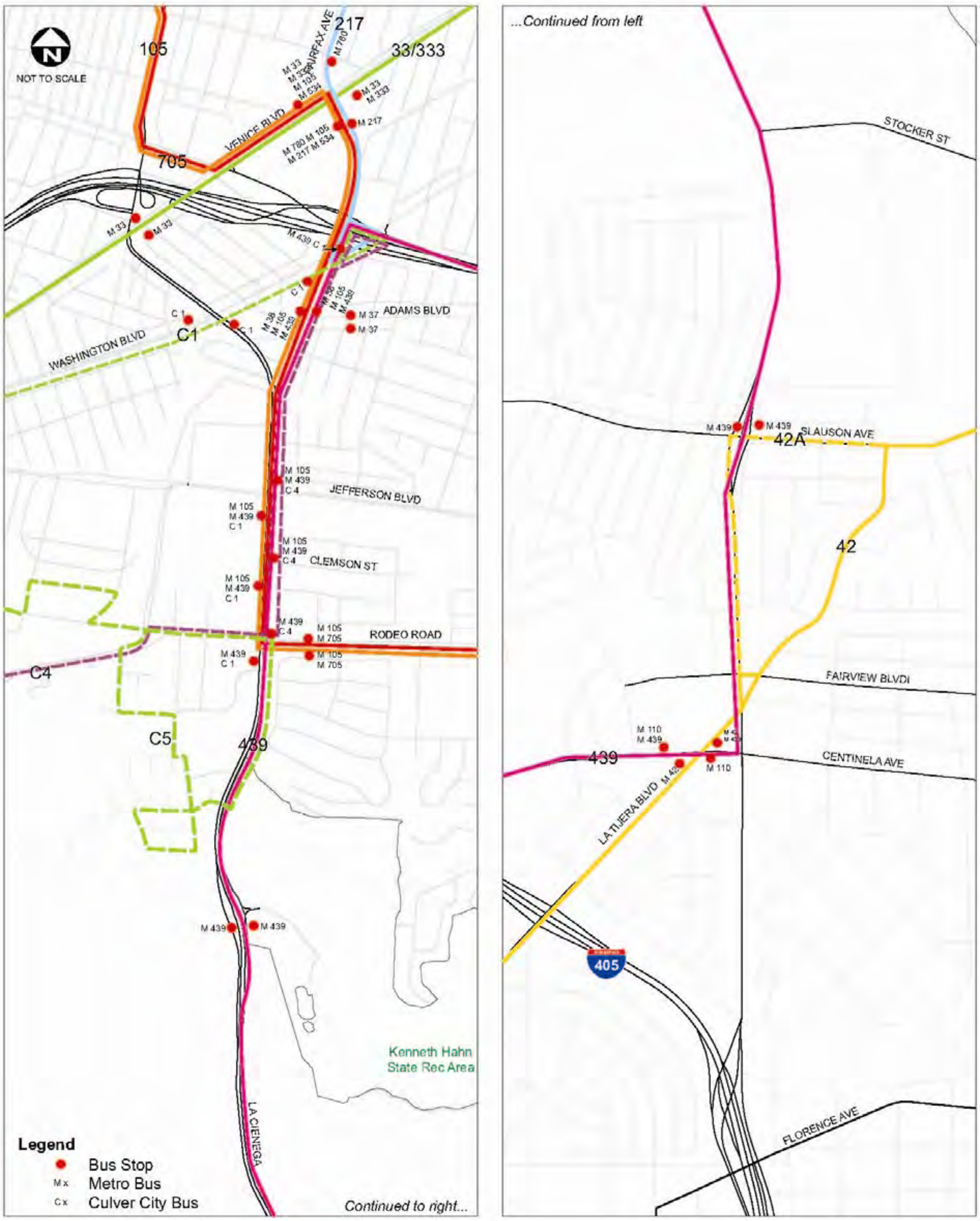
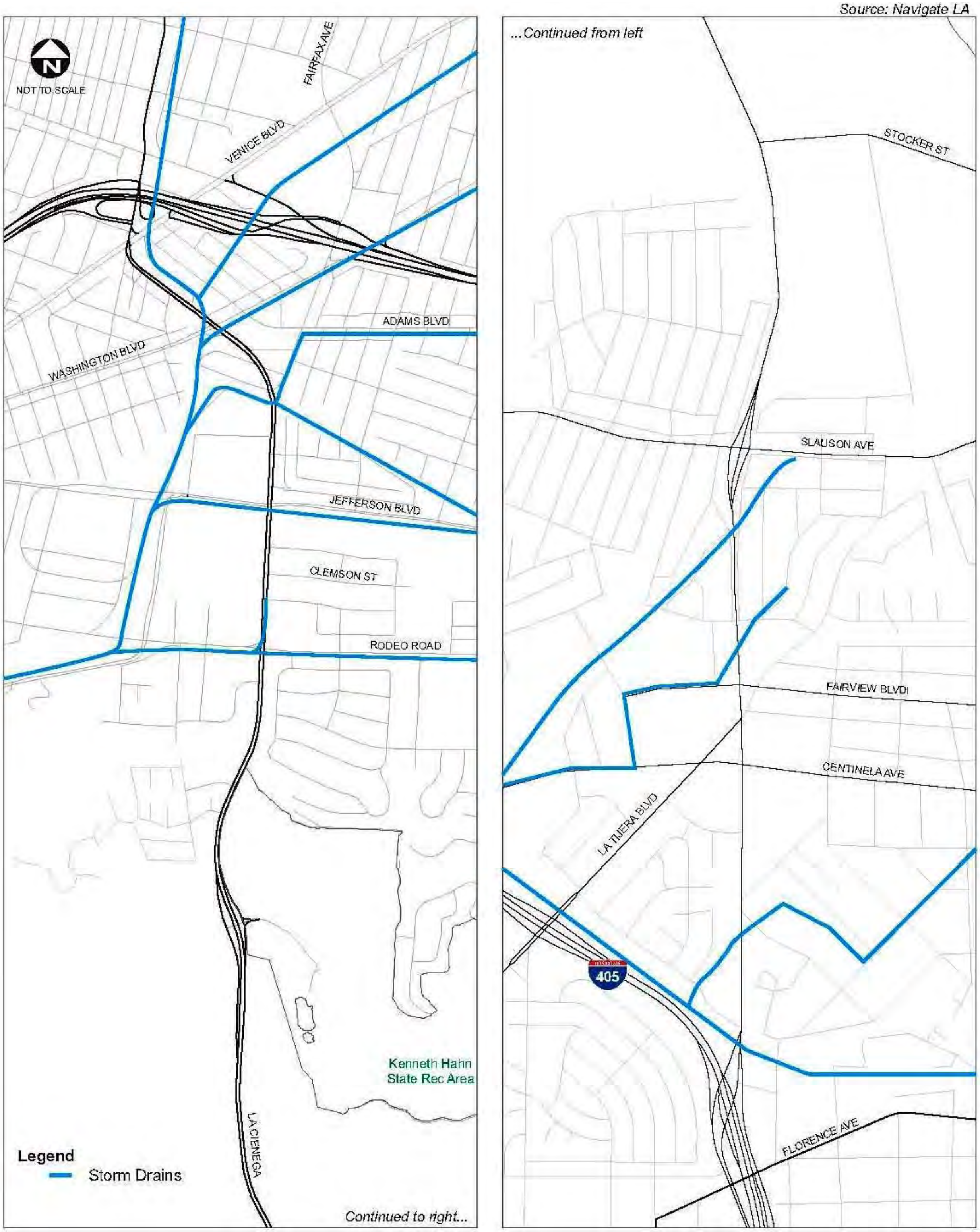


FIGURE 2-7: SEWER PIPES

FIGURE 2-8: STORM DRAINS

Source: Navigate LA



2.8 EXISTING LAND USES

The existing land uses along the corridor vary widely and include low density residential, medium-high density residential, commercial, industrial, public facilities, open space and recreation, and transportation uses. These land uses are illustrated in **Figure 2-9**. The following summarizes the land uses along La Cienega Boulevard from north to south.

Near the I-10 freeway in the cities of Los Angeles and Culver City, commercial and industrial uses dominate the area. Between Venice Boulevard and Fairfax Avenue is an emerging gallery area on both sides of the street. Potential future development of parcels fronting along La Cienega Boulevard in the Culver City portion of the study area may include changes in planning designations to permit commercial development with direct vehicle access to/from La Cienega Boulevard. South of Jefferson Boulevard and the Mid-City Exposition Light Rail Transit Line (LRT), which is under construction, to Kenneth Hahn State Recreation Area, is a mix of big box (Target) and small commercial uses, multi-family residential and single-family residential.

In Culver City on the west side of La Cienega Boulevard opposite Kenneth Hahn State Recreation Area, is a residential neighborhood with some multi-family and then industrial uses (primarily oil fields). Traveling south and entering the hilly unincorporated County lands are industrial use (oil fields) and then the residential neighborhoods of Ladera Heights, View Park and Windsor Hills. Some multi-family and commercial uses are clustered near Slauson Avenue.

At 64th Street in the City of Los Angeles are some multi-family uses on the west side, and on the east side a new elementary (K-8) school is under construction. From Fairview Boulevard to south of Centinela Avenue near the I-405 freeway are commercial uses, such as Ladera Center and multi-family housing. Within the City of Los Angeles, single-family uses are on the west side of La Cienega Boulevard, and multi-family residential uses are located on the east side in the City of Inglewood.

2.8.1 Zoning

Table 2-5 shows the zoning found in the three cities and unincorporated County area along La Cienega Boulevard. The zoning is generally similar to the existing land uses.

Figure 2-9: Existing Land use

Source: SCAG

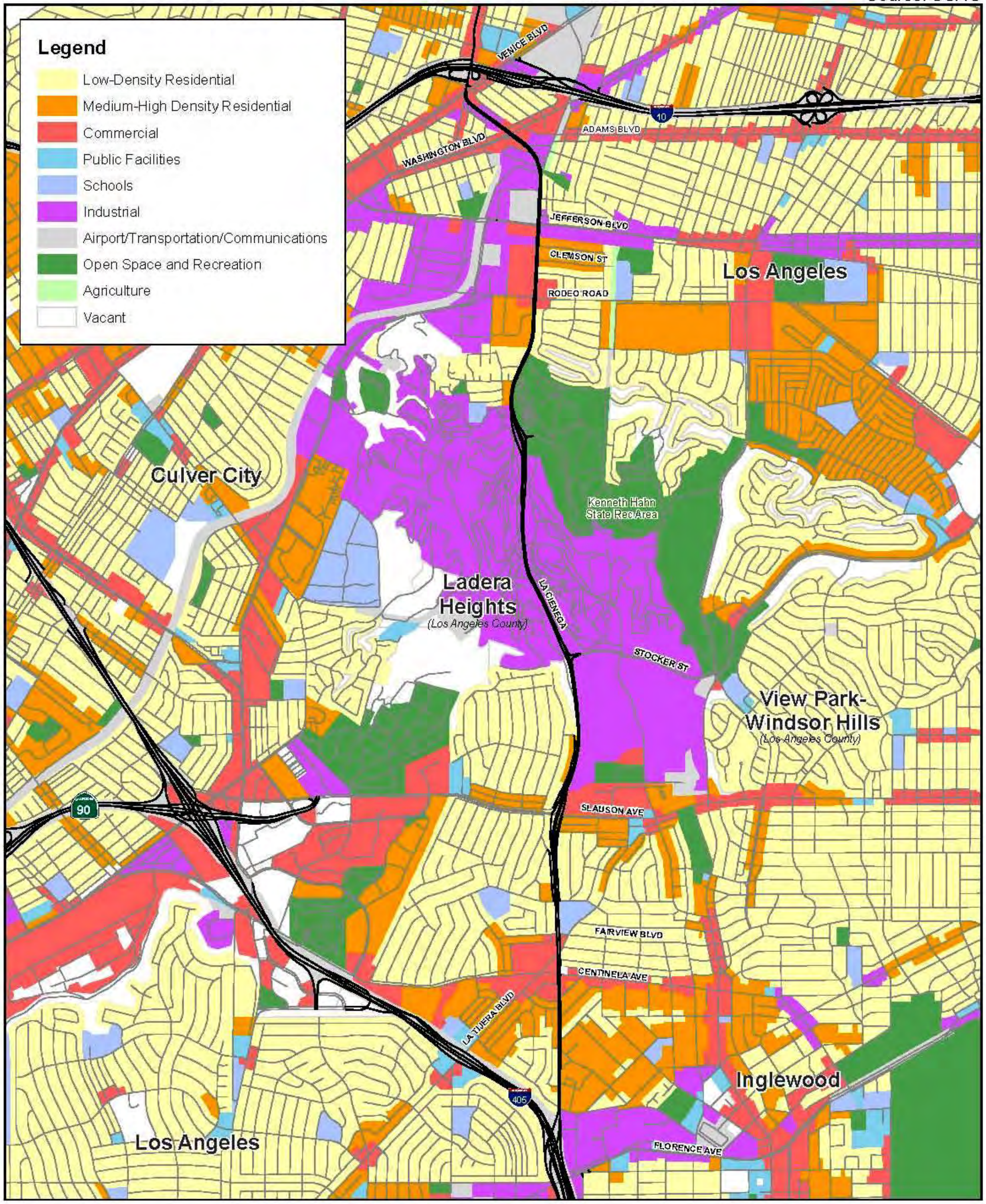


Table 2-5: Zones Along La Cienega Boulevard

Side of Street	Area	Zoning
Culver City		
W/E	La Cienega Blvd. – Blackwelder St.	IG (industrial general)
W	Ivy Way – Stoneview Dr.(approx.)	R1 (Single Family Residential)
City of Los Angeles		
W	Blackwelder St. – Jefferson Blvd.	MR1 (Restricted Industrial)
E	Blackwelder St.- Boden St.	R41 (Multple Dwelling Zone)
E	Boden St.– Jefferson St.	C2 (Commercial Zone)
W	Jefferson Blvd. – Clemson St.	MR1
E	Jefferson Blvd. – Clemson St.	M1 (Limited Industrial), RD1.5 (Restricted Density Multiple Dwelling)
W	Clemson St. – Rodeo Rd.	C4 (Commercial)
E	Clemson St. – Rodeo Rd.	RD1.5, R1, C4
W	Rodeo Rd. – Aladdin St.	C4, RD2 (Restricted Density Multiple Dwelling)
E	Rodeo Rd. – Aladdin St.	C4, R1
E	Aladdin St. – Kenneth Hahn State Recreation Area overpass	R1, OS (Open Space)
County of Los Angeles		
W	Culver City Border – Stocker St.	A2 (Heavy Agriculture)
E	Culver City Border – Stocker St.	A2, M1.5 (Restricted Heavy Industrial), A2
W	Stocker St. – Slauson Ave.	A2, R2 (Two Family Residential)
E	Stocker St. – Slauson Ave.	A2, C3 (Commercial Unlimited)
W	Slauson Ave. – 62 St. (appox.)	R3 (Multiple Dwelling), R1
E	Slauson Ave. – 62 St. (appox.)	R3, R1
City of Los Angeles		
W	Flight Ave. - 64th St.	R2
E	Flight Ave, - 64th St.	R1
W	64th St. – Fairview Ave.	A1 (Agriculture Light)
E	64th St. – Fairview Ave.	PF (Public Facilities)
W	Fairview Ave. – Knowlton St.	C2, R3
W	Knowlton St. – Thornburn St.	RD1.5, R1
City of Inglewood		
E	64th St. – Centinela Ave.	R1, C2
E	Centinela Ave. – Industrial Ave.	C2, R2, R3

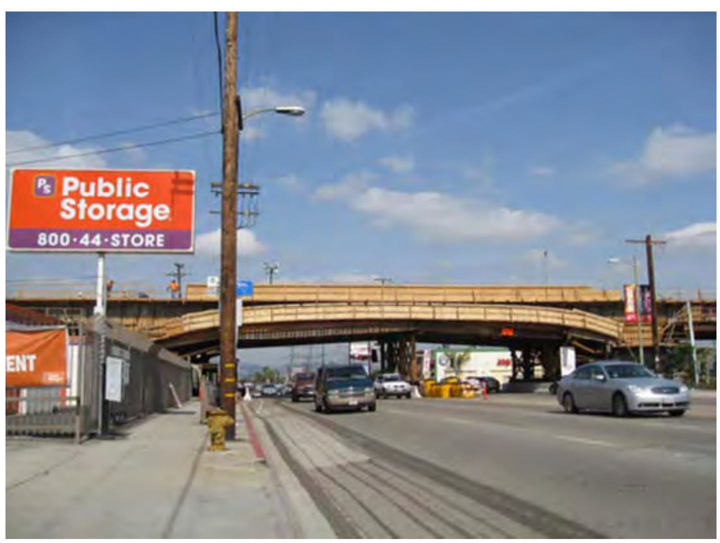
2.8.2 Unique Uses

Unique uses along La Cienega Boulevard include:

- 13 Art Galleries between Venice Boulevard and Fairfax Avenue are part of Culver City's Art District (though none along the corridor is actually in Culver City).

Art Gallery on La Cienega Blvd near Venice Blvd .

- Quixote production vehicle lot near La Cienega Place.
- KLOS / KABC Radio station near Jefferson Boulevard.
- Mid-City Exposition Light Rail Line.



Mid-City Exposition Light Rail line construction at
La Cienega Blvd and Jefferson Blvd.

- See's Candy Factory between Jefferson Boulevard and Rodeo Road.

See's Candy on La Cienega Blvd near Rodeo Road.

- Bahai Faith Unity Center near Rodeo Road.
- Kenneth Hahn State Recreation Area.

Kenneth Hahn Recreational Park on La Cienega Blvd.

- PXP Oil Fields near Baldwin Hills.
- New elementary (K-8) school under construction near Fairview Avenue.

- Pann's Diner at La Tijera Boulevard

Historical Pann's restaurant at La Cienega Blvd and La Tijera Blvd.

2.8.3 Urban Design

Urban design observations along La Cienega Boulevard include:

- Large high tension wires along east side of La Cienega Boulevard along the entire corridor
- Overhead utility wires on the west side of La Cienega Boulevard.
- Cluster of palms and high tension power poles at Fairfax Avenue and La Cienega Boulevard.

Cluster of Palm and high tension power poles at Fairfax Ave and La Cienega Blvd.

- Over-crossings at Kenneth Hahn State Recreation Area and Slauson Avenue.

- Pedestrian bridge at Fairview Boulevard.
- Embankment at Kenneth Hahn State Recreation Area paved with flagstone and high-quality landscaping.

Embankment at Kenneth Hahn State Recreation area paved with flagstone & high-quality landscaping.

- Embankment at Slauson Avenue is paved with broken concrete.
- Vacant properties at La Tijera Boulevard (gas station), Centinela Boulevard SW corner (Honda showroom), Centinela Boulevard NE corner (lot), large parking lot on west side behind former Honda dealership.
- Multiple billboards concentrated at intersections with some along the corridor on top of buildings.

Multiple billboards along the corridor.

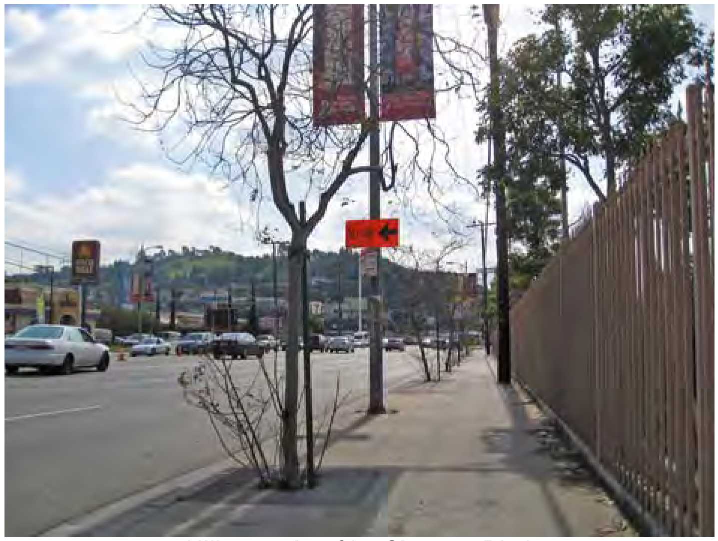
- K-rail and chain-link fence line east side along oil fields
- East side of street from Knowlton Street to Thornburn Street single-family residential properties face La Cienega Boulevard with auto access from a rear alley.

Residential properties facing La Cienega Blvd.

- West side of street from Knowlton to Thornburn Street multi-family properties with auto access (garages) fronting directly on La Cienega Boulevard.

Multi-family properties with auto access from La Cienega Blvd.

- Hilly terrain in the center of the corridor.



Hilly terrain of La Cienega Blvd.

- Elevation at Centinela Avenue going south tapers down with some small hills until I-405
- One-story commercial structures and one to two story residential structures along the corridor

Commercial and residential structures.

- In some cases residential structures are protected from La Cienega Boulevard by block walls.

  It would be desirable for the jurisdictions along the La Cienega Corridor to consider developing an urban design component for the corridor that could upgrade the aesthetics of the corridor through the use of street trees, undergrounding of utilities, sidewalk enhancements and better accommodations for bicycles and pedestrians, where possible.

2.9 Planned Improvements Along the Corridor

The jurisdictions along the La Cienega Boulevard corridor currently have several roadway improvement projects in various stages of development, as summarized below.

2.9.1 City of Inglewood Traffic Improvements

The City of Inglewood has developed preliminary improvement plans for the intersections of La Cienega Boulevard with Centinela Avenue, La Tijera Boulevard and Fairview Boulevard. The improvement plans have not been reviewed and approved to date, but the concepts under study include the following elements:

- Provision of dual southbound left turn lanes from La Cienega Boulevard to Centinela Boulevard
- Elimination of access to the east leg of La Tijera Boulevard from La Cienega Boulevard
- Widening of the westbound approach of Fairview Boulevard at La Cienega Boulevard
- Creation of a northbound left turn lane from La Cienega Boulevard to Fairview Boulevard

2.9.2 Playa Vista Project Improvements

The City of Los Angeles has approved and is preparing to implement intersection improvements at the intersection of La Cienega Boulevard/Centinela Avenue as a mitigation measure for the Playa Vista project in west Los Angeles. These improvements will provide a third westbound through lane and a westbound right turn overlap signal phase on Centinela Avenue at the intersection.

2.9.3 Exposition Light Rail Project Improvements

In conjunction with the construction of the Expo Light Rail line, the Expo Construction Authority is making improvements to the intersections of La Cienega Boulevard with Jefferson Avenue and Rodeo Road. At the intersection of La Cienega Boulevard/Jefferson, a dedicated northbound right turn lane will be added. A Metro parking structure has also been planned to be constructed at the south-east corner of this intersection. The parking structure will have right-in/right-out access from Jefferson Boulevard. At the intersection of La Cienega Boulevard/Rodeo Road an additional westbound left turn lane will be added which will result into a dual left turn lane.

2.9.4 9919 Jefferson Boulevard Project Improvements

A proposed 114,000 square-foot office building at 9919 Jefferson Boulevard will be required to implement a third left-turn lane from southbound Fairfax Avenue to southbound La Cienega Boulevard.

2.10 Other Regional Improvements near the Study Corridor

2.10.1 La Tijera/I-405 planned improvements

Regional Transportation Plan (RTP) project LA0C8058 would widen the bridge carrying La Tijera Boulevard over the I-405 freeway and provide side-by-side dual left-turn lanes on La Tijera Boulevard for traffic entering the freeway in both directions.

2.10.2 Arbor Vitae/I-405 interchange

RTP project 49160 would add a half-diamond interchange to I-405 at Arbor Vitae Avenue in the City of Inglewood, providing ramp to and from the south only. The draft Environmental Assessment/Initial Study (EA/IS) for this project was released for public comments in December 2009. Although the environmental document has not been finalized as of the date of this report, indications are that Caltrans may determine that the No Project Alternative is the preferred alternative and the interchange may not be implemented.

2.10.3 Crenshaw/LAX Corridor LRT

Metro is currently studying a light rail line to connect Los Angeles International Airport to the Expo light rail line via the Crenshaw Boulevard corridor, approximately two miles east of La Cienega, but crossing La Cienega near the southern end of this study's boundaries parallel to Florence Avenue. This light rail line could potentially serve as an alternative mode for some north/south trips in the La Cienega Boulevard corridor, especially those with origins or destinations at the airport.

3.0 FUTURE NO PROJECT CONDITIONS

3.1 Future No Project LOS

This section summarizes the traffic forecasts and intersection level of service analysis for the future "No Project" conditions for the La Cienega Boulevard Corridor Improvement project.

As improvements are assumed at the study intersections along the corridor in "no project" conditions, the future lane configurations in the "No Project" scenario are assumed to be similar to the "Existing" scenario except at the intersection of La Cienega Boulevard and Jefferson Boulevard. A separate northbound right turn lane will be added at that location as a part of the 'Exposition Light Rail' project (phase I).

3.1.1 TRAFFIC FORECAST METHODOLOGY

Traffic volumes for year 2035 were forecasted using the Southern California Association of Governments (SCAG) 2008 Regional Transportation Plan (RTP) travel demand model. SCAG's travel demand forecasting model predicts future travel demand based upon several input data items that include the following:

- SCAG forecasts of regional growth in population and employment in the six-county region;
- SCAG forecast changes in the socio-demographic characteristics of travelers; and
- Future characteristics of the roadway and transit systems including travel times, costs and system capacity reflective of the planned system.

The existing SCAG RTP model was modified to include the recent completion of HOV lanes on I-405 from SR-90 to I-10. The future SCAG RTP model includes the northbound HOV lane on I-405 north of I-10 that is currently under construction. The SCAG 2035 RTP model includes Expo light rail Phase II and the Crenshaw LAX light rail line.

Directional roadway segment volumes for autos and trucks were obtained from the SCAG RTP 2008 and 2035 model outputs. The change in directional peak hour volumes on each intersection approach and departure was calculated by subtracting year 2008 modeled volumes from year 2035 modeled volumes and the future percentage growth was determined for each of the 15 study intersections. An average total growth of 7% was calculated from the year 2008 to the year 2035 conditions. Therefore, an average total growth of 6.5% from year 2010 to year 2035 was used. This percentage was applied to the existing turning movement volumes to obtain the 2035 "No Project" turning movement volumes. Detailed volume development worksheets are included in **Appendix A**.

3.1.2 YEAR 2035 NO PROJECT CONDITIONS

The analysis of traffic operations at intersections in this study utilizes the *Highway Capacity Manual* (HCM) Operations Analysis Methodology to quantify future "No Project" conditions at all study intersections. Peak hour factors from existing count data were used in the future "No Project" conditions.

3.1.3 Intersection Levels of Service

The future "No Project" lane configurations of the study intersections are illustrated in **Figure 3-1**. As part of the existing conditions analysis, signal timing plans at all study intersections along La Cienega Boulevard were provided by LADOT, the County of Los Angeles, Culver City and the City of Inglewood. These signal timings were incorporated in the future "No Project" conditions. Intersection levels of service were calculated using the Synchro 7 software, which accounts for the effects of signal coordination and platoon formation on intersection operations.

Detailed level of service calculation sheets can be found in **Appendix B**. **Table 3-1** presents the Year 2035 "No Project" intersection operating conditions for the a.m. and p.m. peak hours at the 15 study intersections. As indicated in **Table 3-1,** many of the study intersections will operate at unsatisfactory levels of service during both the a.m. and p.m. peak hours. Twelve of the 15 intersections will operate at capacity (LOS E or F) in the a.m. peak hour and 11 out of 15 will be at capacity in the p.m. peak hour. **Figure 3-2** shows the future "No Project" peak hour volumes as well as the level of service and inadequate queuing at the study intersections.

FIGURE 3-1: FUTURE NO PROJECT LANE CONFIGURATIONS

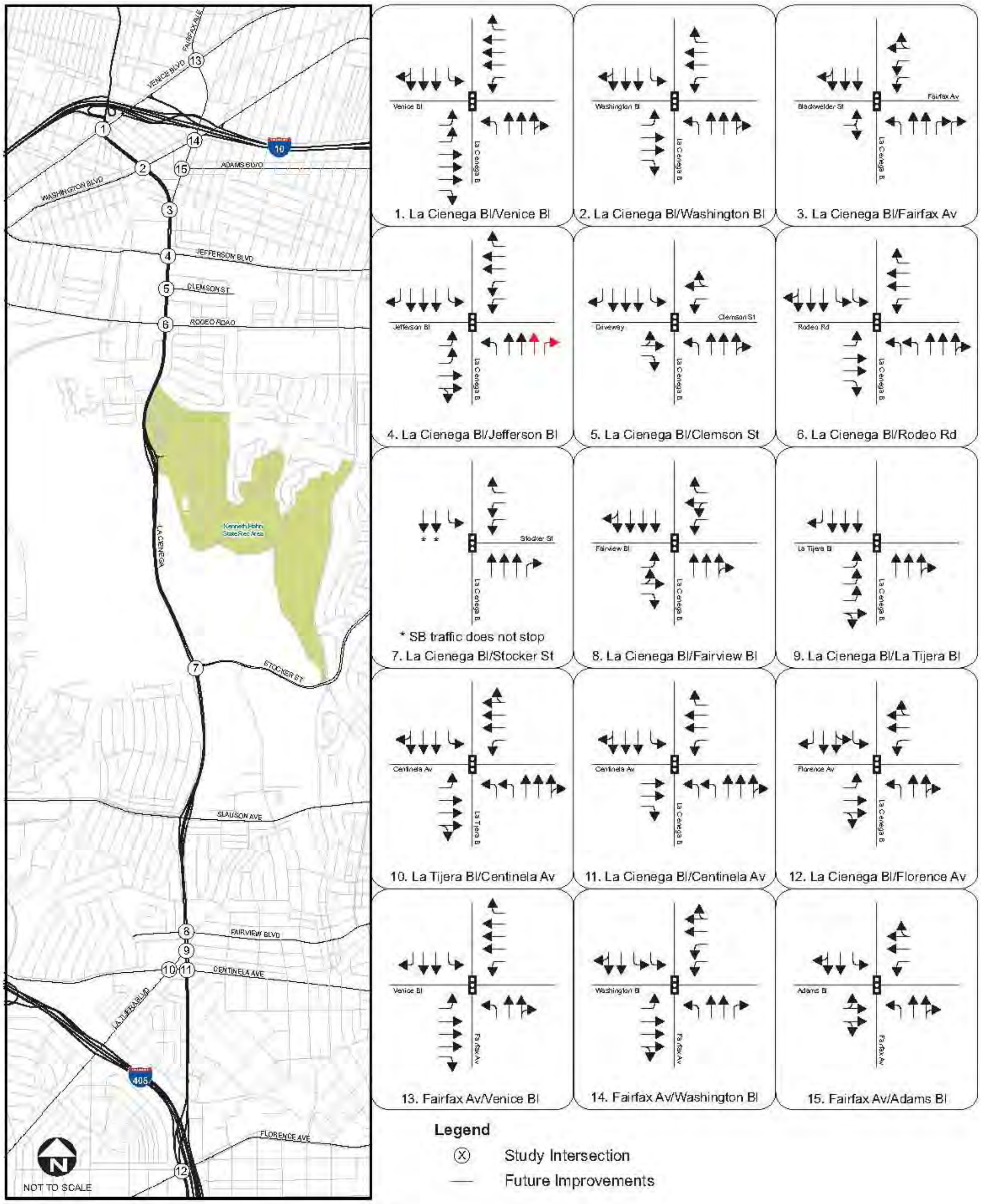


TABLE 3-1: YEAR 2035 NO PROJECT INTERSECTION LOS

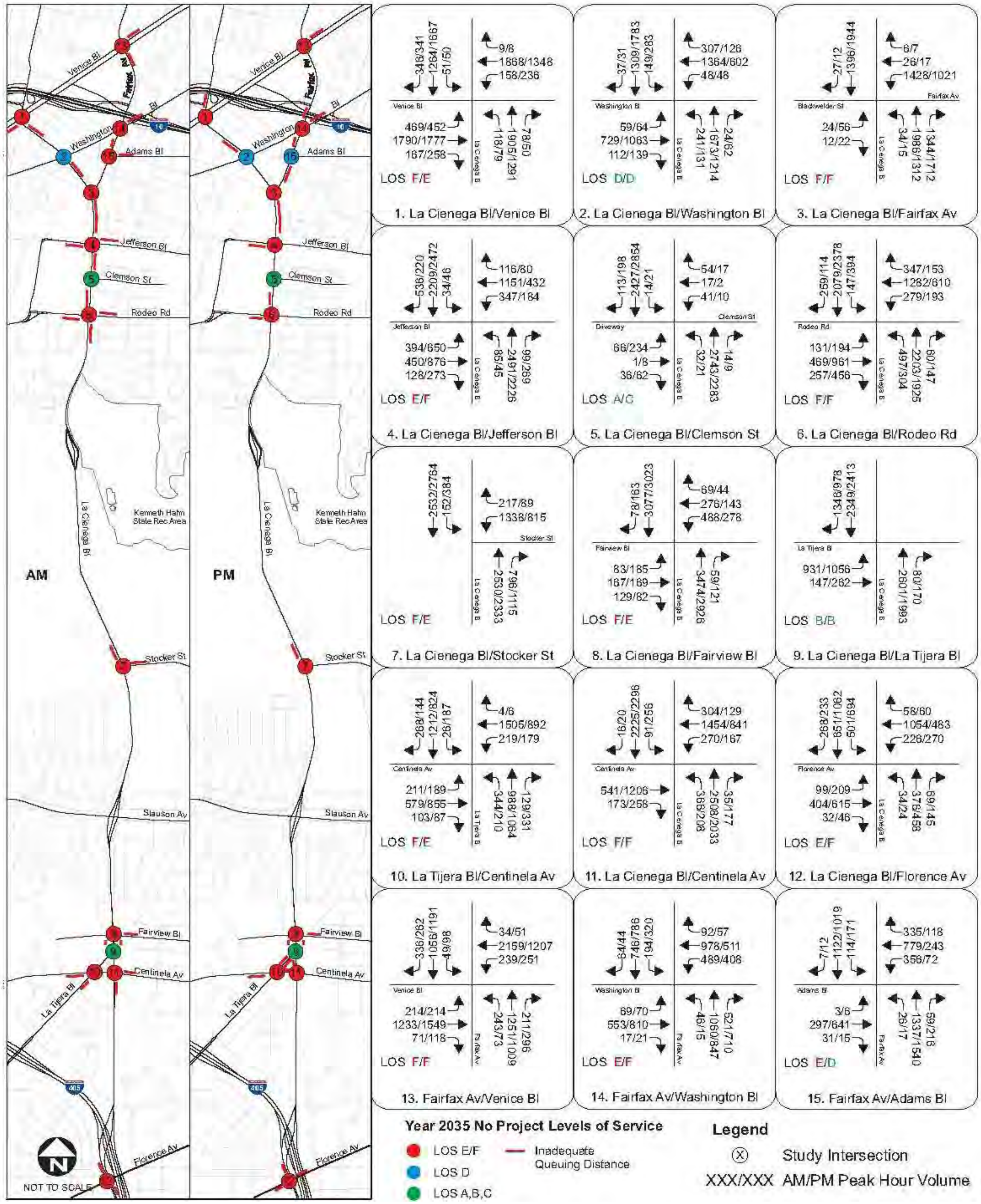
Intersection	AM Peak Hour			PM Peak Hour		
	Delay (sec)	V/C	LOS	Delay (sec)	V/C	LOS
1. La Cienega Blvd & Venice Blvd	146.0	1.82	**F**	61.1	1.10	E
2. La Cienega Blvd & Washington Blvd	42.1	0.97	D	46.4	0.97	D
3. La Cienega Blvd & Fairfax Ave	235.0	1.62	**F**	196.2	1.36	**F**
4. La Cienega Blvd & Jefferson Blvd	74.2	1.59	E	104.9	1.14	**F**
5. La Cienega Blvd & Clemson St	6.7	0.72	A	25.3	0.92	C
6. La Cienega Blvd & Rodeo Rd	124.1	1.35	**F**	122.2	1.25	**F**
7. La Cienega Blvd & Stocker St	93.0	1.22	**F**	70.9	1.10	E
8. La Cienega Blvd & Fairview Blvd	119.6	1.24	**F**	64.1	1.02	E
9. La Cienega Blvd & La Tijera Blvd	16.7	0.92	B	10.5	0.78	B
10. La Tijera Blvd & Centinela Ave	105.5	1.25	**F**	59.8	1.23	E
11. La Cienega Blvd & Centinela Ave	96.6	1.20	**F**	135.9	1.38	**F**
12. La Cienega Blvd & Florence Ave	60.2	0.98	E	159.0	1.16	**F**
13. Fairfax Ave & Venice Blvd	102.0	1.25	**F**	82.9	1.25	**F**
14. Fairfax Ave & Washington Blvd	78.1	1.05	E	89.6	1.01	**F**
15. Fairfax Ave & Adams Blvd	56.2	1.38	E	46.6	1.64	D

Notes:
HCM 2000 Operations Methodology, Delay = Average Vehicle Delay (Seconds), V/C = Volume-to-Capacity Ratio, LOS = Level of Service

As shown in **Figure 3-2** several of the more closely spaced intersections also have inadequate queuing distance during both the a.m. and p.m. peak hours. Queues form that prevent both through traffic and left turning traffic from progressing through the corridor. These queues can also block traffic on cross streets if drivers do not keep the intersections clear.

Queues are expected to be particularly problematic in the southern portion of the corridor near Centinela Avenue, La Tijera Boulevard and Fairview Avenue and in the northern portion from Rodeo Road north to the I-10.

FIGURE 3-2: YEAR 2035 NO PROJECT PEAK HOUR VOLUMES



Based on the intersection LOS analysis, the number of intersections operating at unsatisfactory levels of service is projected to increase from 10 intersections under existing conditions to 12 intersections under year 2035 “No Project” conditions. Based on the queuing analysis, all of the queues that form in the existing conditions are projected to worsen in the future “No Project” conditions and prevent both through traffic and left turning traffic from progressing through the corridor.

3.2 FUTURE LOCATIONS NEEDING IMPROVEMENTS

The locations that potentially need improvements in the future “No Project” conditions are addressed in this section of the report.

3.2.1 La Cienega Boulevard/Venice Boulevard

This intersection is projected to operate at LOS F in the a.m. peak hour and LOS E in the p.m. peak hour. Inadequate storage for queues is expected at eastbound and northbound left turns during the a.m. peak hour. The a.m. peak hour condition is worse than the p.m. peak hour because of the heavy westbound and northbound volumes in the morning.

3.2.2 La Cienega Boulevard/Washington Boulevard

This intersection is projected to operate at LOS D in both the a.m. and p.m. peak hours but queues are expected to exceed storage lengths at the northbound left turn during the a.m. peak hour.

3.2.3 La Cienega Boulevard/Fairfax Avenue

This intersection is projected to operate at LOS F in both the a.m. and p.m. peak hours. Inadequate storage for queues is expected at the northbound through movement during both the a.m. and p.m. peak hours. The queues are worse in the a.m. peak because of the heavy left turn volumes from Fairfax onto La Cienega.

3.2.4 La Cienega Boulevard/Jefferson Boulevard

This intersection is projected to operate at LOS E in the a.m. peak hour and LOS F in the p.m. peak hour. Inadequate storage for queues is expected in the eastbound, westbound and northbound directions.

3.2.5 La Cienega Boulevard/Rodeo Road

This intersection is projected to operate at LOS F in both the a.m. and p.m. peak hours. Storage for queues is expected to be inadequate at all of the approaches in the a.m. peak hour and at eastbound and southbound approaches in the p.m. peak hour.

3.2.6 La Cienega Boulevard/Stocker Street

This intersection is projected to operate at LOS F in the a.m. peak hour and LOS E in the p.m. peak hour. Inadequate storage for queues is expected at southbound and westbound approaches in the a.m. peak hour and at the southbound approach in the p.m. peak hour.

3.2.7 La Cienega Boulevard/Fairview Boulevard

This intersection is projected to operate at LOS F in the a.m. peak hour and LOS E in the p.m. peak hour. Queues are expected to exceed storage capacity at northbound and westbound approaches in both the a.m. and p.m. peak hours.

3.2.8 La Cienega Boulevard/Centinela Avenue

This intersection is projected to operate at LOS F in both the a.m. and p.m. peak hours. Inadequate queue storage is expected at the northbound and westbound approaches in the a.m. peak hour and at southbound approach in the p.m. peak hour.

3.2.9 La Cienega Boulevard/Florence Avenue

This intersection is projected to operate at LOS E in the a.m. peak hour and LOS F in the p.m. peak hour. Inadequate storage for queues is expected at southbound and northbound approaches in the a.m. peak hour and at the southbound, northbound and eastbound approaches in the p.m. peak hour.

3.2.10 Fairfax Avenue/Venice Boulevard

This intersection is projected to operate at LOS F in both the a.m. and p.m. peak hours. Inadequate storage for queues is expected at the westbound and northbound approaches in the a.m. peak hour and at the westbound approach in the p.m. peak hour.

3.2.11 Fairfax Avenue/Washington Boulevard

This intersection is projected to operate at LOS E in the a.m. peak hour and LOS F in the p.m. peak hour. Inadequate queue storage is expected at the westbound approach in the a.m. peak hour and at southbound and westbound approaches in the p.m. peak hour.

3.2.12 Fairfax Avenue/Adams Boulevard

This intersection is projected to operate at LOS E in the a.m. peak hour and LOS D in the p.m. peak hour. Inadequate storage for queues is expected at southbound and westbound approaches in the a.m. peak hour and at southbound and northbound approaches in the p.m. peak hour.

4.0 DESCRIPTION OF PROJECT ALTERNATIVES

The initial premise of this corridor study was to investigate the feasibility of grade separations at intersections along the La Cienega Corridor. Two such grades separations already exist along the corridor, one at Slauson Avenue and one at the entrance to the Kenneth Hahn State Park. For that reason, the first type of alternatives developed were potential grade separations, either overpasses or underpasses at major intersections.

Subsequent to the analysis of grade separation alternatives, Iteris staff developed other types of improvement alternatives which could be implemented at less cost and in shorter time frames and be more in keeping with the character of some portions of the La Cienega Corridor. These Intelligent Transportation Systems (ITS) improvements, Streetscape/Access Control (median) improvements and localized intersection improvements are described below after the grade separation concepts.

4.1 GRADE SEPARATION ALTERNATIVES

Consideration was given to grade separating major intersections between the I-405 freeway on the south and the I-10 freeway on the north. Within that study area, the following major intersections are located:

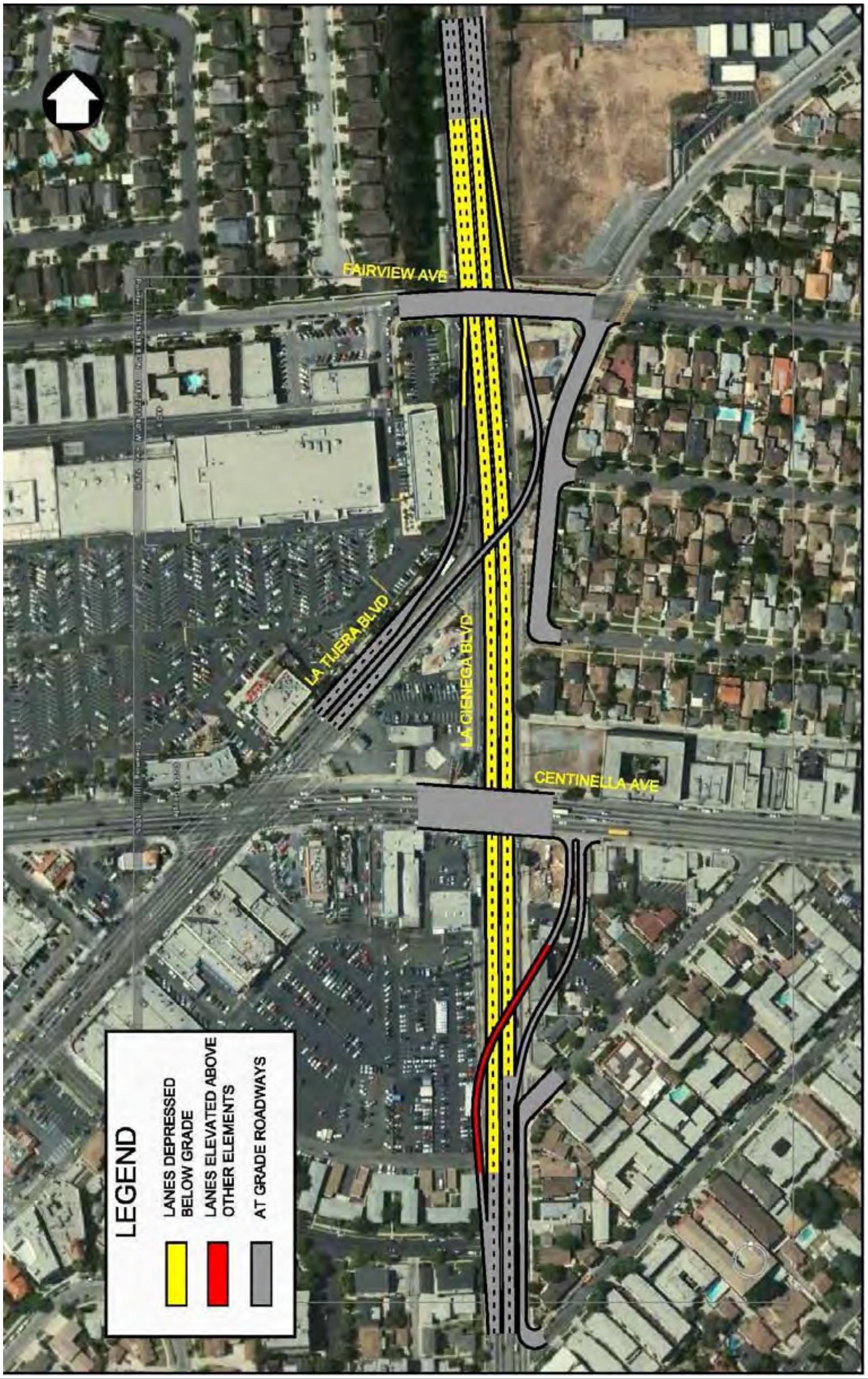
- La Cienega Blvd./Centinela Ave.
- La Cienega Blvd./La Tijera Blvd.
- La Cienega Blvd./Slauson Ave. (already grade separated)
- La Cienega Blvd./Stocker St.
- La Cienega Blvd./Rodeo Rd.
- La Cienega Blvd./Jefferson Blvd.
- La Cienega Blvd./Fairfax Ave.
- La Cienega Blvd./Washington Blvd.
- La Cienega Blvd./Venice Blvd.
- Fairfax Ave./Washington Blvd.

Based on initial discussions with the Project Steering Committee, it was agreed that grade separations north of the La Cienega/Fairfax intersection would not be considered, given the land use patterns and restricted rights of way and impacts associated with grade separations.

4.1.1 La Cienega/Centinela/La Tijera

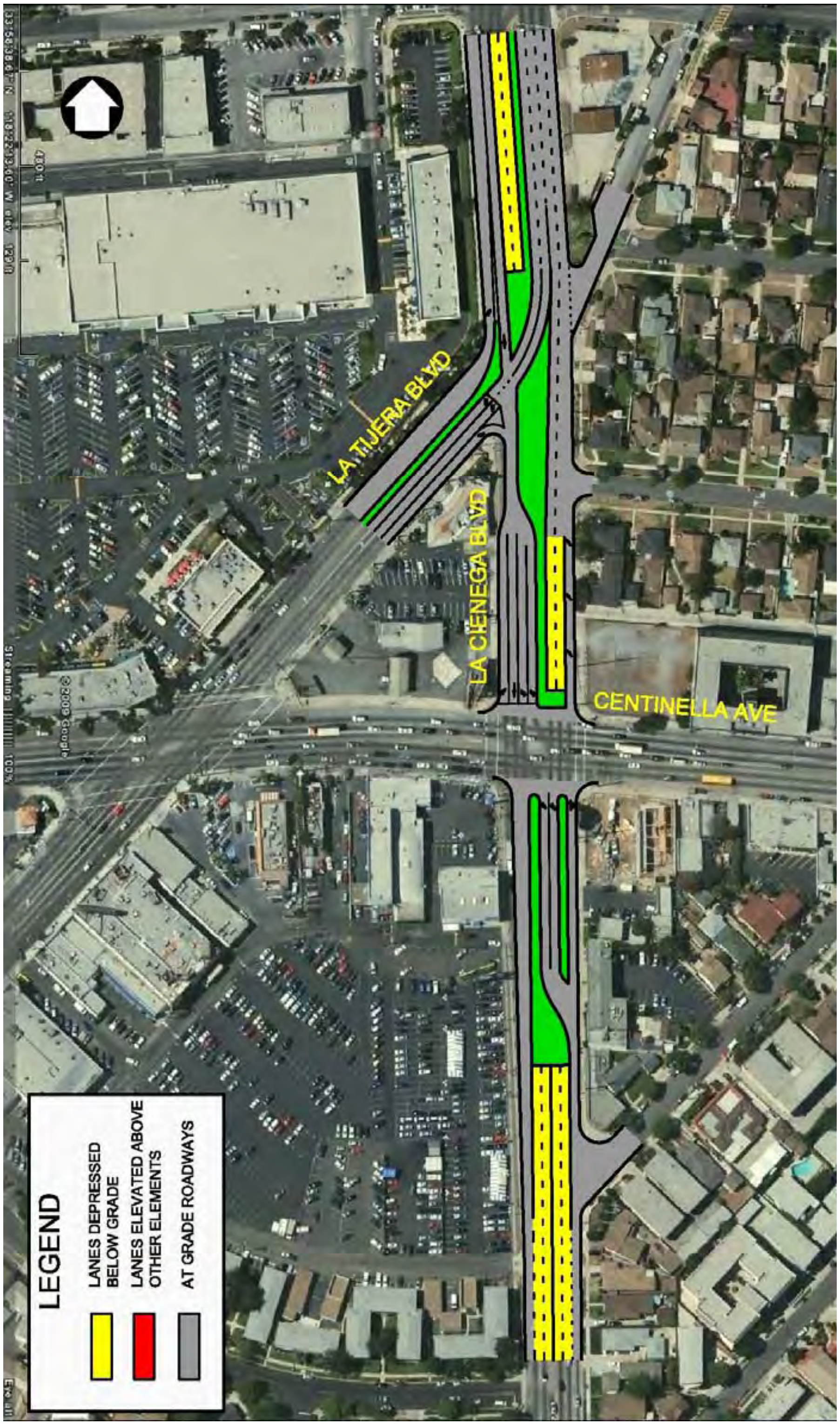
The City of Inglewood had prepared a study, "Proposal to Designate La Cienega Boulevard As a Future Grade-Separated Route Between Interstate Route 10 and Interstate Route 405 Freeways," dated November 2007, that provided an initial concept for the grade separation of the La Cienega/Centinela and La Cienega/La Tijera intersections, as well as the adjacent La Cienega/Fairview intersection. That concept became the starting point for the evaluation of alternatives at the southern end of the corridor. It is illustrated in **Figure 4-1.** The concept depressed the existing six through lanes on La Cienega below the east-west streets and included ramp connections to Centinela and La Tijera, but no connections between Fairview and La Cienega. It also required a significant amount of additional right-of-way for the ramps and for parallel local roads linking residential streets east of La Cienega.

FIGURE 4-1: LA CIENEGA BLVD/CENTINELA/LA TIJERA (CITY OF INGLEWOOD ALTERNATIVE)



A second grade separation concept, illustrated in **Figure 4-2**, was developed that depressed only four lanes of La Cienega (two through lanes in each direction) below Centinela and depressed just the southbound lanes under La Tijera. The northbound lanes of La Cienega and the two left turn lanes from La Tijera would remain at-grade and join together to create a four-lane northbound section of La Cienega before merging to three north of Fairview. Turning movements between La Cienega and Centinela would remain at-grade in a signalized intersection above the depressed through lanes of La Cienega. This alternative would have retained the traffic signal at La Cienega/Fairview in its current configuration. At the initial round of community meetings, public feedback focused on the potential bottleneck at the La Cienega/Fairview intersection and the desire of residents in the adjacent neighborhoods for access to/from La Cienega in both directions from Fairview. Access from La Tijera to the neighborhood east of La Cienega would be restricted by the grade separation, so access via Fairview would be important to the neighborhood.

FIGURE 4-2: LA CIENEGA BLVD/CENTINELA/LA TIJERA (INITIAL ALTERNATIVE)



The public feedback resulted in the development of a third concept for the grade separation at Centinela/La Tijera/Fairview. This concept, illustrated in **Figure 4-3**, depressed two through lanes in each direction on La Cienega below all three cross streets and included one-way frontage roads along the sides of the depressed through lanes that would remain at-grad and intersect with the east-west cross streets. The northbound left turn lanes from La Tijera would drop down into the center of the depressed segment of La Cienega to merge with the northbound through lanes. All turning movements between La Cienega and Centinela and La Cienega and Fairview would continue to be made at signalized intersections above the depressed section of through lanes. The one-way frontage roads between Centinela and Fairview would also accommodate turns onto La Tijera. Based on preliminary evaluation of right-of-way issues, it appears that this alternative could be implemented within the existing right-of-way. See **Figure 4-4** for a typical cross section. Renderings of this grade separation concept are shown in **Figures 4-5 through 4-9**.

Figure 4-3: Centinela/La Tijera/Fairview (Revised Alternative)

FIGURE 4-4: RENDERING OF TYPICAL CROSS SECTION

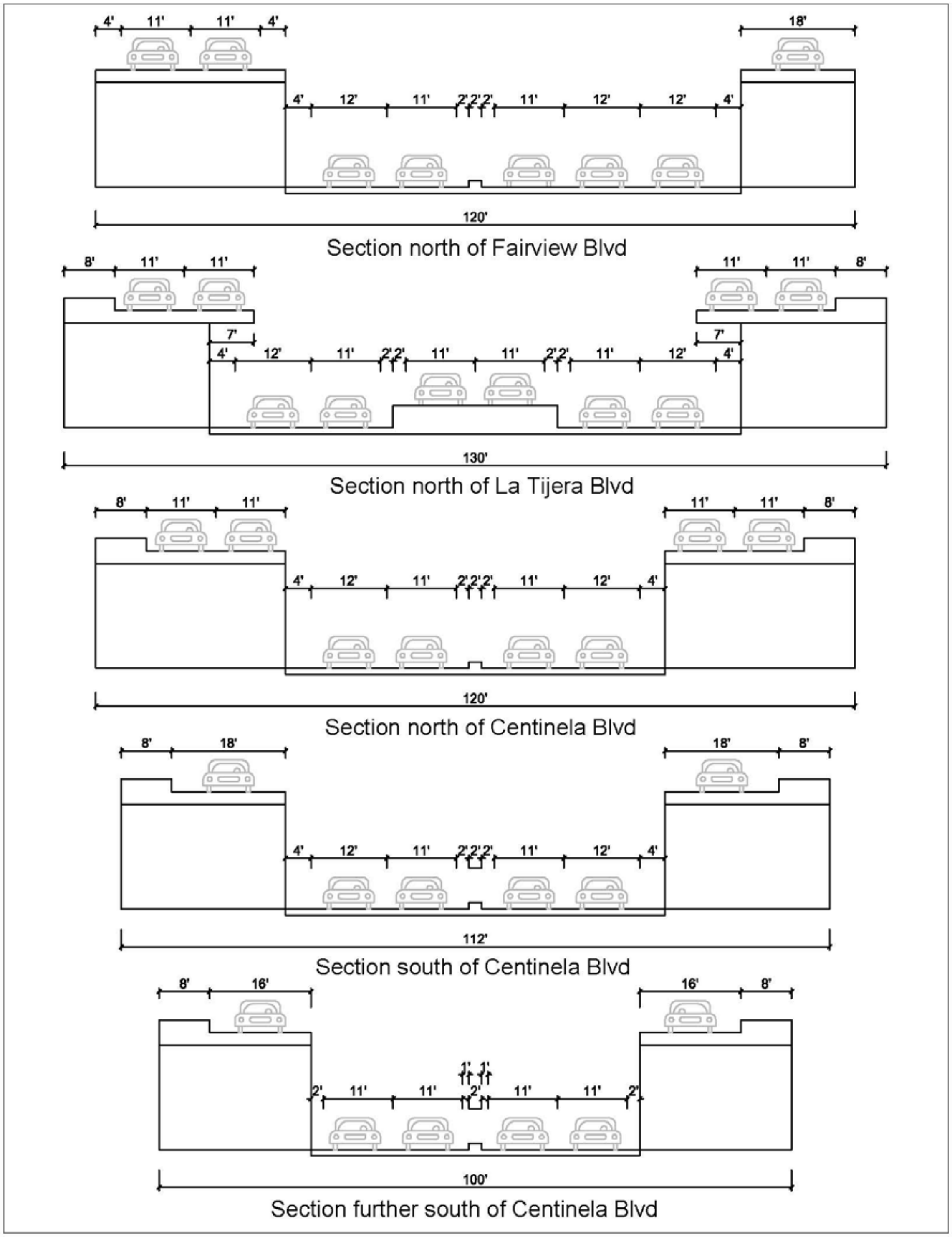


FIGURE 4-5: RENDERING OF CENTINELA/LA TIJERA

FIGURE 4-6: RENDERING OF CENTINELA/LA TIJERA

Figure 4-7: Rendering of Centinela/La Tijera

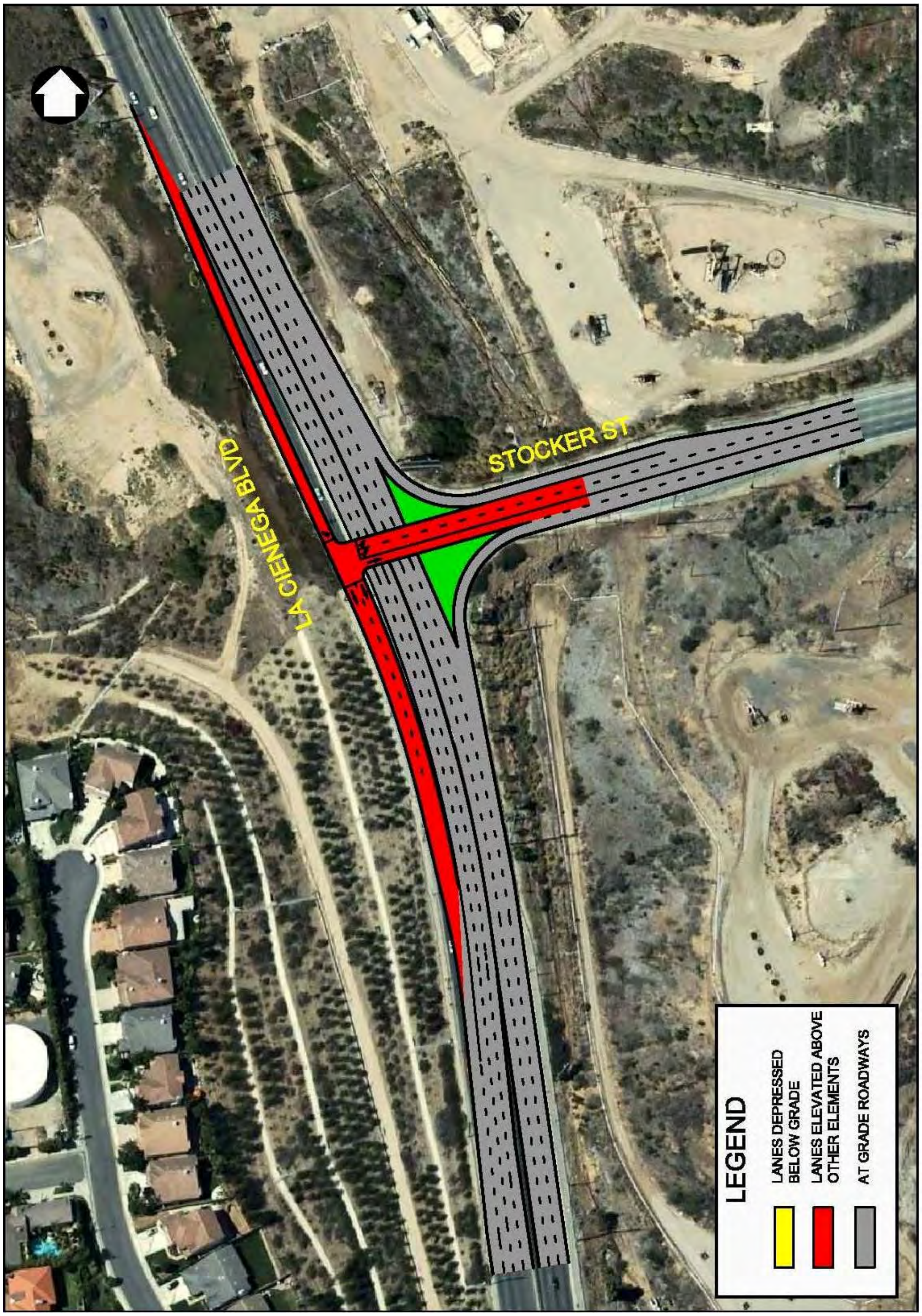
Figure 4-8: Rendering of Centinela/La Tijera

FIGURE 4-9: RENDERING OF CENTINELA/LA TIJERA

4.1.2 La Cienega/Stocker

The La Cienega/Stocker intersection is a signalized T-intersection, but operates in such a way that southbound La Cienega traffic is not stopped by the signal. Left turns to/from Stocker Street are controlled by the signal which stops northbound La Cienega traffic. The left turns from Stocker merge with the southbound through lanes of La Cienega in the middle of the street. Two conceptual grade separation concepts were developed for this location. The one illustrated in **Figure 4-10** elevates Stocker Street above La Cienega Boulevard and creates half of a typical diamond interchange. Left turns to/from Stocker would happen via ramps to/from the western curb lane of southbound La Cienega and would either be controlled by a traffic signal or a roundabout at the top of the ramps. Turns to/from northbound La Cienega would remain at-grade. The elevated portion of Stocker Street would likely require the relocation of some power lines and could be accomplished within the existing right-of-way with the signalized ramp terminal intersection. The roundabout intersection would likely require additional right-of-way. Although an extension of Stocker Street to the west of La Cienega is not planned, the elevated half diamond could potentially accommodate such an extension in the future. Access to the west side of La Cienega could be provided for automobiles, for example, if a parking area for the park was developed west of La Cienega, or the access to the west could be provided solely for bicyclists or hikers.

FIGURE 4-10: LA CIENEGA/STOCKER (ELEVATED ALTERNATIVE)



The second concept for this grade separation location is illustrated in **Figure 4-11**. It entails the depression of the northbound lanes of La Cienega below Stocker, leaving the left turn movements between the two streets at-grade at the signalized intersection in the middle of the street. The depression of the northbound through lanes would take advantage of the topography, in that La Cienega rises to meet Stocker and then drops down again past that intersection. This alternative would not require additional right-of-way. Renderings of this alternative are shown in **Figures 4-12 and 4-13**.

FIGURE 4-11: STOCKER (LA CIENEGA DEPRESSED ALTERNATIVE)

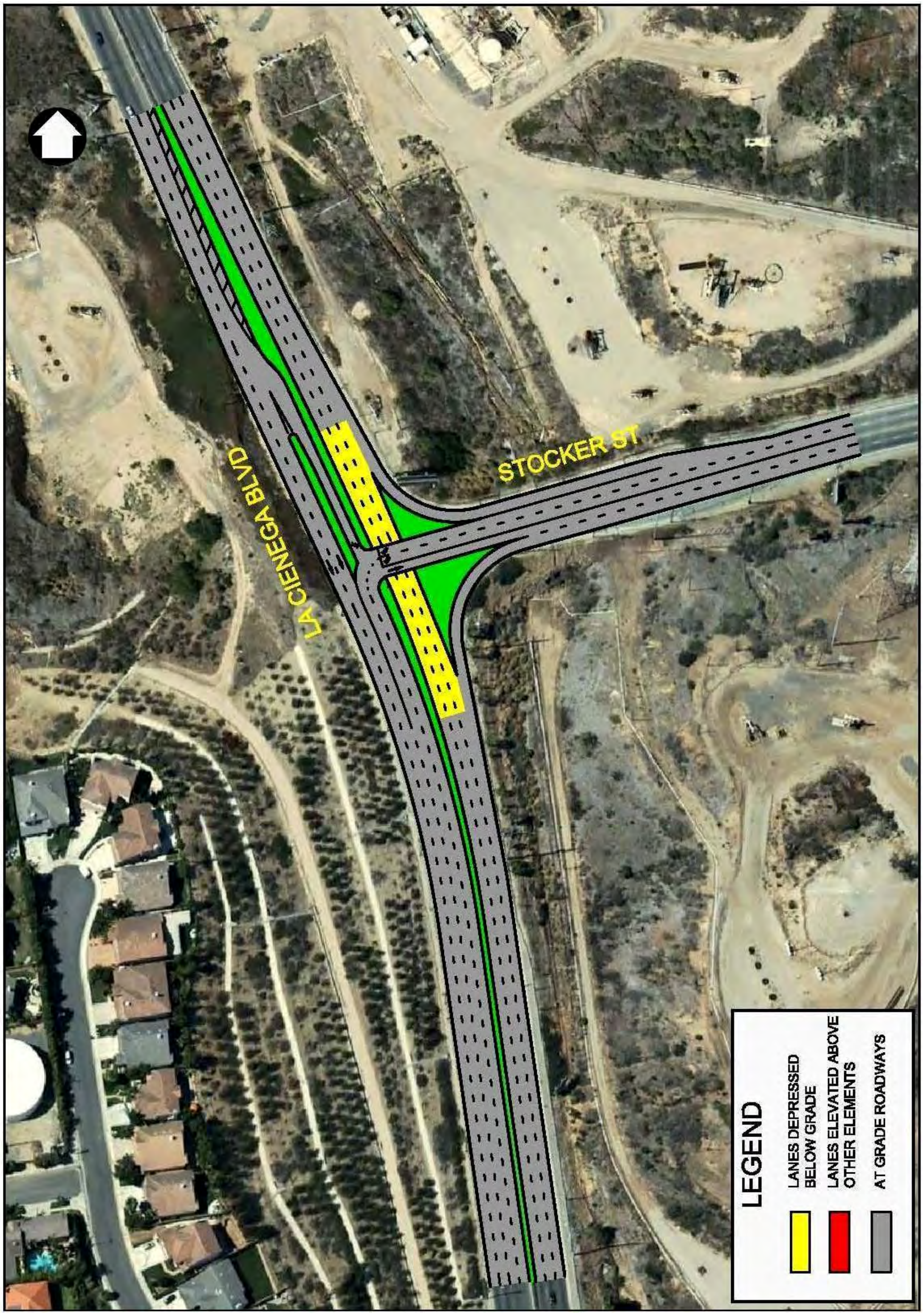


FIGURE 4-12: RENDERING OF STOCKER

FIGURE 4-13: RENDERING OF STOCKER

4.1.3 La Cienega/Rodeo Road

An initial concept for a grade separation that would depress La Cienega Boulevard below Rodeo was considered, but it was determined to be infeasible because of underground utilities (storm drains and major sewer outfall line) below Rodeo Road. The alternative that was developed instead was the grade separation of two through lanes in each direction on La Cienega over Rodeo Road. Turning movements between the two streets would remain at-grade in a signalized intersection below the overpass. There would be no change to the turning movements that could be made between the two intersecting streets. This concept is illustrated in **Figure 4-14**. Renderings of this overpass are shown in **Figures 4-15 and 4-16**.

FIGURE 4-14: RODEO ALTERNATIVE

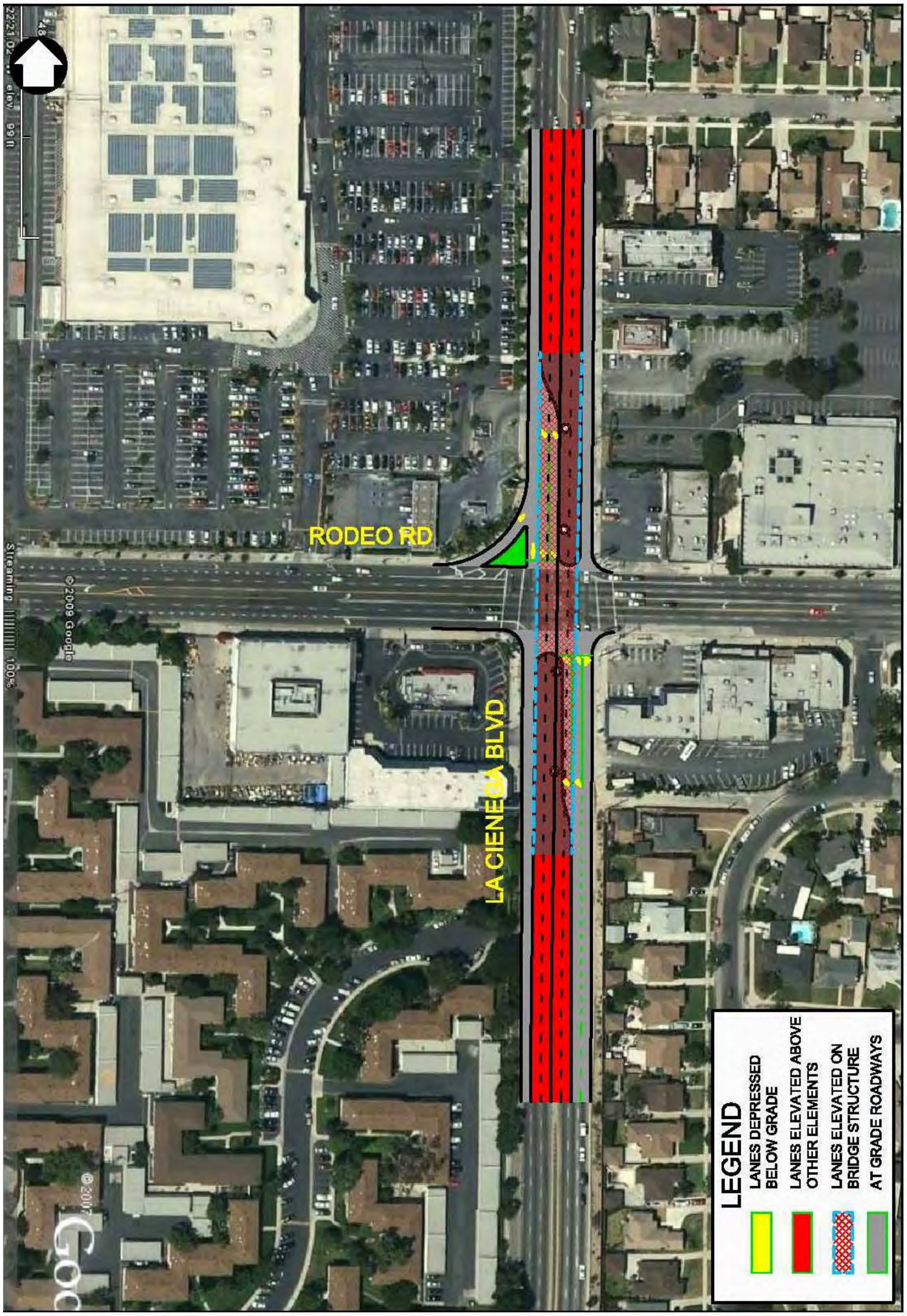


FIGURE 4-15: RENDERING OF RODEO OVERPASS

FIGURE 4-16: RENDERING OF RODEO OVERPASS

4.1.4 La Cienega/Jefferson

No feasible grade separation alternative was developed for the La Cienega/Jefferson intersection. The Exposition Light Rail Transit (LRT) Line is being constructed along Jefferson Boulevard and passes over La Cienega in a grade separation directly adjacent to Jefferson, with an elevated station at the intersection. It was therefore not feasible to elevate La Cienega over Jefferson. A grade separation of La Cienega below Jefferson was also ruled out due to utility constraints and the cost to relocate them or depress the roadway below them. The alignment of Jefferson Boulevard also was not conducive to a grade separation of Jefferson over La Cienega, since the east-west street is offset at La Cienega. It was also felt that an additional grade separation in the vicinity of the LRT station would not be consistent with the desire to make the station area attractive to non-motorized trips and to attract transit-oriented development.

4.1.5 La Cienega/Fairfax

La Cienega Boulevard and Fairfax Avenue come together in a Y-shaped intersection. Northbound traffic diverges at that point, with traffic bound for the eastbound I-10 freeway utilizing Fairfax to reach the on-ramp on Washington Boulevard and traffic bound for the westbound I-10 utilizing La Cienega. Similarly, traffic coming southbound from the westbound I-10, typically utilized the Washington off-ramp to reach Fairfax, and traffic from the eastbound I-10, typically utilized La Cienega to travel toward the south. The freeway oriented traffic therefore splits between the two routes at this Y intersection, with traffic bound for more localized routes using either La Cienega or Fairfax. One complicating factor in the design of this intersection is the fact that Blackwelder Street intersects the intersection as its western leg, making the Y intersection a four-legged intersection.

Initially a concept to depress the northbound lanes of La Cienega below the southbound left turn lanes from Fairfax was investigated. This is illustrated in **Figure 4-17**. It was determined that this concept was not feasible, however, due to the large box culvert storm drain that runs below Fairfax Avenue and crosses La Cienega to empty into the Ballona Creek. The alternative design that was developed included the grade separation of the southbound left turn lanes on Fairfax over the northbound lanes of La Cienega, with the left turn lanes then dropping down into the center of the street and merging with the southbound La Cienega traffic. This alternative, illustrated in **Figure 4-18**, would eliminate the traffic signal at this location. Turns to/from Blackwelder would be made as right-turn-in/right-turn-out maneuvers and would no longer be signal controlled. This alternative would eliminate delays to through traffic on both La Cienega and Fairfax, but it would have negative impacts on local access and make it harder for pedestrians to cross La Cienega. Renderings of this alternative are included in **Figures 4-19 through 4-21**.

FIGURE 4-17: LA CIENEGA/FAIRFAX DEPRESSED ALTERNATIVE

FIGURE 4-18: FAIRFAX FLYOVER ALTERNATIVE

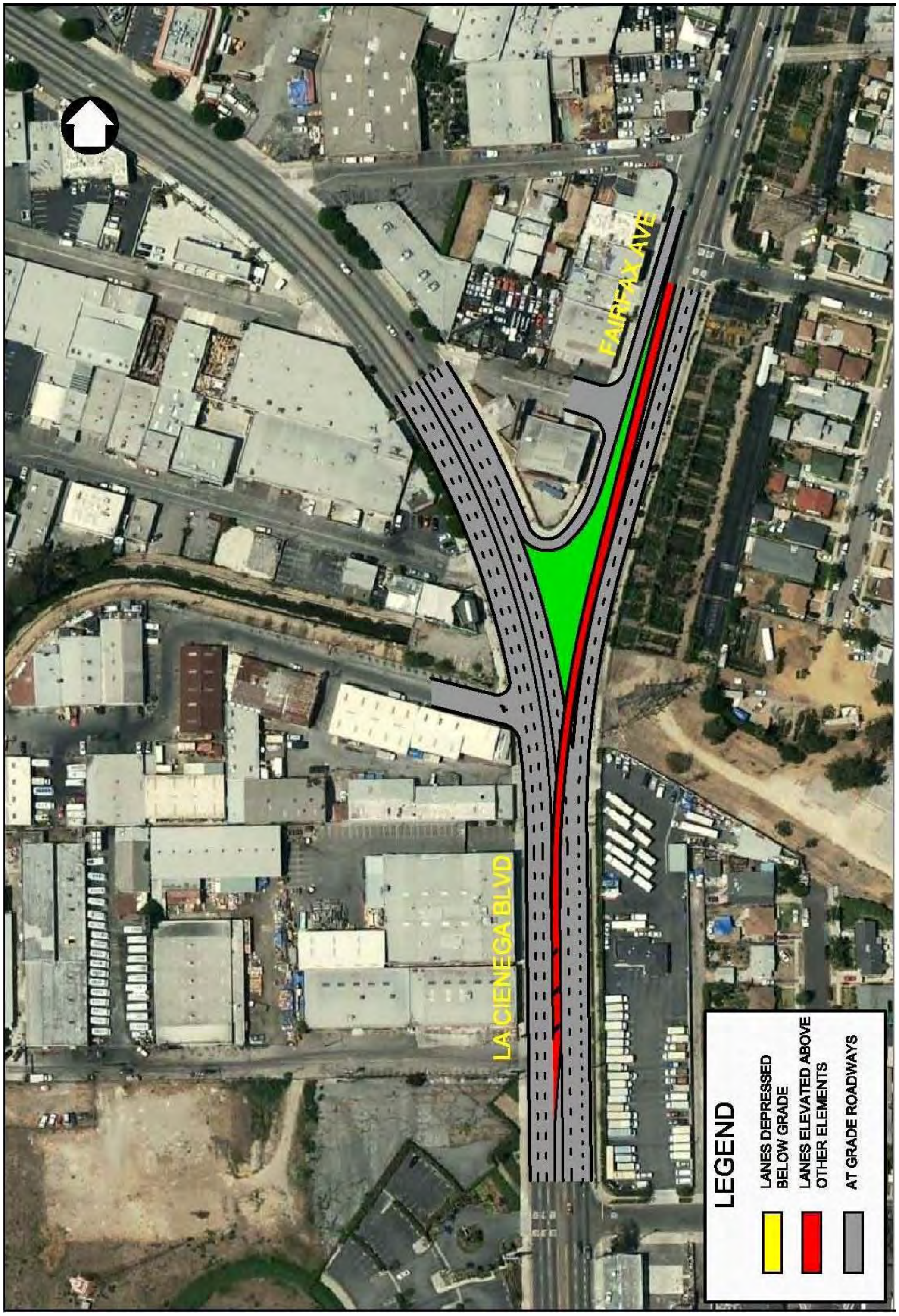


FIGURE 4-19: FAIRFAX FLYOVER RENDERING

FIGURE 4-20: FAIRFAX FLYOVER RENDERING

FIGURE 4-21: FAIRFAX FLYOVER RENDERING

4.2 Non-Grade Separation Improvements

As the La Cienega corridor study evolved, it became clear that grade separations would not be feasible at all major intersections and would not necessarily be desirable at some locations due to land use impacts and aesthetic considerations. Iteris developed concepts for other types of transportation improvements along the corridor that would reduce congestion.

4.2.1 Intelligent Transportation Systems Improvements

State of the art traffic signal controllers could be installed at all of the signalized intersections along the La Cienega corridor to allow the traffic signals to respond to changing traffic conditions in a real-time manner. Modern traffic control equipment would also facilitate adaptive traffic control from the traffic management centers of local jurisdictions. Along with new controllers, close circuit television cameras could be installed at intersections along the corridor to enhance the remote monitoring of traffic conditions and detection of incidents in the field.

In addition to upgraded traffic controls at each intersection, a fiber optic communication system could be installed along the corridor to enhance traffic signal coordination in the northern and southern segments where signals are concentrated and interact with one another. The fiber optic communication system would also allow for data sharing between jurisdictions along the corridor and to control changeable message signs along the corridor. The placement of changeable message signs along the corridor would allow traffic conditions data to be displayed so drivers on the corridor could make more well-informed decisions about route choices. For example, in the northbound direction, a changeable message sign south of Slauson Avenue could alert motorists to travel time to the I-10 freeway or Wilshire Boulevard via alternate routes (La Cienega, Fairfax or La Brea). Changeable message signs could also be used to alert motorists to incidents (accidents or road closures) ahead. On days when parking at Kenneth Hahn State Park is full, they could also be used to alert drivers that the park is closed, or to direct them to alternate parking locations.

4.2.2 Intersection Improvements

Localized intersection improvements were identified at several locations along the corridor

La Cienega/La Tijera – The southbound right turn movement from La Cienega onto La Tijera was recently changed to allow only the curb lane to turn right onto La Tijera. Right turns had previously been allowed form a second lane, a shared through/right-turn lane. The right-turn lane now frequently backs up to north of Fairview Street. It is recommended that LADOT reconsider this recent striping/signage change and return the intersection to its previous lane configuration.

La Cienega/Rodeo – Dual left turn lanes on Rodeo Road would improve the operations of this intersection and reduce the overflow of left turning traffic that sometimes blocks the number one lane on westbound Rodeo. This appears to be feasible with restriping within the existing right-of-way. Another potential improvement would be the striping of a dedicated right-turn-only lane on northbound La Cienega at Rodeo.

La Cienega/ Fairfax - There is a large triangular island in the center of the Fairfax Avenue approach to this intersection. Some of the right-of-way dedicated to the island could be used to create a triple left turn lane from southbound Fairfax onto La Cienega.

La Cienega/Venice – The alignment of La Cienega curves as the roadway approaches this intersection and the presence of buildings close to the back of the sidewalk on the east side of the street restricts visibility on the northbound approach. This makes it somewhat difficult for northbound drivers to have advance warning of a southbound vehicle turning left off of La Cienega onto Venice. Protected left turn signal phasing at this intersection would enhance the safety of the intersection.

Fairfax/Washington - Northbound La Cienega corridor traffic bound for the eastbound I-10 freeway on ramp uses the Fairfax to Washington route to reach the freeway. A dedicated right-turn-only lane from northbound Fairfax to eastbound Washington would facilitate this movement. The existing curb lane could also be designated as a through/right turn lane as well, since there are two lanes that allow turns from Washington Boulevard onto the on ramp (one for car pools). This improvement could be accomplished by relocating the sidewalk on the east side of Fairfax to further within the electric utility right-of-way along Fairfax, as shown in **Figure 4-22**.

Figure 4-22: Fairfax/Washington Improvement

4.2.3 Access Control and Streetscape Improvements

One of the features of the La Cienega corridor that restricts its capacity and slows traffic is the number of driveways and side streets in certain segments that result in left turns across the path of through traffic. Restricting access to some side streets and driveways would reduce the number of locations where through traffic conflicts with turning traffic. A means to accomplish this type of access control is the implementation of a median island.

Median islands focus left turns at a limited number of locations and reduce the side friction in the number one travel lane, thereby increasing its capacity. In the intervening sections between openings in the median, only the curb lane is affected by right turns into and out of driveways or side streets. The other two lanes on La Cienega would operate with fewer locations with conflicting turns across them.

The median islands could also enhance the visual character of the La Cienega corridor. The locations where median islands would be most beneficial from a traffic flow perspective, are at the northern and southern portions of the corridor where there are residential and commercial land uses and multiple driveways and local side streets. A median on the portions over the Baldwin Hills could provide an aesthetic improvement, but the center barriers already in place provide the traffic capacity enhancement associated with access control. **Figures 4-23 and 4-24** illustrate the areas of the corridor where local jurisdictions should consider implementation of median islands.

In addition to median islands, streetscape improvements such as street trees and enhanced crosswalk treatments could be considered along the corridor. Such pedestrian-friendly enhancements would be particularly appropriate in the areas around the Exposition LRT station at Jefferson. Improved pedestrian access should also be considered along the west side of La Cienega Boulevard between Rodeo Road and the entrance to Kenneth Hahn State Park.

FIGURE 4-23: MEDIAN ISLAND LOCATIONS SOUTH END

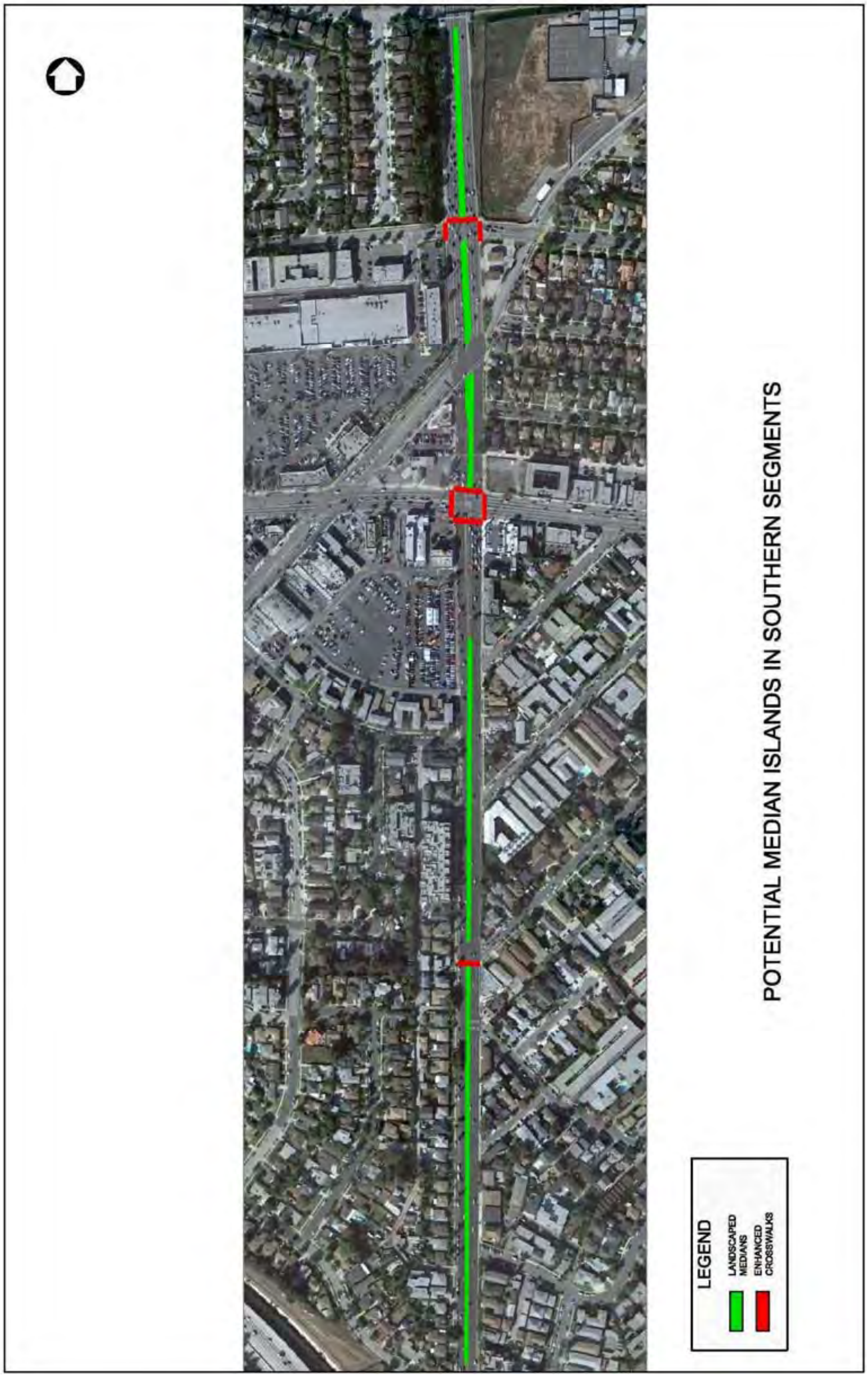


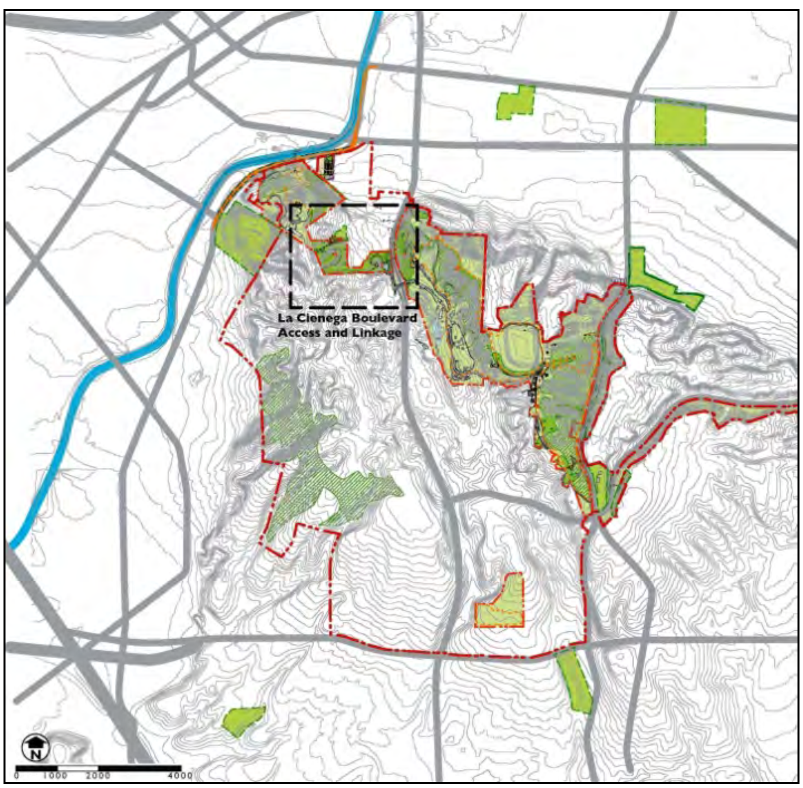
FIGURE 4-24: MEDIAN ISLAND LOCATIONS NORTH END

4.2.4 Bicycle Improvements

While not a focus of this corridor study, the Project Steering Committee and the public felt that it is important to emphasize the need for bicycle improvements in the corridor. The right-of-way is limited and the roadway width just adequate to accommodate the six travel lanes and median throughout virtually all of the corridor, so the addition of on-street bicycle lanes is not feasible. The high speed of traffic, particularly over the Baldwin Hills, would also not make it a very hospitable environment for bike lanes. The long-range plans for the state park expansion in the Baldwin Hills do suggest an off-street bicycle and pedestrian path potentially connecting from the Fairfax/Stocker intersection north to Culver City, with an overcrossing of La Cienega Boulevard in the park area. This is a long-term goal that all of the jurisdictions should keep in mind, as well as potential ways to connect other bicycle routes within their jurisdictions to this potential facility.

Bicycle access to the Exposition LRT station should also be a priority. It would be difficult to provide on-street bicycle lanes on La Cienega Boulevard near the LRT station due to the roadway width and the need for six travel lanes. Consideration could be given to the potential use of the sidewalks by bicycles, with appropriate signage to yield to pedestrians, if the Cities of Culver City and/or Los Angeles so desired.

FIGURE 4-25: BALDWIN HILLS MASTER PLAN WITH OFF-STREET BICYCLE/PEDESTRIAN CONNECTIONS ACROSS LA CIENEGA BOULEVARD.



5.0 EVALUATION OF PROJECT ALTERNATIVES

5.1 EVALUATION CRITERIA

The travel time benefits of the grade separations could be significant, as noted in the previous section of the report. Determining whether or not a grade separation is warranted at an urban intersection, however, must be based on other considerations besides just travel time. Working with the Project Steering Committee, Iteris developed the evaluation criteria listed in **Table 5.1** for use in this study.

TABLE 5-1: EVALUATION CRITERIA

Criteria	Description
Mobility Improvement	Decreased travel time between I-405 and I-10
Congestion Reduction	Improved intersection operations/reduced delay at intersections
Land Use Impacts	Additional right-of-way required/Displaced land use
Construction Impacts	Ability to keep La Cienega Boulevard open to through traffic/ extent of detours required
Accessibility to Adjacent Neighborhoods	Affect on traffic accessing adjacent neighborhoods and adjacent properties
Reduction in Residential Cut Through Traffic	Effectiveness at keeping corridor traffic on major arterials, such as La Cienega, and removal of conditions causing drivers to seek alternate routes through neighborhoods
Safety Improvement	Potential to reduce accidents
Compatibility with Non-Motorized Modes	Affect on pedestrian and bicycle modes/ability to accommodate pedestrian paths/enhanced sidewalks and bicycle lanes
Public Acceptance	Public support or opposition for an alternative

Initially, cost had been considered as one of the evaluation criteria, but it was felt that the best improvement recommendations should be identified first and then cost considerations taken into account in determining how to implement the preferred improvements.

In the community workshops held to present potential improvement options to the public, the evaluation criteria were described and the public asked to identify which criteria were most important to them for use in assessing the alternatives. **Table 5-2** on the following page illustrates the ranking of the evaluation criteria by the public. The "Level of Congestion Reduction" was by far the most important criteria to those who attended the workshops. This was followed by "Reduction of Residential Cut Through Traffic".

TABLE 5-2: WORKSHOP ATTENDEES' WEIGHTING OF EVALUATION CRITERIA

Evaluation Criteria	Priority Tally
Mobility Improvement (Decreased Travel Time I-405 to I-10)	9
Congestion Reduction (Improved intersection Level of Service)	27
Land Use Impacts (Right of Way Required)	6
Construction Impacts (Ability to keep La Cienega open to traffic)	4
Accessibility to Adjacent Neighborhoods	4
Reduction in Residential Cut Through Traffic	19
Safety Improvement	4
Compatibility with Non-Motorized Modes	1
Other	4

5.2 ONE SIZE DOES NOT FIT ALL

At the outset of this study, the presumed direction of the analysis was to identify a corridor improvement that would extend from the I-405 freeway on the south to the I-10 freeway on the north. As the study progressed, the different characteristics of the different segments of the corridor made it clear that no single improvement alternative stretching from one end of the corridor to the other would be feasible or logical. The northern and southern segments of the corridor are significantly different in character and land use than the middle segment over the Baldwin Hills, where the corridor currently operates as an expressway with no access to fronting properties. For that reason, the corridor was divided into five segments for analysis purposes. The five segments are illustrated in **Figure 5-1**.

FIGURE 5-1: FIVE SEGMENTS ALONG THE LA CIENEGA CORRIDOR

Segment 1 extends from the I-405 freeway to just north of Fairview Boulevard. It is located in the City of Inglewood (primarily east side of the street) and City of Los Angeles (west side of the street) and contains three study intersections at Centinela, La Tijera and Fairview. This segment has fronting residential uses in its southern half and mixed commercial, residential and public school land uses in the northern portion.

Segment 2 includes the unincorporated Los Angeles County portion of the study area, plus the Blair Hills area of Culver City, and has one study intersection at Stocker. The roadway in this segment operates like an expressway with existing grade separations at Slauson Avenue and at the entrance to Kenneth Hahn State Park. The land uses are primarily oil fields and the park, with residential uses on the hills above the roadway or adjacent in Blair Hills.

Segment 3 is primarily in the City of Los Angeles. It includes the intersections at Rodeo Road, Clemson Street, Jefferson Boulevard and Fairfax Avenue. The Exposition Light Rail Line and station is located in this segment at Jefferson Boulevard. The land uses are primarily commercial uses.

Segments 4 and 5 are both partly in Culver City and partly in the City of Los Angeles. Segment 4 includes the portion of La Cienega Boulevard north of the La Cienega/Fairfax intersection with study intersections at Washington Boulevard and Venice Boulevard and is in Culver City south of Washington and in Los Angeles, north of Washington. Segment 5 includes the portion of Fairfax Avenue north of the La Cienega/Fairfax intersection with study intersections at Adams Boulevard and Washington Boulevard. The centerline of the street is the city boundary between Culver City and Los Angeles.

5.3 Traffic Operations

5.3.1 Intersection Levels Of Service

Detailed level of service analysis was conducted for the four proposed grade separation improvements in the La Cienega Boulevard corridor. Intersection levels of service were calculated using the Synchro 7 software, which accounts for the effects of signal coordination and platoon formation on intersection operations.

Peak hour factors from existing count data were used in the future "With Grade Separation Alternatives" conditions. Detailed level of service calculation sheets can be found in **Appendix B**. **Table 5-3 & 5-4** presents the future 2035 "With Grade Separation Alternatives" intersection operating conditions for the a.m. and p.m. peak hours respectively at the six proposed grade separation intersections. **Figure 5-2** shows the future "With Grade Separation Alternatives" peak hour volumes, as well as the level of service at the study intersections.

TABLE 5-3: FUTURE WITH GRADE SEPARATION ALTERNATIVES INTERSECTION LOS AM PEAK HOUR

Intersection	Future No Project		Future with Grade-Separations*			Future with Grade Separations**		
	Delay (Sec)	LOS	Delay (sec)	V/C	LOS	Delay (sec)	V/C	LOS
3. La Cienega Blvd & Fairfax Ave†	235.0	F	-	-	-	-	-	-
6. La Cienega Blvd & Rodeo Rd	124.1	F	75.6	1.00	**E**	35.8	-	D
7. La Cienega Blvd & Stocker St	93.0	F	5.2	0.86	A	3.4	-	A
8. La Cienega Blvd & Fairview Blvd	119.6	F	42.3	1.02	D	15.3	-	B
9. La Cienega Blvd & La Tijera Blvd	16.7	B	10.7	0.92	B	4.7	-	A
11. La Cienega Blvd & Centinela Ave	96.6	F	70.7	0.85	**E**	32.5	-	C

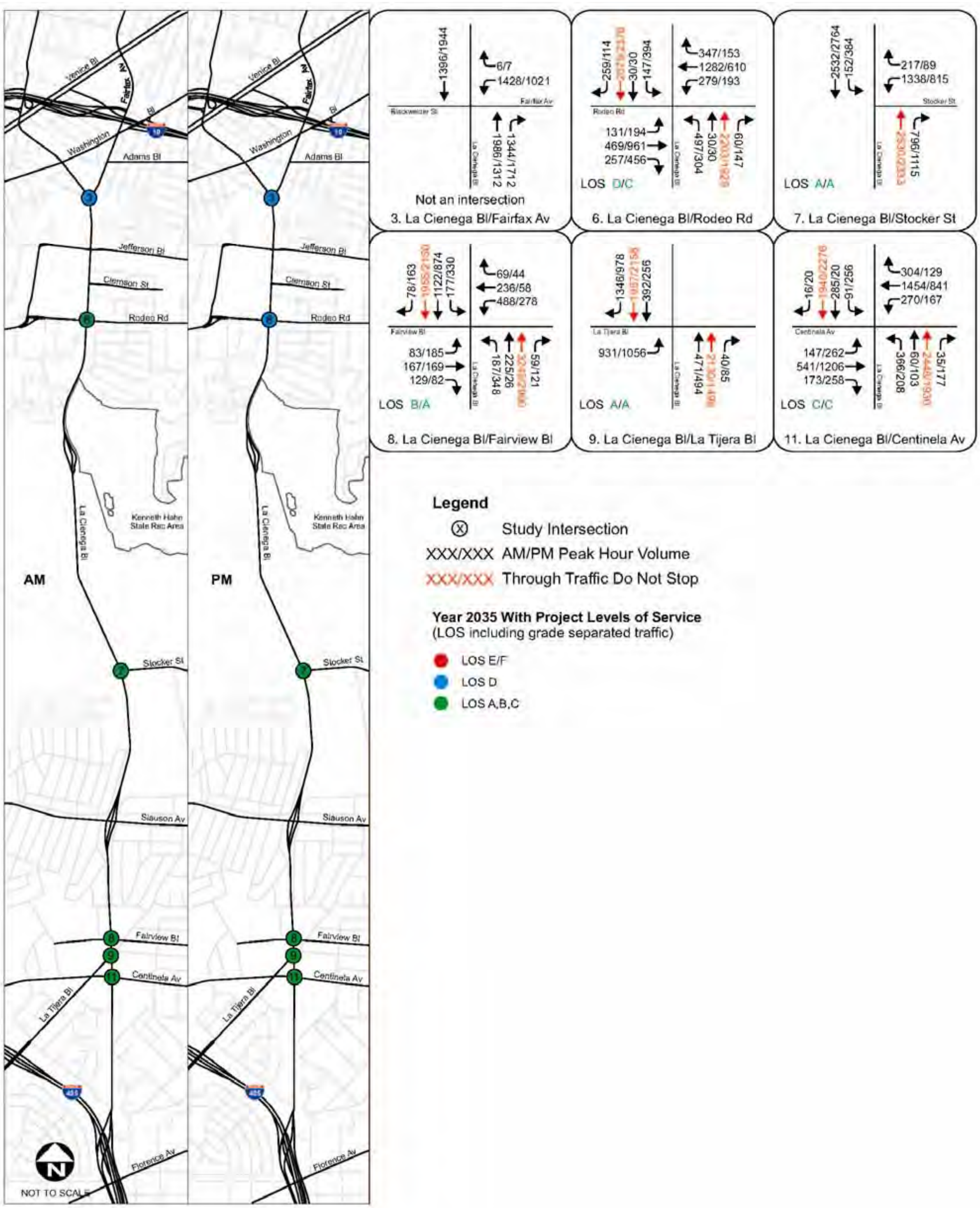
Notes:
HCM 2000 Operations Methodology, Delay = Average Vehicle Delay (Seconds), V/C = Volume-to-Capacity Ratio, LOS = Level of Service
*Through traffic on La Cienega, which "bypasses " signal not included in calculation. Delay, V/C and LOS are for the movements that remain controlled by the traffic signal.
**Includes reduction in delay to through traffic on La Cienega. Delay is average of delay at the remaining intersection plus zero delay for traffic on the grade separated movements. LOS is based on average delay, not V/C. V/C is not reported because it is not feasible to average V/C for a signalized intersection with V/C of grade-separated movements.
†Intersection eliminated.

TABLE 5-4: FUTURE WITH GRADE SEPARATION ALTERNATIVES INTERSECTION LOS PM PEAK HOUR

Intersection	Future No Project		Future with Grade-Separations*			Future with Grade Separations**		
	Delay (Sec)	LOS	Delay (sec)	V/C	LOS	Delay (sec)	V/C	LOS
3. La Cienega Blvd & Fairfax Ave†	196.2	F	-	-	-	-	-	-
6. La Cienega Blvd & Rodeo Rd	122.2	F	50.1	0.83	**E**	22.8	-	C
7. La Cienega Blvd & Stocker St	70.9	E	6.2	0.89	A	4.2	-	A
8. La Cienega Blvd & Fairview Blvd	64.1	E	19.4	0.81	B	6.6	-	A
9. La Cienega Blvd & La Tijera Blvd	10.5	B	8.2	0.62	A	3.6	-	A
11. La Cienega Blvd & Centinela Ave	135.9	F	57.4	0.80	**E**	26.5	-	C

Notes:
HCM 2000 Operations Methodology, Delay = Average Vehicle Delay (Seconds), V/C = Volume-to-Capacity Ratio, LOS = Level of Service
*Through traffic on La Cienega, which "bypasses " signal not included in calculation. Delay, V/C and LOS are for the movements that remain controlled by the traffic signal.
**Includes reduction in delay to through traffic on La Cienega. Delay is average of delay at the remaining intersection plus zero delay for traffic on the grade separated movements. LOS is based on average delay, not V/C. V/C is not reported because it is not feasible to average V/C for a signalized intersection with V/C of grade-separated movements.
†Intersection eliminated.

FIGURE 5-2: FUTURE PEAK HOUR VOLUMES



As can be seen in **Tables 5-3 and 5-4**, two sets of LOS values were calculated for the proposed grade separations. The first set of LOS results was calculated based on the delay only to vehicles that would continue to be controlled at the signalized intersection, which is standard methodology in the HCM. Since the proposed grade separations reduce the need for some vehicles to stop at the intersection, it is not appropriate to assess their effectiveness by calculating the delay of only vehicles that do stop. Therefore, the second set of LOS was calculated including the through traffic on La Cienega Boulevard that would not have to stop as a result of the grade separation. This through traffic would have zero delay at the intersection. The second set of LOS values in **Tables 5-3 and 5-4** represents the actual average delay of all vehicles at the proposed grade separations.

The relative benefits of the grade separation alternatives are illustrated in **Tables 5-3 and 5-4** based on the level of improvement from the No Project condition at each location. Most improve from LOS F to LOC C or better. The La Cienega/Fairfax grade separation appears to provide the greatest benefit, since it eliminates a signalized intersection all together. The La Cienega/La Tijera grade separation, on the other hand does not appear to resolve a congestion problem as much, but the LOS at the La Tijera intersection is constrained by the adjacent closely spaced intersections and the queues which extend between them, so it cannot be treated as an isolated intersection, but rather should be considered in conjunction with the adjacent intersections at Centinela and Fairview.

5.3.2 Corridor Travel Time Savings

The delay reductions at each intersection associated with the grade separations would result in a significant savings in travel time along the corridor. The elimination of delays at signalized intersections for north-south traffic on La Cienega at the four grade separation locations would eliminate the delays forecast at those locations. The total travel time savings could be as much as 7.5 minutes in the northbound direction and 8.8 minutes in the southbound direction, as shown in **Table 5-5**. This would reduce travel times in the future by 32-50% for trips traveling the full length of the study area between the I-405 and I-10 freeways.

TABLE 5-5: 2030 PEAK PERIOD TRAVEL TIME SAVINGS ASSOCIATED WITH GRADE SEPARATIONS

Scenario	Travel Time I-405 to I-10 (minutes)			
	AM Northbound	AM Southbound	PM Northbound	PM Southbound
Existing	21.0	12.7	14.8	17.1
2030	23.3	14.7	16.9	19.1
Reduction due to Grade Separations	7.5	7.5	6.7	8.8
Potential Travel Time	15.8	7.3	10.2	10.3
Percent Reduction in Travel Time	32.2%	50.5%	39.6%	46.2%

5.4 EVALUATION MATRICES

A series of evaluation matrices were prepared, one for each segment of the corridor, to identify the improvement alternatives that best fit the needs of each segment. The matrices are presented in **Tables 5-6 through 5-10.** The matrices include a qualitative assessment of each alternative improvement according to each evaluation criteria indicated as a positive assessment with a “plus” sign and a negative assessment with a “minus” sign. The bottom line of each matrix indicates the summary evaluation of the alternative. **Appendix D** contains a summary of the public input that was provided during the study period.

Segment 1

TABLE 5-6: EVALUATION MATRIX SEGMENT 1

Segment of Corridor		Potential Lead Agency	Improvement Alternatives				
Segment	**Segment Description**		**ITS Improvements**	**Access Control & Streetscape Improvements**	**Intersection Improvements**	**Grade Separation Improvements**	
1	La Cienega, I-405 to Fairview (incl. Fairview int.)	City of Inglewood	Signal Upgrades, Interconnect, DMS	Median Island I-405 to Centinela	Dual Right Turn Lanes SB La Cienega at La Tijera	La Cienega Depressed, Frontage Roads Centinela to Fairview	La Cienega Underpass with Ramps to Centinela
Evaluation Criteria	Mobility Improvement		+	+	+	++	++
	Congestion Reduction		+	+	+	++	++
	Land Use Impacts						-
	Construction Impacts		+		+	-	-
	Public Acceptance		+	+	+	-	--
	Accessibility to Adjacent Neighborhoods			-		+	--
	Safety Improvement			+		+	+
	Compatibility with Non-Motorized Modes		+	+		-	-
	Overall		+	+	+	+	+/-

Segment 1

ITS improvements would be beneficial in this segment and could be implemented in a relatively short period of time. Median islands would also be beneficial in eliminating some of the conflict points where vehicles cross each other's paths turning in and out of driveways or side streets. The median islands would have some impact on accessibility to adjacent neighborhoods and fronting properties as some people would have to drive out of their way to reach their final destination. Overall, however, they are likely to improve the flow of traffic and enhance safety, plus provide a potential aesthetic enhancement to the area with attractive landscaping, so are judged to be a worthwhile improvement, potentially as a short-term improvement prior to the grade separation alternatives, or in conjunction with them as a means of channelizing traffic between the I-405 freeway and the Centinela grade separation.

The intersection improvement at La Cienega/La Tijera, which is a return to the lane designations that were provided at that location until recently, would help reduce the queue of southbound vehicles on La Cienega waiting to turn right onto La Tijera Boulevard.

The two grade separation alternatives in this segment will provide significant mobility benefits and congestion relief by reducing the need for through traffic on La Cienega to stop at three potential signalized intersections. They have the potential to reduce travel time on La Cienega by more than 3.5 minutes. They would also provide benefits to east-west travel by eliminating the conflicts with the north-south through traffic. The grade separation alternative from the City of Inglewood Grade Separation Study would have more land use impacts than the other alternative due to the ramp connections to/from Centinela and La Tijera that it includes. Both alternatives would have fairly significant construction impacts because of the need to depress the through lanes on La Cienega. This could be accomplished in stages to maintain some open travel lanes, but the capacity of La Cienega in this area would likely be significantly reduced during the construction period, requiring detours to parallel routes.

Both grade separation alternatives would have the benefit of significantly improving the throughput capacity on La Cienega, which should in turn reduce the likelihood for cut through traffic in residential neighborhoods. Both would also disconnect La Tijera at La Cienega, so eastbound through traffic from La Tijera could not directly enter the residential area east of the boulevard. By eliminating many of the conflicting movements at the three intersections, the grade separations should improve safety by reducing opportunities for collisions. Neither alternative is conducive to the introduction of bicycle lanes on La Cienega Boulevard, but the alternative with the at-grade one-way frontage roads would be more pedestrian friendly than the one with the ramp connections.

In the community meetings held as part of this project, there was general public acceptance that the grade separations would be a mobility benefit. An important consideration to the public was that they be designed to maintain access to the adjacent neighborhoods and not restrict access to commercial properties.

Segment 2

Table 5-7 illustrates the evaluation of improvement alternatives in the segment over the Baldwin Hills.

TABLE 5-7: EVALUATION MATRIX SEGMENT 2

Segment of Corridor		Potential Lead Agency	Improvement Alternatives				
Segment	**Segment Description**		**ITS Improvements**	**Access Control & Streetscape Improvements**	**Intersection Improvements**	**Grade Separation Improvements**	
2	La Cienega, Fairview to Rodeo	Los Angeles County	Signal Upgrades, Interconnect, DMS			Stocker Elevated with Half Diamond	NB La Cienega Depressed Below Stocker
Evaluation Criteria	Mobility Improvement		+			+	+
	Congestion Reduction		+			+	+
	Land Use Impacts						
	Construction Impacts		+				-
	Public Acceptance		+			-	-
	Accessibility to Adjacent Neighborhoods						
	Safety Improvement					++	+
	Compatibility with Non-Motorized Modes						
	Overall		+			+	+

Segment 2

ITS improvements were judged to be beneficial in this segment as well. Changeable message signs could provide motorists with information on which route (e.g., La Cienega, Fairfax, La Brea) to use to reach the I-10 or points north of the freeway, such as Wilshire Boulevard. They could also alert motorists of incidents or construction delays ahead on city streets or the freeways.

The two alternative grade separation alternatives at Stocker Street were evaluated to be positive improvements that would reduce travel time in the northbound direction and possibly eliminate merging issues and safety-related concerns in the southbound direction. The half diamond alternative with Stocker Street elevated over La Cienega Boulevard would have the benefits of likely being easier to construct while maintaining traffic flow on La Cienega and the safety benefit of moving the merging of traffic out of the center of southbound La Cienega. It could also potentially provide access to the west side of La Cienega Boulevard at some point in the future. The elevated structure would have potential utility conflicts with overhead wires. The alternative that depresses northbound La Cienega below Stocker Street would avoid the overhead utility conflicts, but would likely have greater construction impacts.

Implementation of either grade separation alternative at Stocker would create a continuous expressway segment over the Baldwin Hills from south of Slauson Avenue to just south of Rodeo Road. It would be difficult to implement a bicycle or pedestrian facility in conjunction with such an expressway, so the long-term goal should be for the County to pursue an off-street non-motorized connection across the Baldwin Hills.

There was some public opposition expressed to the grade separation concepts; some opposed to the encouragement of additional regional through traffic in this corridor, and others concerned about environmental effects, primarily noise and air quality impacts of adjacent neighborhoods.

Segment 3

The evaluation matrix for Segment 3 is provided below in **Table 5-8**.

TABLE 5-8: EVALUATION MATRIX SEGMENT 3

Segment of Corridor		Potential Lead Agency	Improvement Alternatives				
Segment	**Segment Description**		**ITS Improvements**	**Access Control & Streetscape Improvements**	**Intersection Improvements**	**Grade Separation Improvements**	
3	La Cienega, Rodeo to Fairfax (incl. ints. at Rodeo and Fairfax)	City of Los Angeles	Signal Upgrades, Interconnect, DMS	Median Island Rodeo to Fairfax	1. Dual Left Turn Lanes WB Rodeo 2. Triple Left Turn SB Fairfax at La Cienega	SB Fairfax Left Turns Fly Over La Cienega	La Cienega Grade Separated Above Rodeo
Evaluation Criteria	Mobility Improvement		+	+	+	++	++
	Congestion Reduction		+	+	+	++	++
	Land Use Impacts						
	Construction Impacts		+			-	-
	Public Acceptance		+	+	+	--	--
	Accessibility to Adjacent Neighborhoods		+	-		-	
	Safety Improvement			+		+	+
	Compatibility with Non-Motorized Modes		+	+		-	-
	Overall		+	+	+	-	-

Segment 3

The ITS improvements and access control and streetscape improvements were evaluated to be positive improvement in Segment 3 for reasons similar to Segment 1. Streetscape enhancements were felt to be particularly important in this segment of the corridor due to the location of the Exposition Light Rail station in the middle of the segment. Measures to improve the walkability of the corridor and enhance bicycle access to the rail station were felt to be particularly important. While it may not be feasible to include bicycle lanes on the roadway of La Cienega Boulevard in this area given the narrow roadway and traffic volumes which require six travel lanes, efforts could be undertaken to make it legal for bicyclists to share the sidewalk with pedestrians as have been implemented on the narrow segments of Santa Monica Boulevard in West Hollywood where signs are posted for bicyclists to yield to pedestrians on the sidewalk.

Intersection improvements at Rodeo Road and Fairfax/La Cienega would provide delay reductions at those two locations, providing modest mobility benefit in the corridor.

The grade separations at both Rodeo Road and at the Fairfax/La Cienega intersection were both assessed to have more negative impacts that positive mobility impacts. The visual impacts and restrictions on access to adjacent properties and side streets make them incompatible with this built out urban area. There was strong public opposition to either grade separation.

Segment 4

Table 5-9 contains the evaluation matrix for Segment 4. Only ITS improvements, streetscape improvements and one intersection improvement were considered in this segment.

TABLE 5-9: EVALUATION MATRIX SEGMENT 4

Segment of Corridor		Potential Lead Agency	Improvement Alternatives				
Segment	**Segment Description**		**ITS Improvements**	**Access Control & Streetscape Improvements**	**Intersection Improvements**	**Grade Separation Improvements**	
4	La Cienega, Fairfax to I-10	City of Culver City and/or Los Angeles	Signal Upgrades, Interconnect, DMS	Median Island Fairfax to Venice	Protected Left Turns N/S La Cienega at Venice		
Evaluation Criteria	Mobility Improvement		+	+			
	Congestion Reduction		+	+	+		
	Land Use Impacts						
	Construction Impacts		+				
	Public Acceptance		+	+	+		
	Accessibility to Adjacent Neighborhoods			-			
	Safety Improvement			+	+		
	Compatibility with Non-Motorized Modes		+	+			
	Overall		+	+	+		

Segment 4

The improvements in Segment 4 are focused on improving traffic operations and safety through enhanced signal operations, as well as streetscape improvements to make this segment of La Cienega more pedestrian and bicycle friendly.

Segment 5

As in Segment 4, the improvements considered in Segment 5 were limited to ITS improvements, streetscape enhancements and one intersection improvement. The evaluation matrix for Segment 5 is shown in **Table 5-10.**

TABLE 5-10: EVALUATION MATRIX SEGMENT 5

Segment of Corridor		Potential Lead Agency	Improvement Alternatives				
Segment	Segment Description		ITS Improvements	Access Control & Streetscape Improvements	Intersection Improvements	Grade Separation Improvements	
5	Fairfax, La Cienega to I-10	City of Culver City, or City of Los Angeles	Signal Upgrades, Interconnect, DMS	Median Island La Cienega to Venice	Right Turn Only Lane NB Fairfax at Venice		
Evaluation Criteria	Mobility Improvement		+	+			
	Congestion Reduction		+	+	+		
	Land Use Impacts						
	Construction Impacts		+				
	Public Acceptance		+	+	+		
	Accessibility to Adjacent Neighborhoods			-			
	Safety Improvement			+			
	Compatibility with Non-Motorized Modes		+	+			
	Overall		+	+	+		

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5.5 COST BY SEGMENT

The cost of improvements by segment is shown in **Table 5-11**. The costs for the ITS improvements are largely driven by the number of signalized intersections and the length of each segment in which fiber optic communications would be installed. Similarly, the cost of the access control and streetscape improvements is driven by the length of each segment.

TABLE 5-11: IMPROVEMENT COSTS BY SEGMENT

Segment of Corridor		Improvement Alternatives				
Segment	**Segment Description**	**ITS Improvements**	**Access Control & Streetscape Improvements**	**Intersection Improvements**	**Grade Separation Improvements**	
1	**La Cienega, I-405 to Fairview**	Signal Upgrades, Interconnect, DMS	Median Island I-405 to Centinela	Dual Right Turn Lanes SB La Cienega at La Tijera	La Cienega Depressed, Frontage Roads Centinela to Fairview	La Cienega Underpass with Ramps to Centinela
Cost (millions)		$ 4.14	$ 5.3	$ 0.1	$ 81.2	$ 107.38
2	**La Cienega, Fairview to Rodeo**	Signal Upgrades, Interconnect, DMS			Stocker Elevated with Half Diamond	NB La Cienega Depressed Below Stocker
Cost (millions)		$ 3.79	$ -	$ -	$ 27.6	$ 37.31
3	**La Cienega, Rodeo to Fairfax**	Signal Upgrades, Interconnect, DMS	Median Island Rodeo to Fairfax	Triple Left Turn SB Fairfax at La Cienega	SB Fairfax Left Turns Fly Over La Cienega	La Cienega Grade Separated below Rodeo
Cost (millions)		$ 2.6	$ 5.3	$ 1.8	$ 27.6	$ 60.23
4	**La Cienega, Fairfax to I-10**	Signal Upgrades, Interconnect, DMS	Median Island Fairfax to Venice			
Cost (millions)		$ 2.1	$ 2.7			
5	**Fairfax, La Cienega to I-10**	Signal Upgrades, Interconnect, DMS	Median Island La Cienega to Venice	Right Turn Only Lane NB Fairfax at Venice		
Cost (millions)		$ 2.1	$ 2.7	$ 1.0		

The grade separation alternatives range in cost from $27 million for the Fairfax Avenue flyover or the Stocker Street elevated grade separation, to $107 million for the Centinela/La Tijera/Fairview grade separation with the ramp connections. Cost estimates for each improvement alternative are included in **Appendix E**.

6.0 FUNDING OPTIONS

The types of improvements under consideration for the La Cienega Boulevard corridor fall into the following categories:

- Intelligent Transportation Systems
- Access Control and Streetscape enhancements
- Intersection Improvements
- Grade Separations

All are physical improvements intended to enhance corridor mobility. Other than streetscape enhancements which will encourage non-motorized transportation, they are primarily highway-oriented improvements and as such, funding options are primarily those related to highway improvements. Funding sources can be broken down by level of government as summarized in the table below. Those that could potentially be used to fund the La Cienega Boulevard improvements are highlighted in yellow in **Table 6-1** at the end of this chapter and are described below.

6.1 LOCAL FUNDING OPTIONS

Proposition C is a voter-approved ½-cent sales tax that has been in place since 1990. It is primarily intended to be used for public transit purposes, but there are other uses of Proposition C funds that can be considered transit supportive besides transit operations. 20% of the funds are allocated to Local jurisdictions on a per capita basis and 25% of the funds are awarded through the Call For Projects for Transit-related Improvements to Freeways and State Highways. There is limited transit service directly on La Cienega Boulevard, but some of the improvements in the list of La Cienega Corridor improvement alternatives could be eligible for Proposition C funding as they enhance access to the Exposition Light Rail Line and complement public transit services.

Measure R was approved by Los Angeles County voters in November 2008 and includes a ½-cent sales tax for transportation improvements over 30 years, beginning in July 2009. 15% of the funds are to be distributed to local jurisdictions and unincorporated areas of the County on a per capita basis. The types of projects eligible for Measure R funding include major street resurfacing, rehabilitation and reconstruction; pothole repair; signal improvements, bikeways and pedestrian improvements. Many of the elements of the La Cienega improvement alternatives would be eligible for funding with Measure R Local Return funds. Another 20% of the Measure R sales tax revenue is to be allocated to Highway Projects that will be allocated by Metro Board action. The South Bay Cities Council of Governments (SBCCOG) has been included in the Measure R Expenditure Plan to receive $900 Million in Measure R Highway Funds over the next 30 years. Some of the components of the La Cienega Corridor improvements could be funded through this funding source if the specific improvements are added to the list of projects included in the Measure R plan. Measure R funds can be used for design and environmental clearance of projects, as well as construction costs.

Transit Development Act (TDA) funds are allocated to counties in California from ¼-cent of the 7.25 cent statewide sales tax, based on the amount of sales tax collected in each county. TDA Article 3 funds are eligible for pedestrian and bicycle facilities and TDA Article 8 funds are geared toward unmet transit needs in areas not served by Metro. If there are no unmet transit needs in such areas, TDA Article 8 funds can be used for highway improvements.

Benefit Assessment Districts are typically established to fund infrastructure projects through bonds that are paid for with special property tax assessments on properties that receive a benefit from the infrastructure improvement. An assessment district must be established and a majority of the property owners in the assessment district must vote to approve the assessment indicating that they agree to assess themselves to pay for the improvement. An attempt could be made to fund some elements of the La Cienega Corridor improvement project in this manner, such as individual grade separations, but it may be difficult to obtain a majority vote of the surrounding property owners since much of the perceived benefit of the improvements may be for through traffic rather than local traffic.

Bonds are another mechanism that can be employed by local jurisdictions to finance major infrastructure investments and pay for them over time, with interest. They require a dedicated revenue stream to repay the bonds.

Private Sources can also assist be tapped by local jurisdictions to help pay for infrastructure improvements. This can happen in several ways; as mitigation for development projects' impacts, as part of a area-wide traffic impact fee program, or as part of a public-private partnership agreement. If there were any major developments planned along the La Cienega Corridor, the local jurisdictions could consider negotiating with the developer(s) to participate in funding of some of the elements of the La Cienega Corridor improvement program.

6.2 State Funding Options

There are a number of state funding sources that provide funding for projects that reduce motor vehicle air pollution or save energy or reduce environmental impacts that could provide some funding to La Cienega Corridor improvements if the local lead agency wants to pursue them and can demonstrate such a nexus between the La Cienega improvements and the environmental issue, but the following are the main sources of funding for highway projects.

Proposition 42 Funds for Local Roads have not been distributed for several years due to state budget issues, but they should provide a source of funds for local street and highway rehabilitation and reconstruction in the future and La Cienega Corridor improvements would be eligible for such funding. Proposition 42 funds are supposed to be allocated and paid quarterly with 20% of the funds distributed to counties based on miles of roads and number of registered vehicles and 20% to cities based on population.

State Gas Tax Subventions are distributed to cities and counties for streets and highways projects that increase capacity or address repaving needs. La Cienega Corridor improvements would be eligible for this funding source.

State Transportation Improvement Program (STIP) funds are held in the State Highway Account and generated by the 18-cents per gallon state gasoline tax and a portion of the federal Surface Transportation Program funds. The STIP is a five-year funding program, adopted every two years by the

California Transportation Commission (CTC), to fund improvements on and off the state highway system that increase the capacity of the system. 75% of the STIP funds are allocated to the Regional Improvement Program with 60% going by formula to the 13 counties in southern California. Metro compiles the list of regional projects based on input from local jurisdictions and Caltrans and submits it to the CTC for approval. Eligible projects include construction of highways and freeways, local roads, grade separations, bicycle and pedestrian facilities, soundwalls and safety programs, all elements of the La Cienega Corridor improvement program.

6.3 Federal Funding Options

Federal funding for transportation projects is contained in congressional legislation authorizing funding to transportation. The current federal authorization, known as Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), authorizes $190 billion for highways, $45 billion for transit, and $5.7 billion for safety enhancements for fiscal years 2005 through 2009. The reauthorization process is now underway.

SAFETEA-LU Highway Programs apportion the federal funds through several different highway programs: Congestion Mitigation and Air Quality Improvement Program (CMAQ), Equity Bonus Program, Freight Intermodal Distribution Pilot Grant Program, High Priority Projects (HPP), Highway Bridge Program (HBP), Highway Safety Improvement Program (HSIP), Intelligent Transportation Systems Research and Development Program, National Corridor Infrastructure Improvement Program (NCIIP), Projects of National and Regional Significance (PNRS), Safe Routes to School Program (SRTS), Surface Transportation Program(STP), and Transportation Improvements. In addition there are a number of transit programs in SAFETEA-LU. Elements of the La Cienega Corridor Improvement Project could qualify for funding under many of the programs in SAFETEA-LU. Several include earmarks for specific projects. With the assistance of local members of Congress, elements of the La Cienega Corridor improvements could be specifically identified ("earmarked") in the next reauthorization bill.

Typically to qualify for federal and state funding sources, the local lead agency must provide some percentage of the total project cost, the "local match" so it is likely that several sources of funds will need to be assembled to fund the La Cienega Corridor improvements. There are also four local agencies involved in the corridor that could each serve as the lead agency for one or more elements of the corridor improvement package; City of Inglewood, County of Los Angeles, City of Culver City, or City of Los Angeles. Individually or jointly, these lead agencies will have to work cooperatively with Metro, state and federal legislators to put together a comprehensive funding package for the corridor improvements.

TABLE 6-1: POTENTIAL FUNDING SOURCES

FUNDING SOURCE		
LOCAL	**Local (cont.)**	**FEDERAL**
Proposition A	Interest Earnings on Propositions A, C, TDA (Metro)	**HOMELAND SECURITY GRANTS**
5% Administration (off the top)	Local Agency Match Funds for Metro Call for Projects	
25% Local Return	Local Agency Street and Road Maintenance Funds	**FEDERAL -- SAFETEA-LU HIGHWAYS**
35% Rail Development Program	Miscellaneous (Metro lease, advertising, other)	Congestion Mitigation & Air Quality Program (CMAQ)
40% Discretionary (95% of 40% discretionary)	Mobile Source Emissions Credits	Equity Bonus Program
Incentive Program (5% of 40% discretionary)	Public/Private Joint Development	Freight Intermodal Distribution Pilot Grant Program
Proposition C	Service Authority for Freeway Emergencies (SAFE)	High Priority Projects (HPP) (earmarks)
1.5% Administration (off the top)		Highway Bridge Program (HBP)
5% Rail and Bus Security		Highway Safety Improvement Program (HSIP)
10% Commuter Rail/Transit Centers	**STATE**	Intelligent Transportation Systems Research & Dev.
20% Local Return	AB 2766 Program, Air Quality Vehicle Registration Fee	Nat'l Corridor Infrastructure Improvement (earmarks)
25% Transit Related Highway Improvements	Carl Moyer Memorial Air Quality Standards Attainment	Projects of National & Regional Significance (earmarks)
40% Discretionary	Environmental Enhancement & Mitigation (EEM)	Safe Routes to Schools Program (SR2S)
Measure R	Petroleum Violation Escrow Account (PVEA)	Surface Transportation Program (STP):
1.5% Administration (off the top)	Proposition 1B State Infrastructure Bonds	Regional share (RSTP)
2% Rail Capital General Improvements	Proposition 42 Funds for Cities and LA County	Transportation Enhancements (TE)
3% Metrolink	Public Transportation Account (PTA)	Transportation Improvements (earmarks)
5% Rail Operations	PUC Grade Separation Program	**FEDERAL – SAFETEA-LU TRANSIT**
15% Local Return	State Gas Tax Subventions To Cities	Section 5307 – Urbanized Area Formula Grants
20% Bus Operations	State Highway Account – for Caltrans Operations	Section 5308 – Clean Fuels Grants
20% Highway Projects	State Highway Account – for Freeway Service Patrol	Section 5309 – Bus & Bus Facility Grants
35% Transit Capital- Specific Projects	State Highway Operation & Protection Prog. (SHOPP)	Section 5309 – Fixed Guideway Modernization
Transportation Development Act (TDA)	State Infrastructure Bank (SIB)	Section 5309 – New Starts
Administration	State Transit Assistance (STA)	Section 5309 – Small Starts & Very Small Starts
TDA Article 3 (Bicycle and Pedestrian)	Population Share	Section 5310 – Elderly & Persons with Disabilities
TDA Article 4 (Public Transportation)	Operator Revenue Share	Section 5311 – Non-Urbanized Area Formula Grants
TDA Article 8 (Transit & Paratransit Unmet Needs)	State Transportation Improvement Program (STIP):	Section 5314 – National Research Program
Benefit Assessments	Interregional Improvement Program (IIP)	Section 5316 – Job Access & Reverse Commute (JARC)
Bond Financings	Regional Improvement Program (RIP)	Section 5317 – New Freedom Program
Fare Revenues	Traffic Congestion Relief Program (TCRP)	Section 5339 – Alternative Analysis Program
HOV Violation Fund		Section 5340 – Growing States & High Density

Funding sources highlighted in yellow are potentially applicable to La Cienega Boulevard Corridor improvements.

7.0 RECOMMENDATIONS

The evaluation of the alternatives indicated that ITS improvements would be appropriate for all segments of the corridor and access control/streetscape improvements would be appropriate in all but Segment 2 over the Baldwin Hills. These could also be implemented at relatively low cost and in the near term.

The evaluation of the grade separation alternatives indicated that they would have significant mobility benefits, but in the segments north of the Baldwin Hills, they would be incompatible with the land uses and policy directions of the Cities of Culver City and Los Angeles and counter-productive to the goal of establishing a transit-oriented district around the Jefferson Boulevard Exposition light rail station. The recommendation is therefore, to continue to pursue development of grade separations only at the Centinela/La Tijera/Fairview and Stocker Street locations.

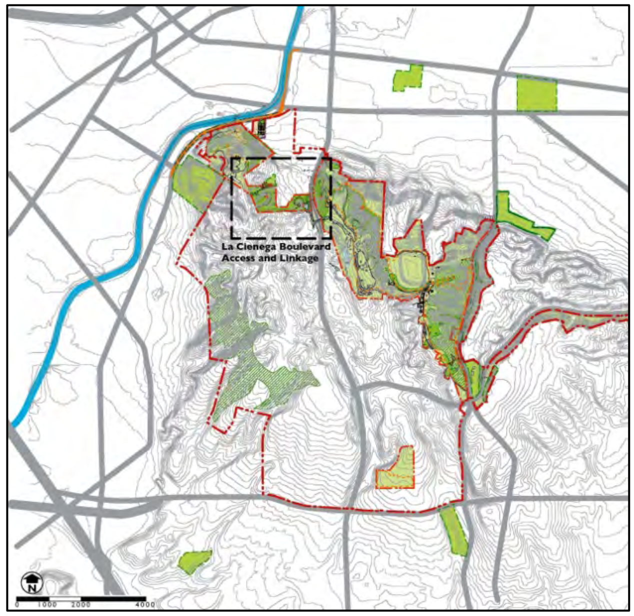
Table 7.1 summarizes the study recommendations.

TABLE 7-1: STUDY RECOMMENDATIONS

Segment	Description	Recommendations
1	I-405-Fairview	Short-Term: ITS Improvements Proceed with Environmental Analysis of Grade Separation Alts
2	Fairview-Rodeo	Short-Term: ITS Improvements Proceed with Environmental Analysis of Grade Separation Alts
3	Rodeo-Fairfax	Short-Term: ITS Improvements Proceed with Development of Streetscape Improvements
4	La Cienega, Fairfax-I-10	Short-Term: ITS Improvements Proceed with Development of Streetscape Improvements
5	Fairfax, La Cienega–I-10	Short-Term: ITS Improvements Proceed with Development of Streetscape Improvements

The next steps in implementation of the study recommendations will be the responsibility of the individual jurisdictions along the corridor. They would likely be the lead agency for implementation of any of the recommended improvements. A corridor-wide ITS improvement would potentially be the only end-to-end project that would be jointly pursued by all of the jurisdictions, with one, potentially Los Angeles County, designated as lead agency for funding and contracting purposes. The County has led such multi-jurisdiction ITS projects in other areas of the County.

Implementation of the streetscape, intersection and grade separation improvements would be led by the jurisdiction(s) in which the improvements are located. The grade separation improvements would require preparation of an environmental impact report, so it is appropriate for the City of Inglewood to be the lead agency for environmental review of the Centinela/La Tijera/Fairview grade separation and for Los Angeles County to be the lead agency for environmental review of the Stocker Street grade separation. Preparation of an environmental impact report will also provide decision makers in each jurisdiction with additional analysis to compare the two alternatives at each location and to refine the preliminary designs as well as develop mitigation measures to reduce any impacts associated with the grade separations.



An additional recommendation of the study is related to the continued pursuit of an off-street pedestrian and bicycle facility over the Baldwin Hills. Los Angeles County should continue to coordinate with the adjacent jurisdictions and the California Department of Parks and Recreation and Baldwin Hills Conservancy on the planning for such a future connection when the oil extraction activities are no longer in operation and the potential expansion of the Kenneth Hahn State Park is possible.

The recommendations that resulted from the public outreach effort include:

- Further engagement of local media by meeting with editorial teams
- Encourage each jurisdiction to provide quarterly updates to key stakeholder organizations
- Continued engagement with the Baldwin Hills Conservancy as they implement new master plans.

APPENDIX A: EXISTING TRAFFIC VOLUMES

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 02/04/2010 LOCATION: City of Los Angeles

E-W STREET: Venice Blvd DAY: THURSDAY PROJECT# 10-5044-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	2	4	0	1	4	0	
7:00 AM	18	313	10	3	182	54	40	197	13	22	283	3	1138
7:15 AM	43	376	9	3	248	47	64	223	20	21	391	2	1447
7:30 AM	30	418	11	6	276	62	94	276	35	32	428	0	1668
7:45 AM	40	439	17	5	306	81	116	376	62	29	393	1	1865
8:00 AM	29	407	14	13	266	59	85	374	51	43	413	2	1756
8:15 AM	25	473	23	11	301	70	93	400	22	28	396	0	1842
8:30 AM	21	419	17	11	263	77	122	416	30	29	414	5	1824
8:45 AM	31	414	16	11	307	105	122	420	47	42	457	1	1973
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	237	3259	117	63	2149	555	736	2682	280	246	3175	14	13513

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	106	1713	70	46	1137	311	422	1610	150	142	1680	8	7395
PEAK HR. FACTOR:		0.906			0.883			0.926			0.915		0.937

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 02/04/2010 LOCATION: City of Los Angeles

E-W STREET: Venice Blvd DAY: THURSDAY PROJECT# 10-5044-003

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	2	4	0	1	4	0	
4:00 PM	21	226	13	16	321	82	85	362	41	50	239	10	1466
4:15 PM	20	290	17	6	346	80	99	359	49	42	202	1	1511
4:30 PM	22	233	14	11	343	80	75	324	55	49	270	7	1483
4:45 PM	18	276	17	10	390	77	96	346	54	51	283	0	1618
5:00 PM	18	246	16	5	379	49	90	359	66	40	260	1	1529
5:15 PM	17	341	9	14	395	97	95	429	55	60	298	1	1811
5:30 PM	25	260	10	15	356	77	114	408	60	51	309	5	1690
5:45 PM	11	319	10	11	376	85	109	409	52	62	351	0	1795
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	152	2191	106	88	2906	627	763	2996	432	405	2212	25	12903

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	71	1166	45	45	1506	308	408	1605	233	213	1218	7	6825
PEAK HR. FACTOR:		0.873			0.918			0.965			0.870		0.942

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd   DATE: 02/04/2010   LOCATION: City of Culver City

E-W STREET: Washington Blvd   DAY: THURSDAY   PROJECT# 10-5044-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	2	1	1	2	1	
7:00 AM	39	315	5	20	176	4	4	84	17	3	188	42	897
7:15 AM	64	340	3	22	239	3	9	96	16	7	282	50	1131
7:30 AM	70	390	1	27	290	6	10	124	19	7	265	76	1285
7:45 AM	65	386	3	54	304	9	9	132	17	10	224	71	1284
8:00 AM	48	347	3	37	298	8	13	153	20	19	303	75	1324
8:15 AM	57	403	6	30	296	6	19	205	31	6	315	80	1454
8:30 AM	57	383	5	24	263	9	11	157	29	7	312	77	1334
8:45 AM	55	372	8	43	320	10	10	141	21	11	297	44	1332
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	455	2936	34	257	2186	55	85	1092	170	70	2186	515	10041

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	217	1505	22	134	1177	33	53	656	101	43	1227	276	5444
PEAK HR. FACTOR:		0.936			0.901			0.794			0.964		0.936

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 02/04/2010 LOCATION: City of Culver City

E-W STREET: Washington Blvd DAY: THURSDAY PROJECT# 10-5044-004

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	1	2	1	1	2	1	
4:00 PM	22	233	10	50	342	13	13	197	28	11	103	22	1044
4:15 PM	43	270	7	38	393	14	10	245	44	11	129	34	1238
4:30 PM	24	214	12	62	347	13	18	187	30	10	119	22	1058
4:45 PM	40	274	8	51	401	10	15	222	29	10	143	33	1236
5:00 PM	20	228	21	58	414	7	17	218	35	14	115	35	1182
5:15 PM	32	325	10	67	416	8	13	249	40	9	150	28	1347
5:30 PM	29	239	12	75	383	5	13	270	25	9	139	31	1230
5:45 PM	37	305	13	56	398	8	15	223	26	11	140	20	1252
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	247	2088	93	457	3094	78	114	1811	257	85	1038	225	9587

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	118	1097	56	256	1611	28	58	960	126	43	544	114	5011
PEAK HR. FACTOR:		0.866			0.965			0.929			0.937		0.930

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd   DATE: 02/04/2010   LOCATION: City of Culver City

E-W STREET: Fairfax Ave   DAY: THURSDAY   PROJECT# 10-5044-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	2	0	3	0	0	1	0	2	0.5	0.5	
7:00 AM	11	374	328		203	5	4		1	228	5	0	1159
7:15 AM	6	396	304		251	3	3		0	290	1	1	1255
7:30 AM	8	469	290		289	4	3		2	334	7	1	1407
7:45 AM	13	458	303		310	3	7		1	346	4	2	1447
8:00 AM	6	422	274		316	4	8		6	295	8	0	1339
8:15 AM	4	440	344		338	13	4		2	307	4	2	1458
8:30 AM	6	454	295		274	9	5		2	316	6	0	1367
8:45 AM	9	404	331		336	13	5		1	317	4	2	1422
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	63	3417	2469	0	2317	54	39	0	15	2433	39	8	10854

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	31	1789	1211	0	1253	24	22	0	11	1282	23	5	5651
PEAK HR. FACTOR:		0.962			0.910			0.589			0.930		0.969

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd   DATE: 02/04/2010   LOCATION: City of Culver City

E-W STREET: Fairfax Ave   DAY: THURSDAY   PROJECT# 10-5044-005

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	2	0	3	0	0	1	0	2	0.5	0.5	
4:00 PM	1	268	323		418	3	11		4	230	2	3	1263
4:15 PM	10	281	354		414	1	13		10	255	4	1	1343
4:30 PM	3	232	344		403	4	16		8	247	1	0	1258
4:45 PM	1	298	352		413	2	16		4	234	1	1	1322
5:00 PM	4	247	360		473	2	17		8	251	0	2	1364
5:15 PM	4	327	429		436	5	12		4	238	1	1	1457
5:30 PM	3	273	390		424	1	9		7	205	13	0	1325
5:45 PM	3	339	369		421	3	13		1	227	1	3	1380
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	29	2265	2921	0	3402	21	107	0	46	1887	23	11	10712

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	14	1186	1548	0	1754	11	51	0	20	921	15	6	5526
PEAK HR. FACTOR:		0.904			0.929			0.710			0.931		0.948

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 05/15/2008 LOCATION: City of Los Angeles

E-W STREET: Jefferson Blvd DAY: THURSDAY PROJECT# 08-Database

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	1	2	2	0	2	2	1	
7:00 AM	27	502	16	10	372	108	71	56	12	52	230	23	1479
7:15 AM	19	570	18	6	499	123	92	88	21	80	268	24	1808
7:30 AM	26	578	14	6	447	118	88	78	23	77	214	22	1691
7:45 AM	15	559	24	8	525	127	89	109	35	85	278	33	1887
8:00 AM	16	533	33	11	516	114	85	130	36	70	275	25	1844
8:15 AM	15	489	29	12	455	81	101	110	27	85	267	31	1702
8:30 AM	19	510	26	8	425	74	77	129	37	72	257	33	1667
8:45 AM	16	570	20	13	467	136	117	91	31	70	221	34	1786
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	153	4311	180	74	3706	881	720	791	222	591	2010	225	13864

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	76	2240	89	31	1987	482	354	405	115	312	1035	104	7230
PEAK HR. FACTOR:		0.973			0.947			0.871			0.916		0.958

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd   DATE: 05/15/2008   LOCATION: City of Los Angeles

E-W STREET: Jefferson Blvd   DAY: THURSDAY   PROJECT# 08-Database

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	1	2	2	0	2	2	1	
4:00 PM	13	515	58	13	561	43	124	165	66	59	106	19	1742
4:15 PM	14	502	67	10	518	40	116	181	44	44	93	17	1646
4:30 PM	8	505	52	10	566	51	154	167	60	58	102	18	1751
4:45 PM	15	492	73	11	560	55	139	189	68	53	83	16	1754
5:00 PM	12	481	82	10	522	42	158	186	54	40	87	23	1697
5:15 PM	9	464	49	8	548	49	144	203	62	26	81	10	1653
5:30 PM	12	525	54	11	577	56	155	218	54	51	110	20	1843
5:45 PM	8	541	58	13	586	52	130	184	77	49	112	19	1829
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	91	4025	493	86	4438	388	1120	1493	485	380	774	142	13915

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	41	2011	243	42	2233	199	587	791	247	166	390	72	7022
PEAK HR. FACTOR:		0.945			0.950			0.951			0.867		0.953

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd   DATE: 2/3/2010   LOCATION: City of Los Angeles

E-W STREET: Clemson St   DAY: WEDNESDAY   PROJECT# 10-5044-006

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	1	0	1	1	0	1	0	
7:00 AM	3	651	4	2	370	17	13	0	4	8	1	10	1083
7:15 AM	4	697	5	1	495	15	16	0	6	7	0	13	1259
7:30 AM	8	624	5	4	523	22	11	0	7	12	5	16	1237
7:45 AM	7	612	2	4	584	28	13	0	12	9	5	13	1289
8:00 AM	10	534	1	4	581	37	19	1	7	9	5	7	1215
8:15 AM	6	533	1	1	493	31	19	0	5	10	5	13	1117
8:30 AM	9	616	3	2	522	23	23	1	7	5	3	8	1222
8:45 AM	6	602	2	4	518	26	22	1	5	8	1	6	1201
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	53	4869	23	22	4086	199	136	3	53	68	25	86	9623

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	29	2467	13	13	2183	102	59	1	32	37	15	49	5000
PEAK HR. FACTOR:		0.888			0.924			0.852			0.765		0.970

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd | DATE: 2/3/2010 | LOCATION: City of Los Angeles

E-W STREET: Clemson St | DAY: WEDNESDAY | PROJECT# 10-5044-006

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	1	0	1	1	0	1	0	
4:00 PM	7	489	0	6	494	39	62	0	18	3	0	6	1124
4:15 PM	4	533	7	11	583	36	36	1	12	1	1	8	1233
4:30 PM	3	512	2	6	647	43	39	0	17	2	1	7	1279
4:45 PM	6	518	3	11	630	43	57	1	13	4	1	2	1289
5:00 PM	4	482	1	6	662	42	51	1	10	4	1	4	1268
5:15 PM	4	532	3	2	651	40	55	2	9	2	1	4	1305
5:30 PM	6	503	4	6	614	38	35	1	20	1	0	5	1233
5:45 PM	5	545	0	5	651	59	70	3	17	2	0	2	1359
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	39	4114	20	53	4932	340	405	9	116	19	5	38	10090

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	19	2062	8	19	2578	179	211	7	56	9	2	15	5165
PEAK HR. FACTOR:		0.950			0.971			0.761			0.722		0.950

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 2/3/2010 LOCATION: City of Los Angeles

E-W STREET: Rodeo Rd DAY: WEDNESDAY PROJECT# 10-5044-007

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	0	2	3	1	1	2	1	1	2	1	
7:00 AM	109	542	16	20	321	35	27	65	45	39	246	98	1563
7:15 AM	137	552	12	33	423	51	31	66	40	40	255	71	1711
7:30 AM	125	484	15	22	439	69	30	93	68	62	298	66	1771
7:45 AM	90	503	14	41	513	63	24	120	55	82	306	81	1892
8:00 AM	95	442	13	36	495	50	33	143	68	67	294	94	1830
8:15 AM	112	426	19	26	456	40	39	113	57	59	250	89	1686
8:30 AM	130	495	12	34	441	48	28	113	70	57	241	79	1748
8:45 AM	128	456	17	27	424	55	24	101	46	56	217	71	1622
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	926	3900	118	239	3512	411	236	814	449	462	2107	649	13823

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	447	1981	54	132	1870	233	118	422	231	251	1153	312	7204
PEAK HR. FACTOR:		0.885			0.906			0.790			0.915		0.952

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 2/3/2010 LOCATION: City of Los Angeles

E-W STREET: Rodeo Rd DAY: WEDNESDAY PROJECT# 10-5044-007

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	0	2	3	1	1	2	1	1	2	1	
4:00 PM	45	413	21	74	408	28	36	205	89	36	92	32	1479
4:15 PM	68	459	8	37	465	19	35	200	80	28	126	28	1553
4:30 PM	51	443	18	74	505	25	40	179	76	44	117	26	1598
4:45 PM	59	404	28	67	493	33	64	236	78	34	162	38	1696
5:00 PM	67	422	38	94	540	24	37	213	105	45	140	29	1754
5:15 PM	68	456	30	81	579	22	47	233	102	37	152	40	1847
5:30 PM	62	429	36	97	514	31	48	212	103	46	117	37	1732
5:45 PM	78	432	29	84	515	26	43	210	102	46	142	32	1739
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	498	3458	208	608	4019	208	350	1688	735	316	1048	262	13398

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	275	1739	133	356	2148	103	175	868	412	174	551	138	7072
PEAK HR. FACTOR:		0.969			0.956			0.952			0.942		0.957

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 2/3/2010 LOCATION: City of Los Angeles

E-W STREET: Stocker St DAY: WEDNESDAY PROJECT# 10-5044-008

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	0	0	0	2	0	1	
7:00 AM		661	126	15	419					220		37	1478
7:15 AM		679	165	23	502					281		43	1693
7:30 AM		613	164	28	491					280		45	1621
7:45 AM		571	188	38	629					345		51	1822
8:00 AM		542	180	40	555					269		52	1638
8:15 AM		549	184	31	602					309		47	1722
8:30 AM		581	196	36	491					279		34	1617
8:45 AM		584	195	32	611					301		36	1759
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	4780	1398	243	4300	0	0	0	0	2284	0	345	13350

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	0	2275	716	137	2277	0	0	0	0	1203	0	195	6803
PEAK HR. FACTOR:		0.962			0.905			0.000			0.883		0.933

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd   DATE: 2/3/2010   LOCATION: City of Los Angeles

E-W STREET: Stocker St   DAY: WEDNESDAY   PROJECT# 10-5044-008

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	1	2	0	0	0	0	2	0	1	
4:00 PM		487	201	91	415					189		12	1395
4:15 PM		502	215	73	469					239		14	1512
4:30 PM		497	248	85	517					187		31	1565
4:45 PM		472	261	95	531					245		39	1643
5:00 PM		506	271	76	649					158		23	1683
5:15 PM		533	281	97	641					201		21	1774
5:30 PM		525	232	80	609					159		16	1621
5:45 PM		543	223	94	598					218		20	1696
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	4065	1932	691	4429	0	0	0	0	1596	0	176	12889

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	0	2107	1007	347	2497	0	0	0	0	736	0	80	6774
PEAK HR. FACTOR:		0.956			0.963			0.000			0.857		0.955

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 02/03/2010 LOCATION: City of Los Angeles

E-W STREET: Fairview Blvd DAY: WEDNESDAY PROJECT# 10-5044-009

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	0	0	4	0	1.3	0.3	1.3	1.5	1.5	0	
7:00 AM		754	17		562	36	22	17	16	48	22	8	1502
7:15 AM		785	5		644	25	20	17	23	76	25	10	1630
7:30 AM		751	8		663	19	18	33	38	115	73	27	1745
7:45 AM		790	16		655	18	18	36	26	127	65	16	1767
8:00 AM		772	24		672	16	14	47	23	96	76	11	1751
8:15 AM		811	5		777	17	25	34	29	101	34	8	1841
8:30 AM		759	17		686	19	29	25	15	66	36	17	1669
8:45 AM		739	9		757	22	20	25	11	65	26	9	1683
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	6161	101	0	5416	172	166	234	181	694	357	106	13588

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	0	3124	53	0	2767	70	75	150	116	439	248	62	7104
PEAK HR. FACTOR:		0.973			0.893			0.958			0.871		0.965

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 02/03/2010 LOCATION: City of Los Angeles

E-W STREET: Fairview Blvd DAY: WEDNESDAY PROJECT# 10-5044-009

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	0	0	4	0	1.3	0.3	1.3	1.5	1.5	0	
4:00 PM		650	12		652	44	32	29	25	44	31	6	1525
4:15 PM		585	17		653	28	38	32	29	46	40	6	1474
4:30 PM		624	21		693	47	41	32	15	49	27	5	1554
4:45 PM		602	26		728	51	41	37	18	54	33	8	1598
5:00 PM		630	16		690	43	48	31	13	58	36	10	1575
5:15 PM		685	37		696	27	47	45	18	47	42	9	1653
5:30 PM		654	19		646	37	47	40	23	73	27	15	1581
5:45 PM		674	37		699	40	25	37	20	73	24	6	1635
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	5104	185	0	5457	317	319	283	161	444	260	65	12595

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	0	2643	109	0	2731	147	167	153	74	251	129	40	6444
PEAK HR. FACTOR:		0.953			0.974			0.895			0.913		0.975

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd　DATE: 02/03/2010　LOCATION: City of Los Angeles

E-W STREET: La Tijera Blvd　DAY: WEDNESDAY　PROJECT# 10-5044-010

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	0	0	2	2	3	0.5	0.5	0	0	0	
7:00 AM		627	19		413	216	143	11					1429
7:15 AM		617	9		502	245	174	16					1563
7:30 AM		578	11		531	283	177	25					1605
7:45 AM		589	22		488	324	221	38					1682
8:00 AM		582	25		509	277	210	30					1633
8:15 AM		590	14		585	327	229	39					1784
8:30 AM		574	25		532	234	201	35					1601
8:45 AM		535	24		552	281	214	34					1640
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	4692	149	0	4112	2187	1569	228	0	0	0	0	12937

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	0	2339	72	0	2113	1211	837	132	0	0	0	0	6704
PEAK HR. FACTOR:		0.986			0.911			0.904			0.000		0.939

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 02/03/2010 LOCATION: City of Los Angeles

E-W STREET: La Tijera Blvd DAY: WEDNESDAY PROJECT# 10-5044-010

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	0	0	2	2	3	0.5	0.5	0	0	0	
4:00 PM		423	36		519	198	237	55					1468
4:15 PM		409	38		534	198	194	73					1446
4:30 PM		465	35		554	207	178	55					1494
4:45 PM		396	47		601	202	230	51					1527
5:00 PM		428	36		553	212	221	61					1511
5:15 PM		473	47		565	198	246	64					1593
5:30 PM		449	41		509	235	227	50					1511
5:45 PM		450	30		553	238	260	62					1593
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	0	3493	310	0	4388	1688	1793	471	0	0	0	0	12143

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	0	1800	154	0	2180	883	954	237	0	0	0	0	6208
PEAK HR. FACTOR:		0.939			0.968			0.925			0.000		0.974

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Tijera Blvd — DATE: 02/03/2010 — LOCATION: City of Los Angeles

E-W STREET: Centinela Ave — DAY: WEDNESDAY — PROJECT# 10-5044-012

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	0	1	3	0	1	3	0	1	2	0	
7:00 AM	47	132	22	5	179	33	42	40	12	52	292	3	859
7:15 AM	68	196	20	7	232	41	39	91	11	55	403	0	1163
7:30 AM	63	185	18	7	231	64	33	107	24	56	367	0	1155
7:45 AM	111	225	30	3	288	48	60	148	21	42	371	0	1347
8:00 AM	86	226	38	5	259	56	54	133	25	50	301	4	1237
8:15 AM	49	253	30	8	312	73	43	133	23	49	315	0	1288
8:30 AM	53	228	14	7	206	40	46	102	24	49	279	0	1048
8:45 AM	49	233	13	9	257	58	56	107	29	50	290	2	1153
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	526	1678	185	51	1964	413	373	861	169	403	2618	9	9250

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	309	889	116	23	1090	241	190	521	93	197	1354	4	5027
PEAK HR. FACTOR:		0.898			0.861			0.878			0.919		0.933

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Tijera Blvd   DATE: 02/03/2010   LOCATION: City of Los Angeles

E-W STREET: Centinela Ave   DAY: WEDNESDAY   PROJECT# 10-5044-012

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	0	1	3	0	1	3	0	1	2	0	
4:00 PM	59	220	51	26	178	18	38	192	19	58	156	2	1017
4:15 PM	47	222	51	24	166	29	40	246	27	46	160	1	1059
4:30 PM	50	208	56	29	168	23	39	181	25	41	167	4	991
4:45 PM	47	226	69	53	207	21	30	220	26	53	222	3	1177
5:00 PM	50	207	76	44	192	34	41	164	21	38	186	0	1053
5:15 PM	45	271	79	50	159	28	51	192	12	40	196	2	1125
5:30 PM	52	249	77	32	179	32	32	204	19	43	197	1	1117
5:45 PM	43	234	67	43	214	36	47	212	27	41	227	2	1193
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	393	1837	526	301	1463	221	318	1611	176	360	1511	15	8732

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	190	961	299	169	744	130	171	772	79	162	806	5	4488
PEAK HR. FACTOR:		0.918			0.890			0.893			0.901		0.940

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 02/03/2010 LOCATION: City of Inglewood

E-W STREET: Centinela Ave DAY: WEDNESDAY PROJECT# 10-5044-011

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	0	3	0	1	2	1	
7:00 AM	63	574	9	17	365	1		51	18	51	270	73	1492
7:15 AM	104	566	2	17	501	1		103	28	57	343	94	1816
7:30 AM	71	505	7	21	487	5		96	43	66	339	77	1717
7:45 AM	95	581	9	21	463	5		140	47	58	295	39	1753
8:00 AM	52	557	13	22	524	3		138	34	59	314	60	1776
8:15 AM	57	543	11	26	532	0		139	45	64	293	68	1778
8:30 AM	54	549	11	31	525	5		90	44	51	261	42	1663
8:45 AM	46	517	20	34	524	4		113	31	50	278	36	1653
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	542	4392	82	189	3921	24	0	870	290	456	2393	489	13648

AM Peak Hr Begins at: 715 AM

PEAK VOLUMES =	322	2209	31	81	1975	14	0	477	152	240	1291	270	7062
PEAK HR. FACTOR:		0.935			0.943			0.841			0.911		0.972

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 02/03/2010 LOCATION: City of Inglewood

E-W STREET: Centinela Ave DAY: WEDNESDAY PROJECT# 10-5044-011

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	0	0	3	0	1	2	1	
4:00 PM	36	387	37	57	423	4		242	43	31	167	30	1457
4:15 PM	41	456	47	59	510	5		264	63	38	187	37	1707
4:30 PM	41	425	37	46	476	7		231	49	39	162	29	1542
4:45 PM	56	452	52	73	532	5		309	71	29	209	33	1821
5:00 PM	52	431	32	43	491	2		235	62	42	184	27	1601
5:15 PM	35	491	36	66	546	4		292	46	39	194	26	1775
5:30 PM	45	393	29	41	419	4		270	54	39	196	35	1525
5:45 PM	53	445	30	56	512	7		292	55	31	200	21	1702
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	359	3480	300	441	3909	38	0	2135	443	288	1499	238	13130

PM Peak Hr Begins at: 430 PM

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
PEAK VOLUMES =	184	1799	157	228	2045	18	0	1067	228	149	749	115	6739
PEAK HR. FACTOR:		0.952			0.930			0.852			0.935		0.925

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd   DATE: 02/03/2010   LOCATION: City of Inglewood

E-W STREET: Florence Ave   DAY: WEDNESDAY   PROJECT# 10-5044-014

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1.5	2	.5	1	2	0	1	2	0	
7:00 AM	5	62	10	71	89	64	23	51	3	47	144	14	583
7:15 AM	12	70	14	64	119	45	15	66	6	53	180	12	656
7:30 AM	8	89	12	85	116	68	16	71	5	48	271	12	801
7:45 AM	13	82	20	136	133	57	27	92	7	50	268	14	899
8:00 AM	4	87	16	116	171	64	21	100	8	53	231	11	882
8:15 AM	5	75	13	106	156	48	24	94	8	49	162	14	754
8:30 AM	9	66	14	110	152	60	20	82	2	55	125	7	702
8:45 AM	9	71	16	102	131	52	26	68	5	54	131	10	675
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	65	602	115	790	1067	458	172	624	44	409	1512	94	5952

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	30	333	61	443	576	237	88	357	28	200	932	51	3336
PEAK HR. FACTOR:		0.922			0.895			0.917			0.891		0.928

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: La Cienega Blvd DATE: 02/03/2010 LOCATION: City of Inglewood

E-W STREET: Florence Ave DAY: WEDNESDAY PROJECT# 10-5044-014

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1.5	2	.5	1	2	0	1	2	0	
4:00 PM	8	72	18	144	229	53	48	138	12	50	90	10	872
4:15 PM	6	104	22	142	232	33	37	114	12	54	113	19	888
4:30 PM	5	92	28	149	212	52	33	103	6	50	67	13	810
4:45 PM	2	96	19	141	231	48	48	135	10	61	88	25	904
5:00 PM	8	107	31	152	231	43	54	135	8	64	89	18	940
5:15 PM	6	110	36	142	233	58	42	148	7	60	131	18	991
5:30 PM	4	95	33	159	229	59	50	136	14	58	102	12	951
5:45 PM	3	95	29	163	250	47	40	127	12	58	107	5	936
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	42	771	216	1192	1847	393	352	1036	81	455	787	120	7292

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	21	407	129	616	943	207	186	546	41	240	429	53	3818
PEAK HR. FACTOR:		0.916			0.960			0.966			0.864		0.963

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Fairfax Ave DATE: 02/03/2010 LOCATION: City of Los Angeles

E-W STREET: Venice Blvd DAY: WEDNESDAY PROJECT# 10-5044-013

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	4	0	1	4	0	
7:00 AM	33	155	37	7	172	30	10	107	20	52	310	6	939
7:15 AM	51	212	38	9	213	50	27	103	5	45	485	7	1245
7:30 AM	58	270	41	13	199	64	37	166	11	42	467	10	1378
7:45 AM	69	294	56	22	264	60	39	189	14	47	505	17	1576
8:00 AM	41	240	33	14	216	70	50	219	14	47	418	9	1371
8:15 AM	66	288	49	14	254	73	41	306	17	48	521	8	1685
8:30 AM	41	258	53	6	213	68	54	277	16	57	464	6	1513
8:45 AM	67	321	52	9	251	86	44	289	16	59	507	7	1708
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	426	2038	359	94	1782	501	302	1656	113	397	3677	70	11415

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES =	215	1107	187	43	934	297	189	1091	63	211	1910	30	6277
PEAK HR. FACTOR:		0.857			0.921			0.922			0.932		0.919

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Fairfax Ave DATE: 02/03/2010 LOCATION: City of Los Angeles

E-W STREET: Venice Blvd DAY: WEDNESDAY PROJECT# 10-5044-013

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	4	0	1	4	0	
4:00 PM	21	195	74	19	217	50	46	284	33	29	179	9	1156
4:15 PM	21	266	69	20	236	49	49	283	29	43	203	8	1276
4:30 PM	16	182	53	33	230	39	40	253	32	49	239	2	1168
4:45 PM	27	214	70	19	230	43	41	285	32	52	244	10	1267
5:00 PM	22	176	65	17	246	47	49	311	30	48	245	9	1265
5:15 PM	13	246	78	18	315	52	52	362	32	57	290	12	1527
5:30 PM	17	216	53	24	241	66	44	353	21	60	275	9	1379
5:45 PM	13	258	67	28	255	68	45	349	22	58	262	15	1440
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	150	1753	529	178	1970	414	366	2480	231	396	1937	74	10478

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	65	896	263	87	1057	233	190	1375	105	223	1072	45	5611
PEAK HR. FACTOR:		0.905			0.894			0.936			0.933		0.919

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Fairfax Ave　　DATE: 02/04/2010　　LOCATION: City of Los Angeles

E-W STREET: Washington Blvd　　DAY: THURSDAY　　PROJECT# 10-5044-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	2	2	0	1	3	1	2	2	0	
7:00 AM	7	188	159	64	119	3	7	76	1	75	121	17	837
7:15 AM	7	213	155	42	129	6	20	77	4	103	195	38	989
7:30 AM	17	246	131	43	163	9	11	115	2	122	235	16	1110
7:45 AM	12	238	125	44	169	12	18	108	3	105	180	30	1044
8:00 AM	5	207	96	49	172	19	19	112	4	103	224	14	1024
8:15 AM	7	247	109	36	156	17	13	154	6	103	226	21	1095
8:30 AM	8	228	124	31	168	16	13	128	1	105	216	23	1061
8:45 AM	3	235	113	36	187	13	12	132	7	103	175	16	1032
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	66	1802	1012	345	1263	95	113	902	28	819	1572	175	8192

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	41	938	461	172	660	57	61	489	15	433	865	81	4273
PEAK HR. FACTOR:		0.914			0.926			0.816			0.924		0.962

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Fairfax Ave | DATE: 02/04/2010 | LOCATION: City of Los Angeles

E-W STREET: Washington Blvd | DAY: THURSDAY | PROJECT# 10-5044-001

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	2	2	0	1	3	1	2	2	0	
4:00 PM	2	152	158	87	171	14	14	149	6	94	92	14	953
4:15 PM	1	167	152	78	169	16	17	142	3	103	104	19	971
4:30 PM	1	177	166	63	177	14	10	151	5	90	120	17	991
4:45 PM	4	167	150	62	154	9	16	155	4	106	110	12	949
5:00 PM	2	188	158	79	176	11	13	173	3	86	130	16	1035
5:15 PM	1	208	174	85	195	10	20	180	5	81	92	10	1061
5:30 PM	6	189	148	58	173	9	13	211	7	89	122	13	1038
5:45 PM	6	172	140	69	169	8	12	163	4	72	95	9	919
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	23	1420	1246	581	1384	91	115	1324	37	721	865	110	7917

PM Peak Hr Begins at: 445 PM

PEAK VOLUMES =	13	752	630	284	698	39	62	719	19	362	454	51	4083
PEAK HR. FACTOR:		0.911			0.880			0.866			0.934		0.962

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Fairfax Ave | DATE: 02/04/2010 | LOCATION: City of Los Angeles

E-W STREET: Adams Blvd | DAY: THURSDAY | PROJECT# 10-5044-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	0	2	0	1	2	0	
7:00 AM	3	321	15	21	169	1	0	26	3	63	136	62	820
7:15 AM	3	287	14	19	218	1	2	41	4	97	204	85	975
7:30 AM	4	307	8	22	249	1	1	47	7	110	176	95	1027
7:45 AM	6	302	7	29	253	4	1	65	8	77	178	69	999
8:00 AM	5	259	15	26	248	1	1	81	3	52	156	69	916
8:15 AM	8	315	22	24	243	0	0	70	9	76	179	63	1009
8:30 AM	6	300	11	23	234	0	0	54	5	72	184	69	958
8:45 AM	6	312	19	29	267	3	1	53	3	59	180	64	996
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	41	2403	111	193	1881	11	6	437	42	606	1393	576	7700

AM Peak Hr Begins at: 730 AM

PEAK VOLUMES =	23	1183	52	101	993	6	3	263	27	315	689	296	3951
PEAK HR. FACTOR:		0.912			0.962			0.862			0.853		0.962

CONTROL: Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

N-S STREET: Fairfax Ave | DATE: 02/04/2010 | LOCATION: City of Los Angeles

E-W STREET: Adams Blvd | DAY: THURSDAY | PROJECT# 10-5044-002

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	0	2	0	1	2	0	
4:00 PM	2	292	42	42	226	5	2	116	4	20	49	25	825
4:15 PM	2	302	41	51	226	3	0	124	10	15	43	29	846
4:30 PM	6	338	30	43	237	2	0	131	3	24	46	32	892
4:45 PM	1	306	40	47	225	3	0	114	6	22	42	26	832
5:00 PM	4	339	42	39	233	1	3	154	7	24	49	29	924
5:15 PM	5	374	48	35	242	6	1	133	2	22	50	28	946
5:30 PM	4	348	50	33	211	3	1	160	4	11	62	21	908
5:45 PM	2	306	52	45	219	1	0	122	0	7	55	27	836
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	26	2605	345	335	1819	24	7	1054	36	145	396	217	7009

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES =	15	1367	192	152	905	11	5	569	13	64	216	105	3614
PEAK HR. FACTOR:		0.922			0.943			0.889			0.944		0.955

CONTROL: Signalized

Day: THURSDAY
Date: 2/4/2010

Classification Report / Prepared by: National Data & Surveying Services
Location: La Cienega Blvd s/o Fairfax Ave

City: Culver City
Project #: 10-5045-001n

North Bound

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Northbound
00:00 AM	1	343	28	6	7	0	0	1	0	0	0	0	0	386
01:00	1	191	22	4	5	0	0	1	0	0	0	0	0	224
02:00	0	127	11	3	3	0	0	1	1	0	0	0	0	146
03:00	0	105	10	1	3	0	0	0	0	0	0	0	0	119
04:00	0	168	16	3	8	0	0	1	0	0	0	0	0	196
05:00	1	523	59	17	21	1	0	4	2	0	0	0	0	628
06:00	2	1605	164	38	63	5	0	7	4	0	0	0	0	1888
07:00	4	2506	225	57	85	2	0	22	8	0	0	0	0	2909
08:00	5	2551	243	53	64	6	0	25	7	0	0	0	0	2954
09:00	3	1527	166	38	56	2	0	12	5	0	0	0	0	1809
10:00	2	1418	158	34	51	4	0	10	5	0	0	0	0	1682
11:00	2	1335	144	35	55	2	0	7	3	0	0	0	0	1583
12:00 PM	4	1375	157	29	46	2	0	9	4	0	0	0	0	1626
13:00	6	1307	150	32	52	5	0	11	2	0	0	0	0	1565
14:00	4	1763	187	46	67	5	0	8	4	0	0	0	0	2084
15:00	3	1875	196	39	70	3	0	17	3	0	0	0	0	2206
16:00	3	2158	225	48	66	2	0	10	4	0	0	0	0	2516
17:00	6	2366	209	41	74	5	0	12	6	0	0	0	0	2719
18:00	5	2272	204	45	59	2	0	13	5	0	0	0	0	2605
19:00	4	1816	153	37	62	2	0	8	3	0	0	0	0	2085
20:00	3	1294	115	23	38	1	0	5	2	0	0	0	0	1481
21:00	4	1088	97	19	34	0	0	4	2	0	0	0	0	1248
22:00	2	846	76	14	21	1	0	3	1	0	0	0	0	964
23:00	0	582	44	10	15	1	0	2	1	0	0	0	0	655
Totals	**65**	**31141**	**3059**	**672**	**1025**	**51**		**193**	**72**					**36278**
% of Totals	0%	86%	8%	2%	3%	0%		1%	0%					100%
	21	12399	1246	289	421	22	0	91	35	0	0	0	0	14524
% AM	0%	34%	3%	1%	1%	0%		0%	0%					40%
AM Peak Hour	08:00	08:00	08:00	07:00	07:00	08:00		08:00	07:00					08:00
Volume	5	2551	243	57	85	6		25	8					2954
	44	18742	1813	383	604	29	0	102	37	0	0	0	0	21754
% PM	0%	52%	5%	1%	2%	0%		0%	0%					60%
PM Peak Hour	13:00	17:00	16:00	16:00	17:00	13:00		15:00	17:00					17:00
Volume	6	2366	225	48	74	5		17	6					2719

Directional Peak Periods	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
All Classes	Volume	%	Volume	%	Volume	%	Volume	%
	5863 ←→	16%	3191 ←→	9%	5235 ←→	14%	21989 ←→	61%

Day: THURSDAY | Classification Report / Prepared by: National Data & Surveying Services | City: Culver City
Date: 2/4/10 | Location: La Cienega Blvd s/o Fairfax Ave | Project #: 10-5045-001s

South Bound

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Southbound
00:00 AM	1	307	34	6	10	1	0	2	1	0	0	0	0	362
01:00	1	171	22	3	5	1	0	1	1	0	0	0	0	205
02:00	1	142	17	3	5	1	0	1	0	0	0	0	0	170
03:00	0	107	12	2	3	0	0	1	0	0	0	0	0	125
04:00	1	260	38	8	11	1	0	2	1	0	0	0	0	322
05:00	2	541	63	13	16	2	0	5	1	0	0	0	0	643
06:00	1	1043	125	27	37	5	0	11	2	0	0	0	0	1251
07:00	5	1927	224	43	67	4	0	22	4	0	0	0	0	2296
08:00	9	2086	214	48	66	6	0	19	6	0	0	0	0	2454
09:00	5	1738	181	37	71	7	0	17	6	0	0	0	0	2062
10:00	3	1470	190	33	62	10	0	12	5	0	0	0	0	1785
11:00	1	1486	183	29	70	9	0	18	1	0	0	0	0	1797
12:00 PM	3	1405	171	32	53	7	0	15	3	0	0	0	0	1689
13:00	4	1508	184	37	62	6	0	19	4	0	0	0	0	1824
14:00	4	1662	195	34	67	5	0	17	3	0	0	0	0	1987
15:00	8	2108	217	43	81	5	0	20	5	0	0	0	0	2487
16:00	7	2228	228	58	74	6	0	18	3	0	0	0	0	2622
17:00	5	2266	208	50	62	4	0	29	5	0	0	0	0	2629
18:00	5	2087	196	41	59	5	0	16	4	0	0	0	0	2413
19:00	4	1675	167	33	56	3	0	13	4	0	0	0	0	1955
20:00	2	1174	125	26	42	2	0	12	2	0	0	0	0	1385
21:00	1	959	95	20	37	2	0	8	1	0	0	0	0	1123
22:00	0	743	80	15	23	1	0	5	0	0	0	0	0	867
23:00	1	495	56	13	18	1	0	4	1	0	0	0	0	589
Totals	**74**	**29588**	**3225**	**654**	**1057**	**94**		**287**	**63**					**35042**
% of Totals	0%	84%	9%	2%	3%	0%		1%	0%					100%
	30	11278	1303	252	423	47	0	111	28	0	0	0	0	13472
% AM	0%	32%	4%	1%	1%	0%		0%	0%					38%
AM Peak Hour	08:00	08:00	07:00	08:00	09:00	10:00		07:00	08:00					08:00
Volume	9	2086	224	48	71	10		22	6					2454
	44	18310	1922	402	634	47	0	176	35	0	0	0	0	21570
% PM	0%	52%	5%	1%	2%	0%		1%	0%					62%
PM Peak Hour	15:00	17:00	16:00	16:00	15:00	12:00		17:00	15:00					17:00
Volume	8	2266	228	58	81	7		29	5					2629

Directional Peak Periods	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
All Classes	Volume	%	Volume	%	Volume	%	Volume	%
	4750 ⟷	14%	3513 ⟷	10%	5251 ⟷	15%	21528 ⟷	61%

Day: THURSDAY | Classification Report / Prepared by: National Data & Surveying Services | City: Culver City
Date: 2/4/10 | Location: La Cienega Blvd s/o Fairfax Ave | Project #: 10-5045-001

SUMMARY

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 AM	2	650	62	12	17	1	0	3	1	0	0	0	0	748
01:00	2	362	44	7	10	1	0	2	1	0	0	0	0	429
02:00	1	269	28	6	8	1	0	2	1	0	0	0	0	316
03:00	0	212	22	3	6	0	0	1	0	0	0	0	0	244
04:00	1	428	54	11	19	1	0	3	1	0	0	0	0	518
05:00	3	1064	122	30	37	3	0	9	3	0	0	0	0	1271
06:00	3	2648	289	65	100	10	0	18	6	0	0	0	0	3139
07:00	9	4433	449	100	152	6	0	44	12	0	0	0	0	5205
08:00	14	4637	457	101	130	12	0	44	13	0	0	0	0	5408
09:00	8	3265	347	75	127	9	0	29	11	0	0	0	0	3871
10:00	5	2888	348	67	113	14	0	22	10	0	0	0	0	3467
11:00	3	2821	327	64	125	11	0	25	4	0	0	0	0	3380
12:00 PM	7	2780	328	61	99	9	0	24	7	0	0	0	0	3315
13:00	10	2815	334	69	114	11	0	30	6	0	0	0	0	3389
14:00	8	3425	382	80	134	10	0	25	7	0	0	0	0	4071
15:00	11	3983	413	82	151	8	0	37	8	0	0	0	0	4693
16:00	10	4386	453	106	140	8	0	28	7	0	0	0	0	5138
17:00	11	4632	417	91	136	9	0	41	11	0	0	0	0	5348
18:00	10	4359	400	86	118	7	0	29	9	0	0	0	0	5018
19:00	8	3491	320	70	118	5	0	21	7	0	0	0	0	4040
20:00	5	2468	240	49	80	3	0	17	4	0	0	0	0	2866
21:00	5	2047	192	39	71	2	0	12	3	0	0	0	0	2371
22:00	2	1589	156	29	44	2	0	8	1	0	0	0	0	1831
23:00	1	1077	100	23	33	2	0	6	2	0	0	0	0	1244
Totals	**139**	**60729**	**6284**	**1326**	**2082**	**145**		**480**	**135**					**71320**
% of Totals	0%	85%	9%	2%	3%	0%		1%	0%					100%
	51	23677	2549	541	844	69	0	202	63	0	0	0	0	27996
% AM	0%	33%	4%	1%	1%	0%		0%	0%					39%
AM Peak Hour	08:00	08:00	08:00	08:00	07:00	10:00		07:00	08:00					08:00
Volume	14	4637	457	101	152	14		44	13					5408
	88	37052	3735	785	1238	76	0	278	72	0	0	0	0	43324
% PM	0%	52%	5%	1%	2%	0%		0%	0%					61%
PM Peak Hour	15:00	17:00	16:00	16:00	15:00	13:00		17:00	17:00					17:00
Volume	11	4632	453	106	151	11		41	11					5348

Peak Period Totals

	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
	Volume	%	Volume	%	Volume	%	Volume	%
	10613 ⟷	15%	6704 ⟷	9%	10486 ⟷	15%	43517 ⟷	61%

Day: WEDNESDAY
Date: 2/3/2010

Classification Report / Prepared by: National Data & Surveying Services
Location: La Cienega Blvd s/o Centinela Ave

City: Culver City
Project #: 10-5045-002n

North Bound

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Northbound
00:00 AM	2	280	36	4	8	1	0	4	0	0	1	0	0	336
01:00	0	143	18	1	4	0	0	2	0	0	0	0	0	168
02:00	0	112	13	1	3	0	0	2	0	0	0	0	0	131
03:00	0	133	17	1	4	0	0	2	0	0	0	0	0	157
04:00	0	178	24	4	9	1	0	3	0	0	1	0	0	220
05:00	3	536	85	10	22	1	0	7	1	0	1	0	0	666
06:00	4	1486	205	27	64	3	0	28	3	0	4	0	0	1824
07:00	6	2055	282	45	57	7	0	49	7	0	6	0	0	2514
08:00	6	2018	269	37	62	8	0	42	6	0	7	0	0	2455
09:00	3	1654	231	26	54	5	0	27	4	0	6	0	0	2010
10:00	2	1366	189	24	48	4	0	18	3	0	7	0	0	1661
11:00	4	1187	199	21	39	7	0	16	4	0	5	0	0	1482
12:00 PM	2	1249	183	25	43	5	0	22	2	0	8	0	0	1539
13:00	2	1310	172	20	40	4	0	19	5	0	10	0	0	1582
14:00	3	1486	195	24	42	3	0	21	2	0	7	0	0	1783
15:00	5	1569	204	29	54	3	0	22	1	0	6	0	0	1893
16:00	6	1756	219	42	49	4	0	32	3	0	4	0	0	2115
17:00	7	1747	236	49	53	6	0	41	4	0	7	0	0	2150
18:00	6	1828	225	37	46	4	0	35	3	0	5	0	0	2189
19:00	4	1326	185	16	37	3	0	16	2	0	3	0	0	1592
20:00	2	953	132	14	26	1	0	13	1	0	3	0	0	1145
21:00	1	823	107	11	23	2	0	10	1	0	2	0	0	980
22:00	2	743	102	10	21	1	0	10	0	0	1	0	0	890
23:00	1	488	62	6	14	1	0	6	1	0	1	0	0	580
Totals	**71**	**26426**	**3590**	**484**	**822**	**74**		**447**	**53**		**95**			**32062**
% of Totals	0%	82%	11%	2%	3%	0%		1%	0%		0%			100%
	30	11148	1568	201	374	37	0	200	28	0	38	0	0	13624
% AM	0%	35%	5%	1%	1%	0%		1%	0%		0%			42%
AM Peak Hour	07:00	07:00	07:00	07:00	06:00	08:00		07:00	07:00		08:00			07:00
Volume	6	2055	282	45	64	8		49	7		7			2514
	41	15278	2022	283	448	37	0	247	25	0	57	0	0	18438
% PM	0%	48%	6%	1%	1%	0%		1%	0%		0%			58%
PM Peak Hour	17:00	18:00	17:00	17:00	15:00	17:00		17:00	13:00		13:00			18:00
Volume	7	1828	236	49	54	6		41	5		10			2189

Directional Peak Periods	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
All Classes	Volume	%	Volume	%	Volume	%	Volume	%
	4969 ←→	15%	3121 ←→	10%	4265 ←→	13%	19707 ←→	61%

Day: WEDNESDAY | Classification Report / Prepared by: National Data & Surveying Services | City: Culver City

Date: 2/3/10 | Location: La Cienega Blvd s/o Centinela Ave | Project #: 10-5045-002s

South Bound

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Southbound
00:00 AM	1	291	19	4	4	1	0	2	1	0	1	0	0	324
01:00	0	160	11	1	4	0	0	1	0	0	1	0	0	178
02:00	0	146	13	2	5	0	0	1	0	0	0	0	0	167
03:00	0	132	10	1	5	0	0	1	0	0	0	0	0	149
04:00	0	237	28	3	4	1	0	3	0	0	1	0	0	277
05:00	1	619	57	9	13	1	0	7	2	0	3	0	0	712
06:00	2	1140	133	24	32	4	0	18	3	0	4	0	0	1360
07:00	6	1862	177	59	39	8	0	43	8	0	12	0	0	2214
08:00	7	1952	164	64	53	5	0	58	10	0	9	0	0	2322
09:00	7	1570	159	33	34	4	0	26	7	0	21	0	0	1861
10:00	4	1284	151	20	28	6	0	19	4	0	15	0	0	1531
11:00	3	1307	158	24	42	2	0	16	5	0	17	0	0	1574
12:00 PM	1	1329	174	22	38	5	0	19	7	0	18	0	0	1613
13:00	3	1417	177	27	44	7	0	28	8	0	19	0	0	1730
14:00	5	1492	199	30	51	10	0	21	3	0	14	0	0	1825
15:00	7	1774	228	39	62	7	0	39	5	0	13	0	0	2174
16:00	8	1869	202	59	43	10	0	47	7	0	10	0	0	2255
17:00	6	2038	207	55	42	8	0	44	8	0	9	0	0	2417
18:00	4	1989	186	31	38	4	0	37	4	0	7	0	0	2300
19:00	5	1667	162	27	32	3	0	19	3	0	6	0	0	1924
20:00	4	1206	118	13	25	2	0	12	2	0	5	0	0	1387
21:00	1	1040	89	11	18	2	0	9	2	0	2	0	0	1174
22:00	2	758	70	8	12	1	0	6	1	0	3	0	0	861
23:00	1	521	54	8	9	2	0	5	1	0	2	0	0	603
Totals	**78**	**27800**	**2946**	**574**	**677**	**93**		**481**	**91**		**192**			**32932**
% of Totals	0%	84%	9%	2%	2%	0%		1%	0%		1%			100%
	31	10700	1080	244	263	32	0	195	40	0	84	0	0	12669
% AM	0%	32%	3%	1%	1%	0%		1%	0%		0%			38%
AM Peak Hour	08:00	08:00	07:00	08:00	08:00	07:00		08:00	08:00		09:00			08:00
Volume	7	1952	177	64	53	8		58	10		21			2322
	47	17100	1866	330	414	61	0	286	51	0	108	0	0	20263
% PM	0%	52%	6%	1%	1%	0%		1%	0%		0%			62%
PM Peak Hour	16:00	17:00	15:00	16:00	15:00	14:00		16:00	13:00		13:00			17:00
Volume	8	2038	228	59	62	10		47	8		19			2417

Directional Peak Periods

All Classes

	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
	Volume	%	Volume	%	Volume	%	Volume	%
	4536	14%	3343	10%	4672	14%	20381	62%

Day: WEDNESDAY | Classification Report / Prepared by: National Data & Surveying Services | City: Culver City

Date: 2/3/10 | Location: La Cienega Blvd s/o Centinela Ave | Project #: 10-5045-002

SUMMARY

Time	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#13	Total
00:00 AM	3	571	55	8	12	2	0	6	1	0	2	0	0	660
01:00	0	303	29	2	8	0	0	3	0	0	1	0	0	346
02:00	0	258	26	3	8	0	0	3	0	0	0	0	0	298
03:00	0	265	27	2	9	0	0	3	0	0	0	0	0	306
04:00	0	415	52	7	13	2	0	6	0	0	2	0	0	497
05:00	4	1155	142	19	35	2	0	14	3	0	4	0	0	1378
06:00	6	2626	338	51	96	7	0	46	6	0	8	0	0	3184
07:00	12	3917	459	104	96	15	0	92	15	0	18	0	0	4728
08:00	13	3970	433	101	115	13	0	100	16	0	16	0	0	4777
09:00	10	3224	390	59	88	9	0	53	11	0	27	0	0	3871
10:00	6	2650	340	44	76	10	0	37	7	0	22	0	0	3192
11:00	7	2494	357	45	81	9	0	32	9	0	22	0	0	3056
12:00 PM	3	2578	357	47	81	10	0	41	9	0	26	0	0	3152
13:00	5	2727	349	47	84	11	0	47	13	0	29	0	0	3312
14:00	8	2978	394	54	93	13	0	42	5	0	21	0	0	3608
15:00	12	3343	432	68	116	10	0	61	6	0	19	0	0	4067
16:00	14	3625	421	101	92	14	0	79	10	0	14	0	0	4370
17:00	13	3785	443	104	95	14	0	85	12	0	16	0	0	4567
18:00	10	3817	411	68	84	8	0	72	7	0	12	0	0	4489
19:00	9	2993	347	43	69	6	0	35	5	0	9	0	0	3516
20:00	6	2159	250	27	51	3	0	25	3	0	8	0	0	2532
21:00	2	1863	196	22	41	4	0	19	3	0	4	0	0	2154
22:00	4	1501	172	18	33	2	0	16	1	0	4	0	0	1751
23:00	2	1009	116	14	23	3	0	11	2	0	3	0	0	1183
Totals	**149**	**54226**	**6536**	**1058**	**1499**	**167**		**928**	**144**		**287**			**64994**
% of Totals	0%	83%	10%	2%	2%	0%		1%	0%		0%			100%
	61	21848	2648	445	637	69	0	395	68	0	122	0	0	26293
% AM	0%	34%	4%	1%	1%	0%		1%	0%		0%			40%
AM Peak Hour	08:00	08:00	07:00	07:00	08:00	07:00		08:00	08:00		09:00			08:00
Volume	13	3970	459	104	115	15		100	16		27			4777
	88	32378	3888	613	862	98	0	533	76	0	165	0	0	38701
% PM	0%	50%	6%	1%	1%	0%		1%	0%		0%			60%
PM Peak Hour	16:00	18:00	17:00	17:00	15:00	16:00		17:00	13:00		13:00			17:00
Volume	14	3817	443	104	116	14		85	13		29			4567

Peak Period Totals

	AM 7-9		NOON 12-2		PM 4-6		Off Peak Volumes	
	Volume	%	Volume	%	Volume	%	Volume	%
	9505 ⟷	15%	6464 ⟷	10%	8937 ⟷	14%	40088 ⟷	62%

APPENDIX B: LOS CALCULATION SHEETS

Existing LOS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	441	1681	157	148	1754	8	111	1788	73	48	1187	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3502	5187	1615	1805	5187	1615	1805	5157		1805	5020	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.08	1.00		0.06	1.00	
Satd. Flow (perm)	3502	5187	1615	1805	5187	1615	148	5157		119	5020	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	474	1808	169	161	1907	9	122	1965	80	55	1349	369
RTOR Reduction (vph)	0	0	25	0	0	4	0	4	0	0	41	0
Lane Group Flow (vph)	474	1808	144	161	1907	5	122	2041	0	55	1677	0
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	9.0	35.0	35.0	7.0	33.0	33.0	64.0	64.0		64.0	64.0	
Effective Green, g (s)	9.0	35.0	35.0	7.0	33.0	33.0	64.0	64.0		64.0	64.0	
Actuated g/C Ratio	0.08	0.29	0.29	0.06	0.28	0.28	0.53	0.53		0.53	0.53	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	263	1513	471	105	1426	444	79	2750		63	2677	
v/s Ratio Prot	c0.14	0.35		0.09	c0.37			0.40			0.33	
v/s Ratio Perm			0.09			0.00	c0.82			0.46		
v/c Ratio	1.80	1.19	0.31	1.53	1.34	0.01	1.54	0.74		0.87	0.63	
Uniform Delay, d1	55.5	42.5	33.1	56.5	43.5	31.6	28.0	21.6		24.5	19.6	
Progression Factor	1.00	1.00	1.00	1.31	1.39	1.75	1.00	1.00		1.00	1.00	
Incremental Delay, d2	375.8	94.5	1.7	244.4	152.2	0.0	298.1	1.1		69.9	0.5	
Delay (s)	431.3	137.0	34.7	318.5	212.6	55.3	326.1	22.7		94.4	20.1	
Level of Service	F	F	C	F	F	E	F	C		F	C	
Approach Delay (s)		186.9			220.2			39.8			22.4	
Approach LOS		F			F			D			C	

Intersection Summary			
HCM Average Control Delay	123.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	111.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	55	685	105	45	1281	288	227	1571	23	140	1229	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6		4.6	2.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3610	1615	1805	5176		1805	5166	
Flt Permitted	0.11	1.00	1.00	0.20	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	215	3610	1615	377	3610	1615	1805	5176		1805	5166	
Peak-hour factor, PHF	0.79	0.79	0.79	0.96	0.96	0.96	0.94	0.94	0.94	0.90	0.90	0.90
Adj. Flow (vph)	70	867	133	47	1334	300	241	1671	24	156	1366	38
RTOR Reduction (vph)	0	0	81	0	0	165	0	1	0	0	3	0
Lane Group Flow (vph)	70	867	52	47	1334	135	241	1694	0	156	1401	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)	35.4	35.4	35.4	35.4	35.4	35.4	13.2	31.8		9.0	30.2	
Effective Green, g (s)	35.4	35.4	35.4	35.4	35.4	35.4	13.2	31.8		9.0	30.2	
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.39	0.39	0.15	0.35		0.10	0.34	
Clearance Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6		4.6	2.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0	6.0		2.0	6.0	
Lane Grp Cap (vph)	85	1420	635	148	1420	635	265	1829		181	1733	
v/s Ratio Prot		0.24			c0.37		0.13	c0.33		0.09	c0.27	
v/s Ratio Perm	0.33		0.03	0.12		0.08						
v/c Ratio	0.82	0.61	0.08	0.32	0.94	0.21	0.91	0.93		0.86	0.81	
Uniform Delay, d1	24.5	21.8	17.1	18.9	26.3	18.1	37.8	28.0		39.9	27.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	44.9	0.8	0.1	1.2	12.1	0.2	31.5	9.6		31.0	4.2	
Delay (s)	69.4	22.6	17.2	20.2	38.4	18.2	69.3	37.5		70.9	31.4	
Level of Service	E	C	B	C	D	B	E	D		E	C	
Approach Delay (s)		25.0			34.3			41.5			35.4	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	35.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	93.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	0	11	1341	24	5	32	1865	1262	0	1311	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6		5.0	5.0		4.8	4.8	4.0		4.8	
Lane Util. Factor		1.00		0.97	1.00		1.00	0.91	0.91		0.91	
Frt		0.96		1.00	0.98		1.00	0.98	0.85		1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1757		3502	1854		1805	3383	1470		5173	
Flt Permitted		0.84		0.67	1.00		0.14	1.00	1.00		1.00	
Satd. Flow (perm)		1519		2479	1854		275	3383	1470		5173	
Peak-hour factor, PHF	0.59	0.59	0.59	0.93	0.93	0.93	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	39	0	19	1442	26	5	33	1943	1315	0	1441	27
RTOR Reduction (vph)	0	5	0	0	3	0	0	17	0	0	3	0
Lane Group Flow (vph)	0	53	0	1442	28	0	33	2255	986	0	1465	0
Turn Type	Perm			Perm			Perm		Free			
Protected Phases		7			8			2			2	
Permitted Phases	7			8			2		Free			
Actuated Green, G (s)		4.0		29.0	29.0		27.6	27.6	75.0		27.6	
Effective Green, g (s)		4.0		29.0	29.0		27.6	27.6	75.0		27.6	
Actuated g/C Ratio		0.05		0.39	0.39		0.37	0.37	1.00		0.37	
Clearance Time (s)		4.6		5.0	5.0		4.8	4.8			4.8	
Vehicle Extension (s)		2.0		4.0	4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)		81		959	717		101	1245	1470		1904	
v/s Ratio Prot					0.02			c0.67			0.28	
v/s Ratio Perm		0.04		c0.58			0.12		c0.67			
v/c Ratio		0.66		1.50	0.04		0.33	1.81	0.67		0.77	
Uniform Delay, d1		34.8		23.0	14.3		17.0	23.7	0.0		20.9	
Progression Factor		1.00		1.00	1.00		0.86	0.94	1.00		1.00	
Incremental Delay, d2		13.7		232.1	0.0		4.5	366.7	1.3		3.1	
Delay (s)		48.5		255.1	14.4		19.2	389.1	1.3		24.0	
Level of Service		D		F	B		B	F	A		C	
Approach Delay (s)		48.5			250.0			269.2			24.0	
Approach LOS		D			F			F			C	

Intersection Summary			
HCM Average Control Delay	205.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.52		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	9.8
Intersection Capacity Utilization	118.1%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	370	423	120	326	1081	109	79	2339	93	32	2074	503
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0	6.0	6.0		6.0	6.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3502	3490		3502	3610	1615	1805	5157		1805	5187	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.05	1.00		0.05	1.00	1.00
Satd. Flow (perm)	3502	3490		3502	3610	1615	92	5157		92	5187	1615
Peak-hour factor, PHF	0.87	0.87	0.87	0.92	0.92	0.92	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	425	486	138	354	1175	118	81	2411	96	34	2183	529
RTOR Reduction (vph)	0	6	0	0	0	1	0	3	0	0	0	1
Lane Group Flow (vph)	425	618	0	354	1175	117	81	2504	0	34	2183	528
Turn Type	Prot			Prot		Perm	Perm			Perm		pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2			6		6
Actuated Green, G (s)	13.0	34.5		17.5	39.0	39.0	83.0	83.0		83.0	83.0	96.0
Effective Green, g (s)	13.0	34.5		17.5	39.0	39.0	83.0	83.0		83.0	83.0	96.0
Actuated g/C Ratio	0.09	0.23		0.12	0.26	0.26	0.55	0.55		0.55	0.55	0.64
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	6.0	6.0		6.0	6.0	4.0
Vehicle Extension (s)	2.0	4.0		1.0	2.0	2.0	3.0	3.0		3.0	3.0	2.0
Lane Grp Cap (vph)	304	803		409	939	420	51	2854		51	2870	1034
v/s Ratio Prot	c0.12	0.18		c0.10	c0.33			0.49			0.42	0.04
v/s Ratio Perm						0.07	c0.88			0.37		0.28
v/c Ratio	1.40	0.77		0.87	1.25	0.28	1.59	0.88		0.67	0.76	0.51
Uniform Delay, d1	68.5	54.0		65.1	55.5	44.3	33.5	29.1		23.7	25.8	14.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.37	0.35		1.01	0.98	1.12
Incremental Delay, d2	197.9	4.7		16.6	122.0	0.1	323.1	3.2		6.1	0.2	0.0
Delay (s)	266.4	58.8		81.7	177.5	44.4	335.5	13.4		30.0	25.4	16.2
Level of Service	F	E		F	F	D	F	B		C	C	B
Approach Delay (s)		142.9			147.3			23.5			23.7	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM Average Control Delay	64.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	118.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	1	33	39	16	51	30	2576	14	14	2279	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3	3.0	5.3	5.3		3.0	4.9		4.9	4.9	4.9
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	1.00
Frt		1.00	0.85	1.00	0.89		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1811	1615	1805	1684		1805	5183		1805	5187	1615
Flt Permitted		0.59	1.00	0.68	1.00		0.04	1.00		0.03	1.00	1.00
Satd. Flow (perm)		1127	1615	1299	1684		79	5183		65	5187	1615
Peak-hour factor, PHF	0.85	0.85	0.85	0.77	0.77	0.77	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	73	1	39	51	21	66	34	2894	16	15	2477	115
RTOR Reduction (vph)	0	0	8	0	5	0	0	0	0	0	0	15
Lane Group Flow (vph)	0	74	31	51	82	0	34	2910	0	15	2477	100
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		Perm
Protected Phases		8	1		4		1	6			2	
Permitted Phases	8		8	4			6			2		2
Actuated Green, G (s)		14.5	19.4	14.5	14.5		125.3	125.3		117.4	117.4	117.4
Effective Green, g (s)		14.5	19.4	14.5	14.5		125.3	125.3		117.4	117.4	117.4
Actuated g/C Ratio		0.10	0.13	0.10	0.10		0.84	0.84		0.78	0.78	0.78
Clearance Time (s)		5.3	3.0	5.3	5.3		3.0	4.9		4.9	4.9	4.9
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		109	209	126	163		122	4330		51	4060	1264
v/s Ratio Prot			0.00		0.05		0.01	c0.56			0.48	
v/s Ratio Perm		c0.07	0.01	0.04			0.22			0.23		0.06
v/c Ratio		0.68	0.15	0.40	0.50		0.28	0.67		0.29	0.61	0.08
Uniform Delay, d1		65.5	58.0	63.7	64.3		6.8	4.6		4.6	6.8	3.8
Progression Factor		1.00	1.00	1.00	1.00		3.97	0.39		0.55	0.58	0.65
Incremental Delay, d2		15.5	0.3	2.1	2.4		0.5	0.3		8.9	0.4	0.1
Delay (s)		81.0	58.3	65.8	66.7		27.6	2.2		11.4	4.4	2.5
Level of Service		F	E	E	E		C	A		B	A	A
Approach Delay (s)		73.2			66.4			2.4			4.3	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.2
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	123	441	241	262	1204	326	467	2068	56	138	1952	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5	5.0	4.0	5.5	5.0	5.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3610	1615	3502	5166		3502	5101	
Flt Permitted	0.12	1.00	1.00	0.19	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	232	3610	1615	353	3610	1615	3502	5166		3502	5101	
Peak-hour factor, PHF	0.79	0.79	0.79	0.92	0.92	0.92	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	156	558	305	285	1309	354	525	2324	63	152	2145	267
RTOR Reduction (vph)	0	0	19	0	0	3	0	2	0	0	11	0
Lane Group Flow (vph)	156	558	286	285	1309	351	525	2385	0	152	2401	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Prot			Prot		
Protected Phases	3	8	5	7	4	1	5	2		1	6	
Permitted Phases	8		8	4		4						
Actuated Green, G (s)	37.8	32.8	49.8	55.5	46.5	53.5	17.0	71.0		7.0	61.0	
Effective Green, g (s)	37.8	32.8	49.8	55.5	46.5	53.5	17.0	71.0		7.0	61.0	
Actuated g/C Ratio	0.25	0.22	0.33	0.37	0.31	0.36	0.11	0.47		0.05	0.41	
Clearance Time (s)	4.0	5.5	5.0	4.0	5.5	5.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	2.0	1.0	2.0	2.0	1.0	1.0	5.0		1.0	5.0	
Lane Grp Cap (vph)	111	789	536	312	1119	576	397	2445		163	2074	
v/s Ratio Prot	c0.05	0.15	0.06	0.11	c0.36	0.03	c0.15	0.46		0.04	c0.47	
v/s Ratio Perm	c0.31		0.12	0.22		0.19						
v/c Ratio	1.41	0.71	0.53	0.91	1.17	0.61	1.32	0.98		0.93	1.16	
Uniform Delay, d1	55.0	54.2	40.7	37.6	51.8	39.7	66.5	38.6		71.3	44.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.95	0.92	
Incremental Delay, d2	227.5	2.4	0.5	29.2	86.2	1.3	161.8	13.3		44.0	75.8	
Delay (s)	282.5	56.5	41.2	66.8	138.0	41.0	228.3	51.9		111.4	116.8	
Level of Service	F	E	D	E	F	D	F	D		F	F	
Approach Delay (s)		86.5			109.9			83.7			116.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	100.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	113.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	1256	204	2375	748	143	2377
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	16	12
Total Lost time (s)	5.5	4.0	6.0	4.0	3.0	4.0
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3152	1454	4668	1454	1841	3249
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3152	1454	4668	1454	1841	3249
Peak-hour factor, PHF	0.88	0.88	0.96	0.96	0.91	0.91
Adj. Flow (vph)	1427	232	2474	779	157	2612
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1427	232	2474	779	157	2612
Turn Type		Free		Free	Prot	
Protected Phases	3		1		2	
Permitted Phases		Free		Free		Free
Actuated Green, G (s)	88.5	225.0	103.0	225.0	19.0	225.0
Effective Green, g (s)	88.5	225.0	103.0	225.0	19.0	225.0
Actuated g/C Ratio	0.39	1.00	0.46	1.00	0.08	1.00
Clearance Time (s)	5.5		6.0		3.0	
Vehicle Extension (s)	3.0		6.5		1.5	
Lane Grp Cap (vph)	1240	1454	2137	1454	155	3249
v/s Ratio Prot	c0.45		c0.53		c0.09	
v/s Ratio Perm		0.16		0.54		0.80
v/c Ratio	1.15	0.16	1.16	0.54	1.01	0.80
Uniform Delay, d1	68.2	0.0	61.0	0.0	103.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	77.6	0.2	76.7	1.4	75.7	2.2
Delay (s)	145.8	0.2	137.7	1.4	178.7	2.2
Level of Service	F	A	F	A	F	A
Approach Delay (s)	125.4		105.1			12.2
Approach LOS	F		F			B

Intersection Summary			
HCM Average Control Delay	76.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	225.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	120.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	78	157	121	458	259	65	0	3262	55	0	2889	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	5.6	5.6	5.6		6.5			6.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00		0.91			0.86	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			1.00	
Flt Protected	0.95	1.00	1.00	0.95	0.99	1.00		1.00			1.00	
Satd. Flow (prot)	1715	1801	1615	1715	1779	1615		5174			6512	
Flt Permitted	0.95	1.00	1.00	0.95	0.99	1.00		1.00			1.00	
Satd. Flow (perm)	1715	1801	1615	1715	1779	1615		5174			6512	
Peak-hour factor, PHF	0.96	0.96	0.96	0.87	0.87	0.87	0.97	0.97	0.97	0.89	0.89	0.89
Adj. Flow (vph)	81	164	126	526	298	75	0	3363	57	0	3246	82
RTOR Reduction (vph)	0	0	3	0	0	59	0	1	0	0	2	0
Lane Group Flow (vph)	73	172	123	405	419	16	0	3419	0	0	3326	0
Turn Type	Split		Perm	Split		Perm						
Protected Phases	4	4		3	3			2			2	
Permitted Phases			4			3						
Actuated Green, G (s)	16.7	16.7	16.7	19.4	19.4	19.4		66.2			66.2	
Effective Green, g (s)	16.7	16.7	16.7	19.4	19.4	19.4		66.2			66.2	
Actuated g/C Ratio	0.14	0.14	0.14	0.16	0.16	0.16		0.55			0.55	
Clearance Time (s)	5.6	5.6	5.6	5.6	5.6	5.6		6.5			6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	239	251	225	277	288	261		2854			3592	
v/s Ratio Prot	0.04	c0.10		c0.24	0.24			c0.66			0.51	
v/s Ratio Perm			0.08			0.01						
v/c Ratio	0.31	0.69	0.55	1.46	1.45	0.06		1.20			0.93	
Uniform Delay, d1	46.4	49.1	48.1	50.3	50.3	42.6		26.9			24.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.79			1.00	
Incremental Delay, d2	0.7	7.5	2.7	226.8	223.0	0.1		91.1			5.4	
Delay (s)	47.2	56.7	50.9	277.1	273.3	42.7		112.2			30.0	
Level of Service	D	E	D	F	F	D		F			C	
Approach Delay (s)		52.8			255.8			112.2			30.0	
Approach LOS		D			F			F			C	

Intersection Summary			
HCM Average Control Delay	91.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.7
Intersection Capacity Utilization	106.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	874	138	0	0	0	0	0	2442	75	0	2206	1264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0						6.0			6.0	6.0
Lane Util. Factor	0.94	1.00						0.91			0.91	1.00
Frt	1.00	1.00						1.00			1.00	0.85
Flt Protected	0.95	1.00						1.00			1.00	1.00
Satd. Flow (prot)	5090	1900						5164			5187	1615
Flt Permitted	0.95	1.00						1.00			1.00	1.00
Satd. Flow (perm)	5090	1900						5164			5187	1615
Peak-hour factor, PHF	0.90	0.90	0.90	0.25	0.25	0.25	0.99	0.99	0.99	0.91	0.91	0.91
Adj. Flow (vph)	971	153	0	0	0	0	0	2467	76	0	2424	1389
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	971	153	0	0	0	0	0	2540	0	0	2424	1389
Turn Type	Split											pm+ov
Protected Phases	4	4						6			2	4
Permitted Phases												2
Actuated Green, G (s)	45.0	45.0						63.0			63.0	108.0
Effective Green, g (s)	45.0	45.0						63.0			63.0	108.0
Actuated g/C Ratio	0.38	0.38						0.52			0.52	0.90
Clearance Time (s)	6.0	6.0						6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0						3.0			3.0	3.0
Lane Grp Cap (vph)	1909	713						2711			2723	1615
v/s Ratio Prot	0.19	0.08						0.49			0.47	c0.32
v/s Ratio Perm												0.54
v/c Ratio	0.51	0.21						0.94			0.89	0.86
Uniform Delay, d1	29.0	25.5						26.6			25.4	2.7
Progression Factor	1.00	0.89						0.44			0.61	1.00
Incremental Delay, d2	0.6	0.4						0.9			1.4	1.8
Delay (s)	29.6	23.1						12.6			17.0	4.4
Level of Service	C	C						B			B	A
Approach Delay (s)		28.7			0.0			12.6			12.4	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	198	544	97	206	1414	4	323	928	121	24	1138	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.91		1.00	0.95		0.97	0.91		1.00	0.91	
Frt	1.00	0.98		1.00	1.00		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	5069		1805	3609		3502	5098		1805	5046	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.16	1.00	
Satd. Flow (perm)	1805	5069		1805	3609		3502	5098		300	5046	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.90	0.90	0.90	0.86	0.86	0.86
Adj. Flow (vph)	225	618	110	224	1537	4	359	1031	134	28	1323	293
RTOR Reduction (vph)	0	21	0	0	0	0	0	13	0	0	29	0
Lane Group Flow (vph)	225	707	0	224	1541	0	359	1152	0	28	1587	0
Turn Type	Prot			Prot			Prot			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases										4		
Actuated Green, G (s)	10.0	39.5		14.0	43.5		9.0	42.6		39.6	36.6	
Effective Green, g (s)	10.0	39.5		14.0	43.5		9.0	42.6		39.6	36.6	
Actuated g/C Ratio	0.08	0.33		0.12	0.36		0.08	0.36		0.33	0.31	
Clearance Time (s)	4.0	6.4		4.0	6.4		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	150	1669		211	1308		263	1810		137	1539	
v/s Ratio Prot	c0.12	0.14		0.12	c0.43		c0.10	0.23		0.01	c0.31	
v/s Ratio Perm										0.06		
v/c Ratio	1.50	0.42		1.06	1.18		1.37	0.64		0.20	1.03	
Uniform Delay, d1	55.0	31.4		53.0	38.2		55.5	32.2		28.0	41.7	
Progression Factor	1.00	1.00		0.57	0.47		1.00	1.00		1.04	0.98	
Incremental Delay, d2	256.6	0.8		37.5	81.0		186.8	1.7		0.5	27.3	
Delay (s)	311.6	32.2		67.8	98.9		242.3	34.0		29.5	68.0	
Level of Service	F	C		E	F		F	C		C	E	
Approach Delay (s)		98.1			95.0			83.0			67.3	
Approach LOS		F			F			F			E	

Intersection Summary			
HCM Average Control Delay	84.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	104.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	508	162	254	1366	286	343	2354	33	86	2089	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4	4.0	5.4	5.4	4.5	5.7		4.5	5.7	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3610	1615	1805	3610	1615	3502	5176		1805	5181	
Flt Permitted		1.00	1.00	0.26	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3610	1615	495	3610	1615	3502	5176		1805	5181	
Peak-hour factor, PHF	0.84	0.84	0.84	0.91	0.91	0.91	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	605	193	279	1501	314	365	2504	35	91	2222	16
RTOR Reduction (vph)	0	0	144	0	0	55	0	1	0	0	1	0
Lane Group Flow (vph)	0	605	49	279	1501	259	365	2538	0	91	2237	0
Turn Type			Perm	pm+pt		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases			4	8		8						
Actuated Green, G (s)		30.6	30.6	46.0	44.6	44.6	11.5	54.3		5.5	48.3	
Effective Green, g (s)		30.6	30.6	46.0	44.6	44.6	11.5	54.3		5.5	48.3	
Actuated g/C Ratio		0.26	0.26	0.38	0.37	0.37	0.10	0.45		0.05	0.40	
Clearance Time (s)		5.4	5.4	4.0	5.4	5.4	4.5	5.7		4.5	5.7	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		921	412	299	1342	600	336	2342		83	2085	
v/s Ratio Prot		0.17		0.08	c0.42		0.10	c0.49		0.05	c0.43	
v/s Ratio Perm			0.03	0.28		0.16						
v/c Ratio		0.66	0.12	0.93	1.12	0.43	1.09	1.08		1.10	1.07	
Uniform Delay, d1		40.0	34.3	42.0	37.7	28.2	54.2	32.9		57.2	35.9	
Progression Factor		0.47	0.04	1.00	1.00	1.00	1.00	1.00		0.65	0.44	
Incremental Delay, d2		3.4	0.5	34.7	63.9	2.3	74.2	45.8		93.0	37.7	
Delay (s)		22.0	1.8	76.6	101.6	30.5	128.4	78.7		130.4	53.4	
Level of Service		C	A	E	F	C	F	E		F	D	
Approach Delay (s)		17.1			87.6			84.9			56.4	
Approach LOS		B			F			F			E	

Intersection Summary			
HCM Average Control Delay	70.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	101.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	93	379	30	212	989	54	32	353	65	470	611	252
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5		3.5	4.5		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.91	0.91	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.99	1.00
Satd. Flow (prot)	1805	3570		1805	3582		1805	3526		1643	3430	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.99	1.00
Satd. Flow (perm)	1805	3570		1805	3582		1805	3526		1643	3430	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	101	412	33	238	1111	61	35	384	71	522	679	280
RTOR Reduction (vph)	0	6	0	0	4	0	0	15	0	0	0	209
Lane Group Flow (vph)	101	439	0	238	1168	0	35	440	0	391	810	71
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases												7
Actuated Green, G (s)	7.5	26.5		17.6	36.6		12.5	12.5		25.4	25.4	25.4
Effective Green, g (s)	7.5	26.5		17.6	36.6		12.5	12.5		25.4	25.4	25.4
Actuated g/C Ratio	0.08	0.26		0.18	0.37		0.12	0.12		0.25	0.25	0.25
Clearance Time (s)	3.5	4.5		3.5	4.5		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	135	946		318	1311		226	441		417	871	410
v/s Ratio Prot	0.06	0.12		c0.13	c0.33		0.02	c0.12		c0.24	0.24	
v/s Ratio Perm												0.04
v/c Ratio	0.75	0.46		0.75	0.89		0.15	1.00		0.94	0.93	0.17
Uniform Delay, d1	45.3	30.8		39.1	29.8		39.0	43.7		36.5	36.4	29.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	20.1	1.6		9.3	9.4		0.3	42.0		28.6	15.9	0.2
Delay (s)	65.4	32.4		48.4	39.2		39.4	85.8		65.1	52.3	29.3
Level of Service	E	C		D	D		D	F		E	D	C
Approach Delay (s)		38.5			40.8			82.4			51.3	
Approach LOS		D			D			F			D	

Intersection Summary			
HCM Average Control Delay	49.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	201	1158	67	224	2027	32	228	1175	198	46	991	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.6		5.6	5.6	5.6
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	5187	1615	1805	5187	1615	1805	3532		1805	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.09	1.00		0.11	1.00	1.00
Satd. Flow (perm)	1805	5187	1615	1805	5187	1615	177	3532		203	3610	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	218	1259	73	241	2180	34	265	1366	230	50	1077	342
RTOR Reduction (vph)	0	0	43	0	0	6	0	12	0	0	0	159
Lane Group Flow (vph)	218	1259	30	241	2180	28	265	1584	0	50	1077	183
Turn Type	Prot		Perm	Prot		Perm	pm+pt			Perm		Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		4
Actuated Green, G (s)	12.0	36.0	36.0	20.0	44.0	44.0	53.0	50.4		37.4	37.4	37.4
Effective Green, g (s)	12.0	36.0	36.0	20.0	44.0	44.0	53.0	50.4		37.4	37.4	37.4
Actuated g/C Ratio	0.10	0.30	0.30	0.17	0.37	0.37	0.44	0.42		0.31	0.31	0.31
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.6		5.6	5.6	5.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	181	1556	485	301	1902	592	214	1483		63	1125	503
v/s Ratio Prot	c0.12	0.24		0.13	c0.42		c0.10	0.45			0.30	
v/s Ratio Perm			0.02			0.02	c0.44			0.25		0.11
v/c Ratio	1.20	0.81	0.06	0.80	1.15	0.05	1.24	1.07		0.79	0.96	0.36
Uniform Delay, d1	54.0	38.8	30.0	48.1	38.0	24.5	48.7	34.8		37.8	40.5	32.1
Progression Factor	0.67	1.06	2.05	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	97.0	0.4	0.0	14.1	72.5	0.1	140.6	44.0		64.7	18.4	2.0
Delay (s)	133.2	41.6	61.5	62.2	110.5	24.6	189.3	78.8		102.5	58.9	34.1
Level of Service	F	D	E	E	F	C	F	E		F	E	C
Approach Delay (s)		55.4			104.6			94.6			54.6	
Approach LOS		E			F			F			D	

Intersection Summary			
HCM Average Control Delay	81.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	114.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	519	16	460	918	86	44	996	489	183	701	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		4.0	5.9		5.9	5.9	4.0	4.0	5.9	
Lane Util. Factor	1.00	0.91		0.97	0.95		1.00	0.95	1.00	0.97	0.95	
Frt	1.00	1.00		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	5163		3502	3564		1805	3610	1615	3502	3566	
Flt Permitted	0.19	1.00		0.95	1.00		0.34	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	368	5163		3502	3564		650	3610	1615	3502	3566	
Peak-hour factor, PHF	0.82	0.82	0.82	0.92	0.92	0.92	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	79	633	20	500	998	93	48	1095	537	197	754	66
RTOR Reduction (vph)	0	4	0	0	8	0	0	0	36	0	7	0
Lane Group Flow (vph)	79	649	0	500	1083	0	48	1095	501	197	813	0
Turn Type	Perm			Prot			Perm		pm+ov	Prot		
Protected Phases		2		1	6			4	1	3	8	
Permitted Phases	2						4		4			
Actuated Green, G (s)	24.3	24.3		7.1	35.5		29.0	29.0	36.1	5.0	38.0	
Effective Green, g (s)	24.3	24.3		7.1	35.5		29.0	29.0	36.1	5.0	38.0	
Actuated g/C Ratio	0.28	0.28		0.08	0.42		0.34	0.34	0.42	0.06	0.45	
Clearance Time (s)	6.0	6.0		4.0	5.9		5.9	5.9	4.0	4.0	5.9	
Vehicle Extension (s)	7.4	7.4		2.0	3.0		5.4	5.4	2.0	2.0	4.0	
Lane Grp Cap (vph)	105	1471		291	1483		221	1227	683	205	1589	
v/s Ratio Prot		0.13		c0.14	c0.30			c0.30	0.06	c0.06	0.23	
v/s Ratio Perm	0.21						0.07		0.25			
v/c Ratio	0.75	0.44		1.72	0.73		0.22	0.89	0.73	0.96	0.51	
Uniform Delay, d1	27.8	24.9		39.1	20.9		20.1	26.7	20.6	40.1	17.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	36.2	0.8		337.4	1.9		1.2	9.2	3.5	51.2	0.4	
Delay (s)	64.0	25.8		376.5	22.8		21.2	35.9	24.1	91.3	17.4	
Level of Service	E	C		F	C		C	D	C	F	B	
Approach Delay (s)		29.9			133.9			31.7			31.7	
Approach LOS		C			F			C			C	

Intersection Summary			
HCM Average Control Delay	63.8	HCM Level of Service	E
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	85.3	Sum of lost time (s)	13.9
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	279	29	334	731	314	24	1256	55	107	1054	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt		0.99		1.00	0.95		1.00	0.99		1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3558		1805	3447		1805	3587		1805	3607	
Flt Permitted		0.85		0.50	1.00		0.18	1.00		0.09	1.00	
Satd. Flow (perm)		3039		954	3447		345	3587		173	3607	
Peak-hour factor, PHF	0.86	0.86	0.86	0.85	0.85	0.85	0.91	0.91	0.91	0.96	0.96	0.96
Adj. Flow (vph)	3	324	34	393	860	369	26	1380	60	111	1098	6
RTOR Reduction (vph)	0	9	0	0	24	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	352	0	393	1205	0	26	1436	0	111	1104	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		31.0		31.0	31.0		49.0	49.0		49.0	49.0	
Effective Green, g (s)		31.0		31.0	31.0		49.0	49.0		49.0	49.0	
Actuated g/C Ratio		0.34		0.34	0.34		0.54	0.54		0.54	0.54	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1047		329	1187		188	1953		94	1964	
v/s Ratio Prot					0.35			0.40			0.31	
v/s Ratio Perm		0.12		c0.41			0.08			c0.64		
v/c Ratio		0.34		1.19	1.02		0.14	0.74		1.18	0.56	
Uniform Delay, d1		21.9		29.5	29.5		10.1	15.6		20.5	13.5	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4		113.5	30.0		1.5	2.5		149.5	1.2	
Delay (s)		22.3		143.0	59.5		11.6	18.1		170.0	14.6	
Level of Service		C		F	E		B	B		F	B	
Approach Delay (s)		22.3			79.8			18.0			28.8	
Approach LOS		C			E			B			C	

Intersection Summary			
HCM Average Control Delay	42.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	108.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	424	1668	242	221	1266	7	74	1212	47	47	1565	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3502	5187	1615	1805	5187	1615	1805	5158		1805	5055	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00		0.11	1.00	
Satd. Flow (perm)	3502	5187	1615	1805	5187	1615	217	5158		217	5055	
Peak-hour factor, PHF	0.96	0.96	0.96	0.87	0.87	0.87	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	442	1738	252	254	1455	8	85	1393	54	51	1701	348
RTOR Reduction (vph)	0	0	16	0	0	6	0	4	0	0	35	0
Lane Group Flow (vph)	442	1738	236	254	1455	2	85	1443	0	51	2014	0
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	13.0	29.0	29.0	12.0	28.0	28.0	35.0	35.0		35.0	35.0	
Effective Green, g (s)	13.0	29.0	29.0	12.0	28.0	28.0	35.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.14	0.32	0.32	0.13	0.31	0.31	0.39	0.39		0.39	0.39	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	506	1671	520	241	1614	502	84	2006		84	1966	
v/s Ratio Prot	0.13	c0.34		c0.14	0.28			0.28			c0.40	
v/s Ratio Perm			0.15			0.00	0.39			0.23		
v/c Ratio	0.87	1.04	0.45	1.05	0.90	0.00	1.01	0.72		0.61	1.02	
Uniform Delay, d1	37.7	30.5	24.2	39.0	29.7	21.4	27.5	23.3		22.0	27.5	
Progression Factor	1.00	1.00	1.00	0.97	1.07	1.56	0.66	0.63		1.00	1.00	
Incremental Delay, d2	15.3	33.2	2.9	59.6	5.4	0.0	88.0	0.9		11.8	26.8	
Delay (s)	53.0	63.7	27.1	97.5	37.2	33.4	106.2	15.7		33.8	54.3	
Level of Service	D	E	C	F	D	C	F	B		C	D	
Approach Delay (s)		58.0			46.1			20.7			53.8	
Approach LOS		E			D			C			D	

Intersection Summary			
HCM Average Control Delay	46.9	HCM Level of Service	D
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	110.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	998	131	45	565	119	123	1140	58	266	1675	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6		4.6	2.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3610	1615	1805	5149		1805	5174	
Flt Permitted	0.34	1.00	1.00	0.12	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	638	3610	1615	220	3610	1615	1805	5149		1805	5174	
Peak-hour factor, PHF	0.93	0.93	0.93	0.94	0.94	0.94	0.87	0.87	0.87	0.96	0.96	0.96
Adj. Flow (vph)	65	1073	141	48	601	127	141	1310	67	277	1745	30
RTOR Reduction (vph)	0	0	87	0	0	78	0	6	0	0	2	0
Lane Group Flow (vph)	65	1073	54	48	601	49	141	1371	0	277	1773	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)	34.5	34.5	34.5	34.5	34.5	34.5	10.8	32.3		9.4	33.5	
Effective Green, g (s)	34.5	34.5	34.5	34.5	34.5	34.5	10.8	32.3		9.4	33.5	
Actuated g/C Ratio	0.38	0.38	0.38	0.38	0.38	0.38	0.12	0.36		0.10	0.37	
Clearance Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6		4.6	2.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0	6.0		2.0	6.0	
Lane Grp Cap (vph)	245	1384	619	84	1384	619	217	1848		189	1926	
v/s Ratio Prot		c0.30			0.17		0.08	c0.27		c0.15	c0.34	
v/s Ratio Perm	0.10		0.03	0.22		0.03						
v/c Ratio	0.27	0.78	0.09	0.57	0.43	0.08	0.65	0.74		1.47	0.92	
Uniform Delay, d1	19.0	24.3	17.7	21.9	20.5	17.6	37.8	25.2		40.3	27.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.12	1.25	
Incremental Delay, d2	0.6	2.8	0.1	9.1	0.2	0.1	5.0	2.7		218.0	3.0	
Delay (s)	19.6	27.1	17.8	31.0	20.7	17.7	42.7	27.9		263.2	36.8	
Level of Service	B	C	B	C	C	B	D	C		F	D	
Approach Delay (s)		25.7			20.9			29.3			67.3	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	41.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.8
Intersection Capacity Utilization	86.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	53	0	21	958	16	6	15	1232	1607	0	1825	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6		5.0	5.0		4.8	4.8	4.0		4.8	
Lane Util. Factor		1.00		0.97	1.00		1.00	0.91	0.91		0.91	
Frt		0.96		1.00	0.96		1.00	0.94	0.85		1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1764		3502	1826		1805	3266	1470		5182	
Flt Permitted		0.77		0.71	1.00		0.15	1.00	1.00		1.00	
Satd. Flow (perm)		1413		2633	1826		286	3266	1470		5182	
Peak-hour factor, PHF	0.71	0.71	0.71	0.93	0.93	0.93	0.90	0.90	0.90	0.93	0.93	0.93
Adj. Flow (vph)	75	0	30	1030	17	6	17	1369	1786	0	1962	12
RTOR Reduction (vph)	0	15	0	0	4	0	0	99	0	0	1	0
Lane Group Flow (vph)	0	90	0	1030	19	0	17	2074	982	0	1973	0
Turn Type	Perm			Perm			Perm		Free			
Protected Phases		7			8			2			2	
Permitted Phases	7			8			2		Free			
Actuated Green, G (s)		5.0		29.0	29.0		26.6	26.6	75.0		26.6	
Effective Green, g (s)		5.0		29.0	29.0		26.6	26.6	75.0		26.6	
Actuated g/C Ratio		0.07		0.39	0.39		0.35	0.35	1.00		0.35	
Clearance Time (s)		4.6		5.0	5.0		4.8	4.8			4.8	
Vehicle Extension (s)		2.0		4.0	4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)		94		1018	706		101	1158	1470		1838	
v/s Ratio Prot					0.01			c0.64			0.38	
v/s Ratio Perm		0.06		c0.39			0.06		c0.67			
v/c Ratio		0.96		1.01	0.03		0.17	1.79	0.67		1.07	
Uniform Delay, d1		34.9		23.0	14.3		16.6	24.2	0.0		24.2	
Progression Factor		1.00		1.00	1.00		0.83	1.32	1.00		1.00	
Incremental Delay, d2		77.8		31.1	0.0		0.3	356.4	0.2		43.9	
Delay (s)		112.7		54.1	14.3		14.1	388.3	0.2		68.1	
Level of Service		F		D	B		B	F	A		E	
Approach Delay (s)		112.7			53.3			266.1			68.1	
Approach LOS		F			D			F			E	

Intersection Summary			
HCM Average Control Delay	166.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.28		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	9.8
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	610	822	257	173	405	75	43	2090	253	44	2321	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0	6.0	6.0		6.0	6.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.91		1.00	0.91	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3502	3481		3502	3610	1615	1805	5103		1805	5187	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.05	1.00		0.05	1.00	1.00
Satd. Flow (perm)	3502	3481		3502	3610	1615	92	5103		92	5187	1615
Peak-hour factor, PHF	0.95	0.95	0.95	0.87	0.87	0.87	0.94	0.94	0.94	0.95	0.95	0.95
Adj. Flow (vph)	642	865	271	199	466	86	46	2223	269	46	2443	218
RTOR Reduction (vph)	0	17	0	0	0	3	0	10	0	0	0	36
Lane Group Flow (vph)	642	1119	0	199	466	83	46	2482	0	46	2443	182
Turn Type	Prot			Prot		Perm	Perm			Perm		pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2			6		6
Actuated Green, G (s)	13.0	40.1		11.9	39.0	39.0	83.0	83.0		83.0	83.0	96.0
Effective Green, g (s)	13.0	40.1		11.9	39.0	39.0	83.0	83.0		83.0	83.0	96.0
Actuated g/C Ratio	0.09	0.27		0.08	0.26	0.26	0.55	0.55		0.55	0.55	0.64
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	6.0	6.0		6.0	6.0	4.0
Vehicle Extension (s)	2.0	4.0		1.0	2.0	2.0	3.0	3.0		3.0	3.0	2.0
Lane Grp Cap (vph)	304	931		278	939	420	51	2824		51	2870	1034
v/s Ratio Prot	c0.18	c0.32		0.06	0.13			0.49			0.47	0.02
v/s Ratio Perm						0.05	c0.50			0.50		0.10
v/c Ratio	2.11	1.20		0.72	0.50	0.20	0.90	0.88		0.90	0.85	0.18
Uniform Delay, d1	68.5	54.9		67.4	47.2	43.3	29.9	29.1		29.9	28.3	11.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.64	0.63		1.02	1.03	0.57
Incremental Delay, d2	511.3	101.3		7.1	0.2	0.1	84.3	3.3		20.1	0.3	0.0
Delay (s)	579.8	156.2		74.5	47.3	43.4	103.5	21.7		50.6	29.4	6.2
Level of Service	F	F		E	D	D	F	C		D	C	A
Approach Delay (s)		309.2			54.1			23.1			27.9	
Approach LOS		F			D			C			C	

Intersection Summary			
HCM Average Control Delay	93.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	219	7	58	9	2	16	20	2143	8	20	2680	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3	3.0	5.3	5.3		3.0	4.9		4.9	4.9	4.9
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	1.00
Frt		1.00	0.85	1.00	0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1812	1615	1805	1649		1805	5184		1805	5187	1615
Flt Permitted		0.71	1.00	0.16	1.00		0.04	1.00		0.06	1.00	1.00
Satd. Flow (perm)		1357	1615	303	1649		69	5184		113	5187	1615
Peak-hour factor, PHF	0.76	0.76	0.76	0.72	0.72	0.72	0.95	0.95	0.95	0.97	0.97	0.97
Adj. Flow (vph)	288	9	76	12	3	22	21	2256	8	21	2763	192
RTOR Reduction (vph)	0	0	4	0	17	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	297	72	12	8	0	21	2264	0	21	2763	162
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		Perm
Protected Phases		8	1		4		1	6			2	
Permitted Phases	8		8	4			6			2		2
Actuated Green, G (s)		25.1	30.1	25.1	25.1		114.7	114.7		106.7	106.7	106.7
Effective Green, g (s)		25.1	30.1	25.1	25.1		114.7	114.7		106.7	106.7	106.7
Actuated g/C Ratio		0.17	0.20	0.17	0.17		0.76	0.76		0.71	0.71	0.71
Clearance Time (s)		5.3	3.0	5.3	5.3		3.0	4.9		4.9	4.9	4.9
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		227	324	51	276		111	3964		80	3690	1149
v/s Ratio Prot			0.01		0.01		0.01	c0.44			c0.53	
v/s Ratio Perm		c0.22	0.04	0.04			0.14			0.19		0.10
v/c Ratio		1.31	0.22	0.24	0.03		0.19	0.57		0.26	0.75	0.14
Uniform Delay, d1		62.5	50.2	54.1	52.3		15.6	7.4		7.7	13.4	6.9
Progression Factor		1.00	1.00	1.00	1.00		2.39	0.87		1.03	0.73	1.24
Incremental Delay, d2		166.8	0.3	2.4	0.0		0.5	0.4		4.1	0.7	0.1
Delay (s)		229.2	50.5	56.5	52.3		37.8	6.8		12.0	10.6	8.7
Level of Service		F	D	E	D		D	A		B	B	A
Approach Delay (s)		192.8			53.7			7.1			10.5	
Approach LOS		F			D			A			B	

Intersection Summary			
HCM Average Control Delay	21.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	182	902	428	181	573	143	286	1808	138	370	2233	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5	5.0	4.0	5.5	5.0	5.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3610	1615	3502	5132		3502	5152	
Flt Permitted	0.36	1.00	1.00	0.10	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	679	3610	1615	196	3610	1615	3502	5132		3502	5152	
Peak-hour factor, PHF	0.95	0.95	0.95	0.94	0.94	0.94	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	192	949	451	193	610	152	295	1864	142	385	2326	111
RTOR Reduction (vph)	0	0	31	0	0	8	0	6	0	0	3	0
Lane Group Flow (vph)	192	949	420	193	610	144	295	2000	0	385	2434	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Prot			Prot		
Protected Phases	3	8	5	7	4	1	5	2		1	6	
Permitted Phases	8		8	4		4						
Actuated Green, G (s)	39.8	34.8	50.0	55.5	46.5	54.3	15.2	70.2		7.8	62.8	
Effective Green, g (s)	39.8	34.8	50.0	55.5	46.5	54.3	15.2	70.2		7.8	62.8	
Actuated g/C Ratio	0.27	0.23	0.33	0.37	0.31	0.36	0.10	0.47		0.05	0.42	
Clearance Time (s)	4.0	5.5	5.0	4.0	5.5	5.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	2.0	1.0	2.0	2.0	1.0	1.0	5.0		1.0	5.0	
Lane Grp Cap (vph)	218	838	538	252	1119	585	355	2402		182	2157	
v/s Ratio Prot	0.03	c0.26	0.08	c0.09	0.17	0.01	0.08	c0.39		c0.11	c0.47	
v/s Ratio Perm	0.20		0.18	0.20		0.08						
v/c Ratio	0.88	1.13	0.78	0.77	0.55	0.25	0.83	0.83		2.12	1.13	
Uniform Delay, d1	51.6	57.6	45.1	37.8	43.0	33.5	66.1	34.8		71.1	43.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.73	0.53	
Incremental Delay, d2	30.5	74.3	6.7	11.8	0.3	0.1	14.5	3.6		514.1	62.2	
Delay (s)	82.1	131.9	51.8	49.6	43.3	33.6	80.7	38.3		565.9	85.3	
Level of Service	F	F	D	D	D	C	F	D		F	F	
Approach Delay (s)		103.2			43.0			43.8			150.9	
Approach LOS		F			D			D			F	

Intersection Summary			
HCM Average Control Delay	95.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	105.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	765	83	2190	1047	361	2596
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	16	12
Total Lost time (s)	5.5	4.0	6.0	4.0	3.0	4.0
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3152	1454	4668	1454	1841	3249
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3152	1454	4668	1454	1841	3249
Peak-hour factor, PHF	0.86	0.86	0.96	0.96	0.96	0.96
Adj. Flow (vph)	890	97	2281	1091	376	2704
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	890	97	2281	1091	376	2704
Turn Type		Free		Free	Prot	
Protected Phases	3		1		2	
Permitted Phases		Free		Free		Free
Actuated Green, G (s)	62.0	198.7	103.2	198.7	19.0	198.7
Effective Green, g (s)	62.0	198.7	103.2	198.7	19.0	198.7
Actuated g/C Ratio	0.31	1.00	0.52	1.00	0.10	1.00
Clearance Time (s)	5.5		6.0		3.0	
Vehicle Extension (s)	3.0		6.5		1.5	
Lane Grp Cap (vph)	984	1454	2424	1454	176	3249
v/s Ratio Prot	0.28		c0.49		c0.20	
v/s Ratio Perm		0.07		0.75		c0.83
v/c Ratio	0.90	0.07	0.94	0.75	2.14	0.83
Uniform Delay, d1	65.5	0.0	44.9	0.0	89.8	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.5	0.1	8.7	3.6	529.9	2.7
Delay (s)	77.0	0.1	53.6	3.6	619.8	2.7
Level of Service	E	A	D	A	F	A
Approach Delay (s)	69.4		37.4			78.0
Approach LOS	E		D			E

Intersection Summary			
HCM Average Control Delay	58.5	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	198.7	Sum of lost time (s)	9.0
Intersection Capacity Utilization	111.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	159	77	261	134	42	0	2747	113	0	2839	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	5.6	5.6	5.6		6.5			6.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00		0.91			0.86	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.99	
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00		1.00			1.00	
Satd. Flow (prot)	1715	1796	1615	1715	1775	1615		5156			6486	
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00		1.00			1.00	
Satd. Flow (perm)	1715	1796	1615	1715	1775	1615		5156			6486	
Peak-hour factor, PHF	0.90	0.90	0.90	0.91	0.91	0.91	0.95	0.95	0.95	0.97	0.97	0.97
Adj. Flow (vph)	193	177	86	287	147	46	0	2892	119	0	2927	158
RTOR Reduction (vph)	0	0	22	0	0	39	0	3	0	0	5	0
Lane Group Flow (vph)	174	196	64	212	222	7	0	3008	0	0	3080	0
Turn Type	Split		Perm	Split		Perm						
Protected Phases	4	4		3	3			2			2	
Permitted Phases			4			3						
Actuated Green, G (s)	18.5	18.5	18.5	18.0	18.0	18.0		65.8			65.8	
Effective Green, g (s)	18.5	18.5	18.5	18.0	18.0	18.0		65.8			65.8	
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.15		0.55			0.55	
Clearance Time (s)	5.6	5.6	5.6	5.6	5.6	5.6		6.5			6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	264	277	249	257	266	242		2827			3556	
v/s Ratio Prot	0.10	c0.11		0.12	c0.13			c0.58			0.47	
v/s Ratio Perm			0.04			0.00						
v/c Ratio	0.66	0.71	0.26	0.82	0.83	0.03		1.06			0.87	
Uniform Delay, d1	47.8	48.2	44.7	49.5	49.6	43.5		27.1			23.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.87			1.00	
Incremental Delay, d2	5.8	8.0	0.5	18.9	19.7	0.0		34.8			3.1	
Delay (s)	53.6	56.2	45.2	68.4	69.2	43.6		58.4			26.4	
Level of Service	D	E	D	E	E	D		E			C	
Approach Delay (s)		53.1			66.4			58.4			26.4	
Approach LOS		D			E			E			C	

Intersection Summary			
HCM Average Control Delay	44.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.7
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	992	246	0	0	0	0	0	1871	160	0	2266	918
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0						6.0			6.0	6.0
Lane Util. Factor	0.94	1.00						0.91			0.91	1.00
Frt	1.00	1.00						0.99			1.00	0.85
Flt Protected	0.95	1.00						1.00			1.00	1.00
Satd. Flow (prot)	5090	1900						5126			5187	1615
Flt Permitted	0.95	1.00						1.00			1.00	1.00
Satd. Flow (perm)	5090	1900						5126			5187	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.25	0.25	0.25	0.94	0.94	0.94	0.97	0.97	0.97
Adj. Flow (vph)	1067	265	0	0	0	0	0	1990	170	0	2336	946
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	1067	265	0	0	0	0	0	2152	0	0	2336	946
Turn Type	Split											pm+ov
Protected Phases	4	4						6			2	4
Permitted Phases												2
Actuated Green, G (s)	45.0	45.0						63.0			63.0	108.0
Effective Green, g (s)	45.0	45.0						63.0			63.0	108.0
Actuated g/C Ratio	0.38	0.38						0.52			0.52	0.90
Clearance Time (s)	6.0	6.0						6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0						3.0			3.0	3.0
Lane Grp Cap (vph)	1909	713						2691			2723	1615
v/s Ratio Prot	0.21	0.14						0.42			c0.45	c0.22
v/s Ratio Perm												0.37
v/c Ratio	0.56	0.37						0.80			0.86	0.59
Uniform Delay, d1	29.7	27.2						23.3			24.6	1.3
Progression Factor	0.91	0.85						0.06			0.36	1.00
Incremental Delay, d2	0.5	0.6						1.2			2.0	0.8
Delay (s)	27.6	23.7						2.6			10.8	2.1
Level of Service	C	C						A			B	A
Approach Delay (s)		26.8			0.0			2.6			8.3	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	10.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	178	802	82	168	838	5	198	999	311	176	773	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.91		1.00	0.95		0.97	0.91		1.00	0.91	
Frt	1.00	0.99		1.00	1.00		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	5115		1805	3607		3502	5002		1805	5071	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.11	1.00	
Satd. Flow (perm)	1805	5115		1805	3607		3502	5002		217	5071	
Peak-hour factor, PHF	0.89	0.89	0.89	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	200	901	92	187	931	6	215	1086	338	198	869	152
RTOR Reduction (vph)	0	10	0	0	1	0	0	47	0	0	21	0
Lane Group Flow (vph)	200	983	0	187	936	0	215	1377	0	198	1000	0
Turn Type	Prot			Prot			Prot			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases										4		
Actuated Green, G (s)	10.0	41.1		14.0	45.1		9.0	39.0		40.0	35.0	
Effective Green, g (s)	10.0	41.1		14.0	45.1		9.0	39.0		40.0	35.0	
Actuated g/C Ratio	0.08	0.34		0.12	0.38		0.08	0.32		0.33	0.29	
Clearance Time (s)	4.0	6.4		4.0	6.4		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	150	1752		211	1356		263	1626		139	1479	
v/s Ratio Prot	c0.11	0.19		c0.10	c0.26		0.06	c0.28		c0.06	0.20	
v/s Ratio Perm										c0.42		
v/c Ratio	1.33	0.56		0.89	0.69		0.82	0.85		1.42	0.68	
Uniform Delay, d1	55.0	32.1		52.2	31.6		54.7	37.7		36.9	37.5	
Progression Factor	1.00	1.00		0.82	0.65		1.00	1.00		1.09	0.90	
Incremental Delay, d2	188.2	1.3		27.9	2.3		17.6	5.7		224.5	2.3	
Delay (s)	243.2	33.4		70.5	23.0		72.3	43.4		264.8	35.9	
Level of Service	F	C		E	C		E	D		F	D	
Approach Delay (s)		68.6			30.9			47.2			73.1	
Approach LOS		E			C			D			E	

Intersection Summary			
HCM Average Control Delay	54.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	28.9
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1132	242	157	789	121	195	1909	167	240	2156	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4	4.0	5.4	5.4	4.5	5.7		4.5	5.7	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3610	1615	1805	3610	1615	3502	5124		1805	5180	
Flt Permitted		1.00	1.00	0.11	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3610	1615	211	3610	1615	3502	5124		1805	5180	
Peak-hour factor, PHF	0.85	0.85	0.85	0.94	0.94	0.94	0.95	0.95	0.95	0.93	0.93	0.93
Adj. Flow (vph)	0	1332	285	167	839	129	205	2009	176	258	2318	20
RTOR Reduction (vph)	0	0	134	0	0	56	0	8	0	0	1	0
Lane Group Flow (vph)	0	1332	151	167	839	73	205	2177	0	258	2337	0
Turn Type			Perm	pm+pt		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases			4	8		8						
Actuated Green, G (s)		30.6	30.6	46.0	44.6	44.6	10.9	54.3		5.5	48.9	
Effective Green, g (s)		30.6	30.6	46.0	44.6	44.6	10.9	54.3		5.5	48.9	
Actuated g/C Ratio		0.26	0.26	0.38	0.37	0.37	0.09	0.45		0.05	0.41	
Clearance Time (s)		5.4	5.4	4.0	5.4	5.4	4.5	5.7		4.5	5.7	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		921	412	214	1342	600	318	2319		83	2111	
v/s Ratio Prot		c0.37		c0.07	0.23		0.06	c0.42		c0.14	c0.45	
v/s Ratio Perm			0.09	0.23		0.05						
v/c Ratio		1.45	0.37	0.78	0.63	0.12	0.64	0.94		3.11	1.11	
Uniform Delay, d1		44.7	36.7	49.7	30.9	24.8	52.7	31.3		57.2	35.5	
Progression Factor		0.59	0.29	1.00	1.00	1.00	1.00	1.00		0.63	0.40	
Incremental Delay, d2		205.4	1.9	16.7	2.2	0.4	4.4	9.0		968.0	53.2	
Delay (s)		231.7	12.3	66.4	33.1	25.2	57.1	40.2		1003.9	67.5	
Level of Service		F	B	E	C	C	E	D		F	E	
Approach Delay (s)		193.0			37.1			41.7			160.5	
Approach LOS		F			D			D			F	

Intersection Summary			
HCM Average Control Delay	112.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.30		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	110.2%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱		↰	↑↱		↰	↑↱		↰	↰↑	↱
Volume (vph)	197	577	43	254	454	56	22	430	136	651	997	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5		3.5	4.5		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.91	0.91	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.99	1.00
Satd. Flow (prot)	1805	3573		1805	3551		1805	3480		1643	3440	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.99	1.00
Satd. Flow (perm)	1805	3573		1805	3551		1805	3480		1643	3440	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.86	0.86	0.86	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	203	595	44	295	528	65	24	467	148	678	1039	228
RTOR Reduction (vph)	0	5	0	0	10	0	0	30	0	0	0	139
Lane Group Flow (vph)	203	634	0	295	583	0	24	585	0	556	1161	89
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases												7
Actuated Green, G (s)	7.5	24.2		19.4	36.1		12.0	12.0		26.4	26.4	26.4
Effective Green, g (s)	7.5	24.2		19.4	36.1		12.0	12.0		26.4	26.4	26.4
Actuated g/C Ratio	0.08	0.24		0.19	0.36		0.12	0.12		0.26	0.26	0.26
Clearance Time (s)	3.5	4.5		3.5	4.5		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	135	865		350	1282		217	418		434	908	426
v/s Ratio Prot	c0.11	c0.18		c0.16	0.16		0.01	c0.17		c0.34	0.34	
v/s Ratio Perm												0.06
v/c Ratio	1.50	0.73		0.84	0.46		0.11	1.40		1.28	1.28	0.21
Uniform Delay, d1	46.2	34.9		38.8	24.4		39.2	44.0		36.8	36.8	28.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	261.2	5.5		16.6	1.2		0.2	193.9		143.2	133.9	0.2
Delay (s)	307.5	40.4		55.4	25.6		39.5	237.9		180.0	170.7	28.9
Level of Service	F	D		E	C		D	F		F	F	C
Approach Delay (s)		104.8			35.5			230.4			156.7	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM Average Control Delay	132.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	94.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	201	1454	111	236	1134	48	69	948	278	92	1118	246
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.6		5.6	5.6	5.6
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	5187	1615	1805	5187	1615	1805	3487		1805	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.10	1.00		0.10	1.00	1.00
Satd. Flow (perm)	1805	5187	1615	1805	5187	1615	188	3487		198	3610	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.93	0.93	0.93	0.91	0.91	0.91	0.89	0.89	0.89
Adj. Flow (vph)	214	1547	118	254	1219	52	76	1042	305	103	1256	276
RTOR Reduction (vph)	0	0	56	0	0	23	0	30	0	0	0	147
Lane Group Flow (vph)	214	1547	62	254	1219	29	76	1317	0	103	1256	129
Turn Type	Prot		Perm	Prot		Perm	pm+pt			Perm		Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		4
Actuated Green, G (s)	10.0	23.0	23.0	8.0	21.0	21.0	48.0	45.4		38.4	38.4	38.4
Effective Green, g (s)	10.0	23.0	23.0	8.0	21.0	21.0	48.0	45.4		38.4	38.4	38.4
Actuated g/C Ratio	0.11	0.26	0.26	0.09	0.23	0.23	0.53	0.50		0.43	0.43	0.43
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.6		5.6	5.6	5.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	201	1326	413	160	1210	377	172	1759		84	1540	689
v/s Ratio Prot	0.12	c0.30		c0.14	0.24		0.02	c0.38			0.35	
v/s Ratio Perm			0.04			0.02	0.22			c0.52		0.08
v/c Ratio	1.06	1.17	0.15	1.59	1.01	0.08	0.44	0.75		1.23	0.82	0.19
Uniform Delay, d1	40.0	33.5	25.9	41.0	34.5	26.9	29.8	17.8		25.8	22.7	16.1
Progression Factor	1.46	0.75	0.85	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	48.9	77.1	0.2	291.9	27.7	0.4	1.8	3.0		171.0	4.9	0.6
Delay (s)	107.1	102.1	22.2	332.9	62.2	27.3	31.6	20.7		196.8	27.6	16.7
Level of Service	F	F	C	F	E	C	C	C		F	C	B
Approach Delay (s)		97.6			106.1			21.3			36.4	
Approach LOS		F			F			C			D	

Intersection Summary			
HCM Average Control Delay	67.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.6
Intersection Capacity Utilization	101.4%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	760	20	383	480	54	14	795	666	300	738	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		4.0	5.9		5.9	5.9	4.0	4.0	5.9	
Lane Util. Factor	1.00	0.91		0.97	0.95		1.00	0.95	1.00	0.97	0.95	
Frt	1.00	1.00		1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	5167		3502	3555		1805	3610	1615	3502	3581	
Flt Permitted	0.44	1.00		0.95	1.00		0.30	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	828	5167		3502	3555		566	3610	1615	3502	3581	
Peak-hour factor, PHF	0.87	0.87	0.87	0.93	0.93	0.93	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	76	874	23	412	516	58	15	874	732	341	839	47
RTOR Reduction (vph)	0	3	0	0	10	0	0	0	13	0	5	0
Lane Group Flow (vph)	76	894	0	412	564	0	15	874	719	341	881	0
Turn Type	Perm			Prot			Perm		pm+ov	Prot		
Protected Phases		2		1	6			4	1	3	8	
Permitted Phases	2						4		4			
Actuated Green, G (s)	25.0	25.0		7.1	36.2		26.1	26.1	33.2	5.0	35.1	
Effective Green, g (s)	25.0	25.0		7.1	36.2		26.1	26.1	33.2	5.0	35.1	
Actuated g/C Ratio	0.30	0.30		0.09	0.44		0.31	0.31	0.40	0.06	0.42	
Clearance Time (s)	6.0	6.0		4.0	5.9		5.9	5.9	4.0	4.0	5.9	
Vehicle Extension (s)	7.4	7.4		2.0	3.0		5.4	5.4	2.0	2.0	4.0	
Lane Grp Cap (vph)	249	1554		299	1549		178	1134	645	211	1513	
v/s Ratio Prot		c0.17		c0.12	0.16			0.24	c0.10	c0.10	0.25	
v/s Ratio Perm	0.09						0.03		0.35			
v/c Ratio	0.31	0.58		1.38	0.36		0.08	0.77	1.12	1.62	0.58	
Uniform Delay, d1	22.4	24.6		38.0	15.7		20.1	25.8	24.9	39.0	18.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.7	1.3		189.7	0.1		0.5	4.0	71.5	298.1	0.7	
Delay (s)	25.0	25.9		227.7	15.9		20.6	29.8	96.4	337.1	19.1	
Level of Service	C	C		F	B		C	C	F	F	B	
Approach Delay (s)		25.8			104.4			59.8			107.5	
Approach LOS		C			F			E			F	

Intersection Summary			
HCM Average Control Delay	74.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	83.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	602	14	68	228	111	16	1446	203	161	957	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt		1.00		1.00	0.95		1.00	0.98		1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3596		1805	3433		1805	3543		1805	3603	
Flt Permitted		0.95		0.23	1.00		0.22	1.00		0.08	1.00	
Satd. Flow (perm)		3423		440	3433		416	3543		145	3603	
Peak-hour factor, PHF	0.89	0.89	0.89	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	6	676	16	72	243	118	17	1572	221	171	1018	13
RTOR Reduction (vph)	0	2	0	0	15	0	0	11	0	0	1	0
Lane Group Flow (vph)	0	696	0	72	346	0	17	1782	0	171	1030	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		27.5		27.5	27.5		52.5	52.5		52.5	52.5	
Effective Green, g (s)		27.5		27.5	27.5		52.5	52.5		52.5	52.5	
Actuated g/C Ratio		0.31		0.31	0.31		0.58	0.58		0.58	0.58	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1046		134	1049		243	2067		85	2102	
v/s Ratio Prot					0.10			0.50			0.29	
v/s Ratio Perm		c0.20		0.16			0.04			c1.18		
v/c Ratio		0.67		0.54	0.33		0.07	0.86		2.01	0.49	
Uniform Delay, d1		27.2		26.0	24.1		8.1	15.7		18.8	10.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.1		7.4	0.4		0.6	5.0		494.1	0.8	
Delay (s)		29.4		33.3	24.5		8.7	20.7		512.8	11.8	
Level of Service		C		C	C		A	C		F	B	
Approach Delay (s)		29.4			26.0			20.6			83.0	
Approach LOS		C			C			C			F	

Intersection Summary			
HCM Average Control Delay	40.8	HCM Level of Service	D
HCM Volume to Capacity ratio	1.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	105.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Future No Project LOS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	729	112	48	1364	307	241	1673	24	149	1309	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6		4.6	2.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3610	1615	1805	5176		1805	5166	
Flt Permitted	0.11	1.00	1.00	0.17	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	215	3610	1615	329	3610	1615	1805	5176		1805	5166	
Peak-hour factor, PHF	0.79	0.79	0.79	0.96	0.96	0.96	0.94	0.94	0.94	0.90	0.90	0.90
Adj. Flow (vph)	75	923	142	50	1421	320	256	1780	26	166	1454	41
RTOR Reduction (vph)	0	0	86	0	0	165	0	2	0	0	3	0
Lane Group Flow (vph)	75	923	56	50	1421	155	256	1804	0	166	1492	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)	35.4	35.4	35.4	35.4	35.4	35.4	13.4	31.8		9.0	30.0	
Effective Green, g (s)	35.4	35.4	35.4	35.4	35.4	35.4	13.4	31.8		9.0	30.0	
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.39	0.39	0.15	0.35		0.10	0.33	
Clearance Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6		4.6	2.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0	6.0		2.0	6.0	
Lane Grp Cap (vph)	85	1420	635	129	1420	635	269	1829		181	1722	
v/s Ratio Prot		0.26			c0.39		0.14	c0.35		0.09	c0.29	
v/s Ratio Perm	0.35		0.03	0.15		0.10						
v/c Ratio	0.88	0.65	0.09	0.39	1.00	0.24	0.95	0.99		0.92	0.87	
Uniform Delay, d1	25.4	22.3	17.2	19.5	27.3	18.3	38.0	28.9		40.1	28.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	60.1	1.1	0.1	1.9	24.1	0.2	41.3	18.1		42.9	6.1	
Delay (s)	85.5	23.3	17.2	21.5	51.4	18.5	79.3	46.9		83.0	34.3	
Level of Service	F	C	B	C	D	B	E	D		F	C	
Approach Delay (s)		26.7			44.7			51.0			39.1	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	42.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.2
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	0	12	1428	26	6	34	1986	1344	0	1396	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6		5.0	5.0		4.8	4.8	4.0		4.8	
Lane Util. Factor		1.00		0.97	1.00		1.00	0.91	0.91		0.91	
Frt		0.96		1.00	0.97		1.00	0.98	0.85		1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1757		3502	1850		1805	3383	1470		5172	
Flt Permitted		0.84		0.67	1.00		0.14	1.00	1.00		1.00	
Satd. Flow (perm)		1518		2477	1850		275	3383	1470		5172	
Peak-hour factor, PHF	0.59	0.59	0.59	0.93	0.93	0.93	0.96	0.96	0.96	0.91	0.91	0.91
Adj. Flow (vph)	41	0	20	1535	28	6	35	2069	1400	0	1534	30
RTOR Reduction (vph)	0	4	0	0	4	0	0	17	0	0	3	0
Lane Group Flow (vph)	0	57	0	1535	30	0	35	2402	1050	0	1561	0
Turn Type	Perm			Perm			Perm		Free			
Protected Phases		7			8			2			2	
Permitted Phases	7			8			2		Free			
Actuated Green, G (s)		4.0		29.0	29.0		27.6	27.6	75.0		27.6	
Effective Green, g (s)		4.0		29.0	29.0		27.6	27.6	75.0		27.6	
Actuated g/C Ratio		0.05		0.39	0.39		0.37	0.37	1.00		0.37	
Clearance Time (s)		4.6		5.0	5.0		4.8	4.8			4.8	
Vehicle Extension (s)		2.0		4.0	4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)		81		958	715		101	1245	1470		1903	
v/s Ratio Prot					0.02			c0.71			0.30	
v/s Ratio Perm		0.04		c0.62			0.13		c0.71			
v/c Ratio		0.71		1.60	0.04		0.35	1.93	0.71		0.82	
Uniform Delay, d1		34.9		23.0	14.3		17.2	23.7	0.0		21.5	
Progression Factor		1.00		1.00	1.00		0.87	0.95	1.00		1.00	
Incremental Delay, d2		20.4		275.9	0.0		4.5	419.6	1.5		4.1	
Delay (s)		55.3		298.9	14.4		19.5	442.0	1.5		25.6	
Level of Service		E		F	B		B	F	A		C	
Approach Delay (s)		55.3			292.8			305.8			25.6	
Approach LOS		E			F			F			C	

Intersection Summary			
HCM Average Control Delay	235.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.62		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	9.8
Intersection Capacity Utilization	124.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	394	450	128	347	1151	116	85	2491	99	34	2209	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0	6.0	6.0	6.0	6.0	6.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3490		3502	3610	1615	1805	5187	1615	1805	5187	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.05	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	3502	3490		3502	3610	1615	92	5187	1615	92	5187	1615
Peak-hour factor, PHF	0.87	0.87	0.87	0.92	0.92	0.92	0.97	0.97	0.97	0.95	0.95	0.95
Adj. Flow (vph)	453	517	147	377	1251	126	88	2568	102	36	2325	564
RTOR Reduction (vph)	0	5	0	0	0	1	0	0	15	0	0	0
Lane Group Flow (vph)	453	659	0	377	1251	125	88	2568	87	36	2325	564
Turn Type	Prot			Prot		Perm	Perm		Perm	Perm		pm+ov
Protected Phases	7	4		3	8			2			6	7
Permitted Phases						8	2		2	6		6
Actuated Green, G (s)	13.0	34.0		18.0	39.0	39.0	83.0	83.0	83.0	83.0	83.0	96.0
Effective Green, g (s)	13.0	34.0		18.0	39.0	39.0	83.0	83.0	83.0	83.0	83.0	96.0
Actuated g/C Ratio	0.09	0.23		0.12	0.26	0.26	0.55	0.55	0.55	0.55	0.55	0.64
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	6.0	6.0	6.0	6.0	6.0	4.0
Vehicle Extension (s)	2.0	4.0		1.0	2.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0
Lane Grp Cap (vph)	304	791		420	939	420	51	2870	894	51	2870	1034
v/s Ratio Prot	c0.13	0.19		0.11	c0.35			0.50			0.45	0.05
v/s Ratio Perm						0.08	c0.96		0.05	0.39		0.30
v/c Ratio	1.49	0.83		0.90	1.33	0.30	1.73	0.89	0.10	0.71	0.81	0.55
Uniform Delay, d1	68.5	55.3		65.1	55.5	44.5	33.5	29.6	15.8	24.6	27.1	14.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.44	0.43	0.42	1.03	1.00	1.11
Incremental Delay, d2	237.3	7.9		20.8	156.8	0.1	377.1	3.5	0.2	7.2	0.2	0.0
Delay (s)	305.8	63.2		85.9	212.3	44.7	391.8	16.1	6.8	32.4	27.4	16.6
Level of Service	F	E		F	F	D	F	B	A	C	C	B
Approach Delay (s)		161.6			173.1			27.8			25.4	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM Average Control Delay	74.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.59		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	125.4%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	66	1	36	41	17	54	32	2743	14	14	2427	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3	3.0	5.3	5.3		3.0	4.9		4.9	4.9	4.9
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	1.00
Frt		1.00	0.85	1.00	0.89		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1811	1615	1805	1683		1805	5183		1805	5187	1615
Flt Permitted		0.58	1.00	0.66	1.00		0.03	1.00		0.03	1.00	1.00
Satd. Flow (perm)		1097	1615	1263	1683		64	5183		65	5187	1615
Peak-hour factor, PHF	0.85	0.85	0.85	0.77	0.77	0.77	0.89	0.89	0.89	0.92	0.92	0.92
Adj. Flow (vph)	78	1	42	53	22	70	36	3082	16	15	2638	123
RTOR Reduction (vph)	0	0	5	0	4	0	0	0	0	0	0	16
Lane Group Flow (vph)	0	79	37	53	88	0	36	3098	0	15	2638	107
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		Perm
Protected Phases		8	1		4		1	6			2	
Permitted Phases	8		8	4			6			2		2
Actuated Green, G (s)		15.3	20.3	15.3	15.3		124.5	124.5		116.5	116.5	116.5
Effective Green, g (s)		15.3	20.3	15.3	15.3		124.5	124.5		116.5	116.5	116.5
Actuated g/C Ratio		0.10	0.14	0.10	0.10		0.83	0.83		0.78	0.78	0.78
Clearance Time (s)		5.3	3.0	5.3	5.3		3.0	4.9		4.9	4.9	4.9
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		112	219	129	172		111	4302		50	4029	1254
v/s Ratio Prot			0.01		0.05		0.01	c0.60			0.51	
v/s Ratio Perm		c0.07	0.02	0.04			0.26			0.23		0.07
v/c Ratio		0.71	0.17	0.41	0.51		0.32	0.72		0.30	0.65	0.09
Uniform Delay, d1		65.2	57.4	63.1	63.8		9.7	5.4		4.9	7.6	4.0
Progression Factor		1.00	1.00	1.00	1.00		2.85	0.50		0.49	0.53	0.61
Incremental Delay, d2		18.3	0.4	2.1	2.6		0.5	0.3		8.3	0.5	0.1
Delay (s)		83.4	57.7	65.2	66.4		28.1	3.0		10.7	4.5	2.5
Level of Service		F	E	E	E		C	A		B	A	A
Approach Delay (s)		74.5			66.0			3.3			4.4	
Approach LOS		E			E			A			A	

Intersection Summary			
HCM Average Control Delay	6.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.2
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	469	257	279	1282	347	497	2203	60	147	2079	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5	5.0	4.0	5.5	5.0	5.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3610	1615	3502	5166		3502	5101	
Flt Permitted	0.12	1.00	1.00	0.16	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	234	3610	1615	296	3610	1615	3502	5166		3502	5101	
Peak-hour factor, PHF	0.79	0.79	0.79	0.92	0.92	0.92	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	166	594	325	303	1393	377	558	2475	67	162	2285	285
RTOR Reduction (vph)	0	0	15	0	0	2	0	2	0	0	11	0
Lane Group Flow (vph)	166	594	310	303	1393	375	558	2540	0	162	2559	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Prot			Prot		
Protected Phases	3	8	5	7	4	1	5	2		1	6	
Permitted Phases	8		8	4		4						
Actuated Green, G (s)	37.5	32.5	49.5	55.5	46.5	53.5	17.0	71.0		7.0	61.0	
Effective Green, g (s)	37.5	32.5	49.5	55.5	46.5	53.5	17.0	71.0		7.0	61.0	
Actuated g/C Ratio	0.25	0.22	0.33	0.37	0.31	0.36	0.11	0.47		0.05	0.41	
Clearance Time (s)	4.0	5.5	5.0	4.0	5.5	5.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	2.0	1.0	2.0	2.0	1.0	1.0	5.0		1.0	5.0	
Lane Grp Cap (vph)	111	782	533	301	1119	576	397	2445		163	2074	
v/s Ratio Prot	c0.05	0.16	0.07	0.13	c0.39	0.03	c0.16	0.49		0.05	c0.50	
v/s Ratio Perm	c0.32		0.13	0.25		0.20						
v/c Ratio	1.50	0.76	0.58	1.01	1.24	0.65	1.41	1.04		0.99	1.23	
Uniform Delay, d1	55.1	55.1	41.7	39.0	51.8	40.4	66.5	39.5		71.5	44.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.97	0.97	
Incremental Delay, d2	264.3	3.8	1.0	53.6	117.8	2.0	197.0	29.2		59.7	108.7	
Delay (s)	319.4	58.9	42.7	92.6	169.6	42.4	263.5	68.7		129.4	151.9	
Level of Service	F	E	D	F	F	D	F	E		F	F	
Approach Delay (s)		93.9			135.2			103.8			150.5	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	124.1	HCM Level of Service	F
HCM Volume to Capacity ratio	1.35		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.5
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	1338	217	2530	796	152	2532
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	16	12
Total Lost time (s)	5.5	4.0	6.0	4.0	3.0	4.0
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3152	1454	4668	1454	1841	3249
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3152	1454	4668	1454	1841	3249
Peak-hour factor, PHF	0.88	0.88	0.96	0.96	0.91	0.91
Adj. Flow (vph)	1520	247	2635	829	167	2782
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1520	247	2635	829	167	2782
Turn Type		Free		Free	Prot	
Protected Phases	3		1		2	
Permitted Phases		Free		Free		Free
Actuated Green, G (s)	88.5	225.0	103.0	225.0	19.0	225.0
Effective Green, g (s)	88.5	225.0	103.0	225.0	19.0	225.0
Actuated g/C Ratio	0.39	1.00	0.46	1.00	0.08	1.00
Clearance Time (s)	5.5		6.0		3.0	
Vehicle Extension (s)	3.0		6.5		1.5	
Lane Grp Cap (vph)	1240	1454	2137	1454	155	3249
v/s Ratio Prot	c0.48		c0.56		c0.09	
v/s Ratio Perm		0.17		0.57		0.86
v/c Ratio	1.23	0.17	1.23	0.57	1.08	0.86
Uniform Delay, d1	68.2	0.0	61.0	0.0	103.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	109.0	0.3	109.1	1.6	94.5	3.1
Delay (s)	177.2	0.3	170.1	1.6	197.5	3.1
Level of Service	F	A	F	A	F	A
Approach Delay (s)	152.5		129.8			14.2
Approach LOS	F		F			B

Intersection Summary			
HCM Average Control Delay	93.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	225.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	128.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	167	129	488	276	69	0	3474	59	0	3077	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	5.6	5.6	5.6		6.5			6.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00		0.91			0.86	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			1.00	
Flt Protected	0.95	1.00	1.00	0.95	0.99	1.00		1.00			1.00	
Satd. Flow (prot)	1715	1801	1615	1715	1779	1615		5174			6512	
Flt Permitted	0.95	1.00	1.00	0.95	0.99	1.00		1.00			1.00	
Satd. Flow (perm)	1715	1801	1615	1715	1779	1615		5174			6512	
Peak-hour factor, PHF	0.96	0.96	0.96	0.87	0.87	0.87	0.97	0.97	0.97	0.89	0.89	0.89
Adj. Flow (vph)	86	174	134	561	317	79	0	3581	61	0	3457	88
RTOR Reduction (vph)	0	0	2	0	0	59	0	1	0	0	2	0
Lane Group Flow (vph)	77	183	132	432	446	20	0	3641	0	0	3543	0
Turn Type	Split		Perm	Split		Perm						
Protected Phases	4	4		3	3			2			2	
Permitted Phases			4			3						
Actuated Green, G (s)	17.6	17.6	17.6	19.4	19.4	19.4		65.3			65.3	
Effective Green, g (s)	17.6	17.6	17.6	19.4	19.4	19.4		65.3			65.3	
Actuated g/C Ratio	0.15	0.15	0.15	0.16	0.16	0.16		0.54			0.54	
Clearance Time (s)	5.6	5.6	5.6	5.6	5.6	5.6		6.5			6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	252	264	237	277	288	261		2816			3544	
v/s Ratio Prot	0.04	c0.10		c0.25	0.25			c0.70			0.54	
v/s Ratio Perm			0.08			0.01						
v/c Ratio	0.31	0.69	0.56	1.56	1.55	0.08		1.29			1.00	
Uniform Delay, d1	45.7	48.6	47.6	50.3	50.3	42.7		27.4			27.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.85			1.00	
Incremental Delay, d2	0.7	7.6	2.8	268.8	263.4	0.1		133.1			15.0	
Delay (s)	46.4	56.3	50.4	319.1	313.7	42.8		156.2			42.4	
Level of Service	D	E	D	F	F	D		F			D	
Approach Delay (s)		52.4			293.8			156.2			42.4	
Approach LOS		D			F			F			D	

Intersection Summary			
HCM Average Control Delay	119.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.7
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	931	147	0	0	0	0	0	2601	80	0	2349	1346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0						6.0			6.0	6.0
Lane Util. Factor	0.94	1.00						0.91			0.91	1.00
Frt	1.00	1.00						1.00			1.00	0.85
Flt Protected	0.95	1.00						1.00			1.00	1.00
Satd. Flow (prot)	5090	1900						5164			5187	1615
Flt Permitted	0.95	1.00						1.00			1.00	1.00
Satd. Flow (perm)	5090	1900						5164			5187	1615
Peak-hour factor, PHF	0.90	0.90	0.90	0.25	0.25	0.25	0.99	0.99	0.99	0.91	0.91	0.91
Adj. Flow (vph)	1034	163	0	0	0	0	0	2627	81	0	2581	1479
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	1034	163	0	0	0	0	0	2705	0	0	2581	1479
Turn Type	Split											pm+ov
Protected Phases	4	4						6			2	4
Permitted Phases												2
Actuated Green, G (s)	45.0	45.0						63.0			63.0	108.0
Effective Green, g (s)	45.0	45.0						63.0			63.0	108.0
Actuated g/C Ratio	0.38	0.38						0.52			0.52	0.90
Clearance Time (s)	6.0	6.0						6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0						3.0			3.0	3.0
Lane Grp Cap (vph)	1909	713						2711			2723	1615
v/s Ratio Prot	0.20	0.09						0.52			0.50	c0.34
v/s Ratio Perm												0.57
v/c Ratio	0.54	0.23						1.00			0.95	0.92
Uniform Delay, d1	29.4	25.6						28.4			26.9	3.4
Progression Factor	0.99	0.87						0.46			0.59	1.00
Incremental Delay, d2	0.6	0.4						4.7			1.0	1.1
Delay (s)	29.8	22.7						17.7			17.0	4.5
Level of Service	C	C						B			B	A
Approach Delay (s)		28.8			0.0			17.7			12.5	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM Average Control Delay	16.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	211	579	103	219	1505	4	344	988	129	26	1212	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.91		1.00	0.95		0.97	0.91		1.00	0.91	
Frt	1.00	0.98		1.00	1.00		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	5070		1805	3609		3502	5097		1805	5046	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.13	1.00	
Satd. Flow (perm)	1805	5070		1805	3609		3502	5097		254	5046	
Peak-hour factor, PHF	0.88	0.88	0.88	0.92	0.92	0.92	0.90	0.90	0.90	0.86	0.86	0.86
Adj. Flow (vph)	240	658	117	238	1636	4	382	1098	143	30	1409	312
RTOR Reduction (vph)	0	21	0	0	0	0	0	13	0	0	29	0
Lane Group Flow (vph)	240	754	0	238	1640	0	382	1228	0	30	1692	0
Turn Type	Prot			Prot			Prot			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases										4		
Actuated Green, G (s)	10.0	39.5		14.0	43.5		9.0	42.6		39.6	36.6	
Effective Green, g (s)	10.0	39.5		14.0	43.5		9.0	42.6		39.6	36.6	
Actuated g/C Ratio	0.08	0.33		0.12	0.36		0.08	0.36		0.33	0.31	
Clearance Time (s)	4.0	6.4		4.0	6.4		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	150	1669		211	1308		263	1809		123	1539	
v/s Ratio Prot	c0.13	0.15		0.13	c0.45		c0.11	0.24		0.01	c0.34	
v/s Ratio Perm										0.07		
v/c Ratio	1.60	0.45		1.13	1.25		1.45	0.68		0.24	1.10	
Uniform Delay, d1	55.0	31.7		53.0	38.2		55.5	32.9		28.2	41.7	
Progression Factor	1.00	1.00		0.58	0.47		1.00	1.00		1.02	0.99	
Incremental Delay, d2	298.9	0.9		63.7	114.8		223.6	2.1		0.6	51.5	
Delay (s)	353.9	32.6		94.2	132.9		279.1	35.0		29.5	92.8	
Level of Service	F	C		F	F		F	C		C	F	
Approach Delay (s)		108.6			128.0			92.4			91.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	105.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.9
Intersection Capacity Utilization	110.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	541	173	270	1454	304	366	2508	35	91	2225	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4	4.0	5.4	5.4	4.5	5.7		4.5	5.7	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3610	1615	1805	3610	1615	3502	5176		1805	5181	
Flt Permitted		1.00	1.00	0.23	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3610	1615	444	3610	1615	3502	5176		1805	5181	
Peak-hour factor, PHF	0.84	0.84	0.84	0.91	0.91	0.91	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	644	206	297	1598	334	389	2668	37	97	2367	17
RTOR Reduction (vph)	0	0	153	0	0	55	0	1	0	0	1	0
Lane Group Flow (vph)	0	644	53	297	1598	279	389	2704	0	97	2383	0
Turn Type			Perm	pm+pt		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases			4	8		8						
Actuated Green, G (s)		30.6	30.6	46.0	44.6	44.6	11.5	54.3		5.5	48.3	
Effective Green, g (s)		30.6	30.6	46.0	44.6	44.6	11.5	54.3		5.5	48.3	
Actuated g/C Ratio		0.26	0.26	0.38	0.37	0.37	0.10	0.45		0.05	0.40	
Clearance Time (s)		5.4	5.4	4.0	5.4	5.4	4.5	5.7		4.5	5.7	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		921	412	284	1342	600	336	2342		83	2085	
v/s Ratio Prot		0.18		0.09	c0.44		0.11	c0.52		0.05	c0.46	
v/s Ratio Perm			0.03	0.31		0.17						
v/c Ratio		0.70	0.13	1.05	1.19	0.47	1.16	1.15		1.17	1.14	
Uniform Delay, d1		40.5	34.4	43.3	37.7	28.6	54.2	32.9		57.2	35.9	
Progression Factor		0.46	0.02	1.00	1.00	1.00	1.00	1.00		0.70	0.52	
Incremental Delay, d2		4.0	0.6	65.9	93.5	2.6	99.1	74.9		109.9	66.6	
Delay (s)		22.6	1.4	109.2	131.2	31.2	153.4	107.7		150.0	85.1	
Level of Service		C	A	F	F	C	F	F		F	F	
Approach Delay (s)		17.4			113.3			113.5			87.7	
Approach LOS		B			F			F			F	

Intersection Summary			
HCM Average Control Delay	96.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.20		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.8
Intersection Capacity Utilization	107.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	404	32	226	1054	58	34	376	69	501	651	268
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5		3.5	4.5		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.91	0.91	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.99	1.00
Satd. Flow (prot)	1805	3570		1805	3582		1805	3526		1643	3430	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.99	1.00
Satd. Flow (perm)	1805	3570		1805	3582		1805	3526		1643	3430	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92	0.90	0.90	0.90
Adj. Flow (vph)	108	439	35	254	1184	65	37	409	75	557	723	298
RTOR Reduction (vph)	0	6	0	0	4	0	0	15	0	0	0	223
Lane Group Flow (vph)	108	468	0	254	1245	0	37	469	0	418	862	75
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases												7
Actuated Green, G (s)	7.5	26.8		18.0	37.3		12.0	12.0		25.2	25.2	25.2
Effective Green, g (s)	7.5	26.8		18.0	37.3		12.0	12.0		25.2	25.2	25.2
Actuated g/C Ratio	0.08	0.27		0.18	0.37		0.12	0.12		0.25	0.25	0.25
Clearance Time (s)	3.5	4.5		3.5	4.5		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	135	957		325	1336		217	423		414	864	407
v/s Ratio Prot	0.06	0.13		c0.14	c0.35		0.02	c0.13		c0.25	0.25	
v/s Ratio Perm												0.05
v/c Ratio	0.80	0.49		0.78	0.93		0.17	1.11		1.01	1.00	0.18
Uniform Delay, d1	45.5	30.8		39.1	30.1		39.5	44.0		37.4	37.4	29.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	27.7	1.8		11.6	13.0		0.4	76.7		46.7	29.8	0.2
Delay (s)	73.2	32.6		50.7	43.1		39.9	120.7		84.1	67.2	29.6
Level of Service	E	C		D	D		D	F		F	E	C
Approach Delay (s)		40.2			44.4			114.9			64.6	
Approach LOS		D			D			F			E	

Intersection Summary			
HCM Average Control Delay	60.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	214	1233	71	239	2159	34	243	1251	211	49	1056	336
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.6		5.6	5.6	5.6
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	5187	1615	1805	5187	1615	1805	3532		1805	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.09	1.00		0.11	1.00	1.00
Satd. Flow (perm)	1805	5187	1615	1805	5187	1615	177	3532		203	3610	1615
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.86	0.86	0.86	0.92	0.92	0.92
Adj. Flow (vph)	233	1340	77	257	2322	37	283	1455	245	53	1148	365
RTOR Reduction (vph)	0	0	42	0	0	6	0	11	0	0	0	158
Lane Group Flow (vph)	233	1340	35	257	2322	31	283	1689	0	53	1148	207
Turn Type	Prot		Perm	Prot		Perm	pm+pt			Perm		Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		4
Actuated Green, G (s)	12.0	36.0	36.0	20.0	44.0	44.0	53.0	50.4		37.4	37.4	37.4
Effective Green, g (s)	12.0	36.0	36.0	20.0	44.0	44.0	53.0	50.4		37.4	37.4	37.4
Actuated g/C Ratio	0.10	0.30	0.30	0.17	0.37	0.37	0.44	0.42		0.31	0.31	0.31
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.6		5.6	5.6	5.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	181	1556	485	301	1902	592	214	1483		63	1125	503
v/s Ratio Prot	c0.13	0.26		0.14	c0.45		c0.11	0.48			0.32	
v/s Ratio Perm			0.02			0.02	c0.47			0.26		0.13
v/c Ratio	1.29	0.86	0.07	0.85	1.22	0.05	1.32	1.14		0.84	1.02	0.41
Uniform Delay, d1	54.0	39.6	30.1	48.6	38.0	24.5	50.4	34.8		38.5	41.3	32.6
Progression Factor	0.67	1.06	1.94	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	133.2	0.6	0.0	20.3	104.4	0.2	173.9	71.2		74.2	32.1	2.5
Delay (s)	169.5	42.8	58.2	68.9	142.4	24.7	224.3	106.0		112.8	73.4	35.1
Level of Service	F	D	E	E	F	C	F	F		F	E	D
Approach Delay (s)		61.4			133.5			122.9			65.8	
Approach LOS		E			F			F			E	

Intersection Summary			
HCM Average Control Delay	102.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	120.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	553	17	489	978	92	46	1060	521	194	746	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		4.0	5.9		5.9	5.9	4.0	4.0	5.9	
Lane Util. Factor	1.00	0.91		0.97	0.95		1.00	0.95	1.00	0.97	0.95	
Frt	1.00	1.00		1.00	0.99		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	5163		3502	3563		1805	3610	1615	3502	3567	
Flt Permitted	0.16	1.00		0.95	1.00		0.30	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	303	5163		3502	3563		576	3610	1615	3502	3567	
Peak-hour factor, PHF	0.82	0.82	0.82	0.92	0.92	0.92	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	84	674	21	532	1063	100	51	1165	573	209	802	69
RTOR Reduction (vph)	0	3	0	0	8	0	0	0	31	0	7	0
Lane Group Flow (vph)	84	692	0	532	1155	0	51	1165	542	209	864	0
Turn Type	Perm			Prot			Perm		pm+ov	Prot		
Protected Phases		2		1	6			4	1	3	8	
Permitted Phases	2						4		4			
Actuated Green, G (s)	26.8	26.8		7.0	37.9		30.0	30.0	37.0	5.0	39.0	
Effective Green, g (s)	26.8	26.8		7.0	37.9		30.0	30.0	37.0	5.0	39.0	
Actuated g/C Ratio	0.30	0.30		0.08	0.43		0.34	0.34	0.42	0.06	0.44	
Clearance Time (s)	6.0	6.0		4.0	5.9		5.9	5.9	4.0	4.0	5.9	
Vehicle Extension (s)	7.4	7.4		2.0	3.0		5.4	5.4	2.0	2.0	4.0	
Lane Grp Cap (vph)	92	1560		276	1522		195	1221	674	197	1568	
v/s Ratio Prot		0.13		c0.15	0.32			c0.32	0.06	c0.06	0.24	
v/s Ratio Perm	c0.28						0.09		0.27			
v/c Ratio	0.91	0.44		1.93	0.76		0.26	0.95	0.80	1.06	0.55	
Uniform Delay, d1	29.8	24.9		40.9	21.5		21.3	28.7	22.7	41.9	18.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	72.0	0.8		430.5	2.2		1.7	16.4	6.5	81.2	0.5	
Delay (s)	101.9	25.7		471.4	23.8		23.0	45.1	29.2	123.0	18.9	
Level of Service	F	C		F	C		C	D	C	F	B	
Approach Delay (s)		33.9			164.2			39.4			39.0	
Approach LOS		C			F			D			D	

Intersection Summary			
HCM Average Control Delay	78.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	88.7	Sum of lost time (s)	19.9
Intersection Capacity Utilization	87.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	3	297	31	356	779	335	26	1337	59	114	1122	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt		0.99		1.00	0.95		1.00	0.99		1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3558		1805	3447		1805	3587		1805	3607	
Flt Permitted		0.81		0.48	1.00		0.16	1.00		0.08	1.00	
Satd. Flow (perm)		2883		917	3447		303	3587		155	3607	
Peak-hour factor, PHF	0.86	0.86	0.86	0.85	0.85	0.85	0.91	0.91	0.91	0.96	0.96	0.96
Adj. Flow (vph)	3	345	36	419	916	394	29	1469	65	119	1169	7
RTOR Reduction (vph)	0	9	0	0	18	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	375	0	419	1292	0	29	1530	0	119	1176	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		31.0		31.0	31.0		49.0	49.0		49.0	49.0	
Effective Green, g (s)		31.0		31.0	31.0		49.0	49.0		49.0	49.0	
Actuated g/C Ratio		0.34		0.34	0.34		0.54	0.54		0.54	0.54	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		993		316	1187		165	1953		84	1964	
v/s Ratio Prot					0.37			0.43			0.33	
v/s Ratio Perm		0.13		c0.46			0.10			c0.77		
v/c Ratio		0.38		1.33	1.09		0.18	0.78		1.42	0.60	
Uniform Delay, d1		22.2		29.5	29.5		10.3	16.3		20.5	13.9	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.5		167.0	53.5		2.3	3.2		243.6	1.4	
Delay (s)		22.7		196.5	83.0		12.6	19.5		264.1	15.2	
Level of Service		C		F	F		B	B		F	B	
Approach Delay (s)		22.7			110.5			19.4			38.1	
Approach LOS		C			F			B			D	

Intersection Summary			
HCM Average Control Delay	56.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	112.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	452	1777	258	236	1348	8	79	1291	50	50	1667	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3502	5187	1615	1805	5187	1615	1805	5158		1805	5055	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.11	1.00		0.11	1.00	
Satd. Flow (perm)	3502	5187	1615	1805	5187	1615	217	5158		217	5055	
Peak-hour factor, PHF	0.96	0.96	0.96	0.87	0.87	0.87	0.87	0.87	0.87	0.92	0.92	0.92
Adj. Flow (vph)	471	1851	269	271	1549	9	91	1484	57	54	1812	371
RTOR Reduction (vph)	0	0	13	0	0	5	0	4	0	0	35	0
Lane Group Flow (vph)	471	1851	256	271	1549	4	91	1537	0	54	2148	0
Turn Type	Prot		Perm	Prot		Perm	Perm			Perm		
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2			6		
Actuated Green, G (s)	13.0	29.0	29.0	12.0	28.0	28.0	35.0	35.0		35.0	35.0	
Effective Green, g (s)	13.0	29.0	29.0	12.0	28.0	28.0	35.0	35.0		35.0	35.0	
Actuated g/C Ratio	0.14	0.32	0.32	0.13	0.31	0.31	0.39	0.39		0.39	0.39	
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	506	1671	520	241	1614	502	84	2006		84	1966	
v/s Ratio Prot	0.13	c0.36		c0.15	0.30			0.30			c0.42	
v/s Ratio Perm			0.16			0.00	0.42			0.25		
v/c Ratio	0.93	1.11	0.49	1.12	0.96	0.01	1.08	0.77		0.64	1.09	
Uniform Delay, d1	38.1	30.5	24.6	39.0	30.4	21.4	27.5	23.9		22.4	27.5	
Progression Factor	1.00	1.00	1.00	0.99	1.08	1.48	0.64	0.63		1.00	1.00	
Incremental Delay, d2	24.0	57.8	3.3	80.4	9.2	0.0	106.2	1.3		15.6	50.6	
Delay (s)	62.1	88.3	27.9	119.0	42.1	31.8	123.9	16.3		38.0	78.1	
Level of Service	E	F	C	F	D	C	F	B		D	E	
Approach Delay (s)		77.2			53.5			22.3			77.1	
Approach LOS		E			D			C			E	

Intersection Summary			
HCM Average Control Delay	61.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	115.6%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	1063	139	48	602	126	131	1214	62	283	1783	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6		4.6	2.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3610	1615	1805	5149		1805	5174	
Flt Permitted	0.31	1.00	1.00	0.11	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	597	3610	1615	218	3610	1615	1805	5149		1805	5174	
Peak-hour factor, PHF	0.93	0.93	0.93	0.94	0.94	0.94	0.87	0.87	0.87	0.96	0.96	0.96
Adj. Flow (vph)	69	1143	149	51	640	134	151	1395	71	295	1857	32
RTOR Reduction (vph)	0	0	91	0	0	82	0	6	0	0	2	0
Lane Group Flow (vph)	69	1143	58	51	640	52	151	1460	0	295	1887	0
Turn Type	Perm		Perm	Perm		Perm	Prot			Prot		
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)	34.9	34.9	34.9	34.9	34.9	34.9	11.1	32.2		9.1	32.8	
Effective Green, g (s)	34.9	34.9	34.9	34.9	34.9	34.9	11.1	32.2		9.1	32.8	
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.39	0.39	0.12	0.36		0.10	0.36	
Clearance Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6		4.6	2.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.0	6.0		2.0	6.0	
Lane Grp Cap (vph)	232	1400	626	85	1400	626	223	1842		183	1886	
v/s Ratio Prot		c0.32			0.18		0.08	c0.28		c0.16	c0.36	
v/s Ratio Perm	0.12		0.04	0.23		0.03						
v/c Ratio	0.30	0.82	0.09	0.60	0.46	0.08	0.68	0.79		1.61	1.00	
Uniform Delay, d1	19.1	24.7	17.5	22.0	20.5	17.4	37.7	25.9		40.5	28.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.11	1.24	
Incremental Delay, d2	0.7	3.8	0.1	10.9	0.2	0.1	6.3	3.6		277.7	6.4	
Delay (s)	19.8	28.5	17.6	32.9	20.7	17.5	44.0	29.5		322.7	41.8	
Level of Service	B	C	B	C	C	B	D	C		F	D	
Approach Delay (s)		26.8			21.0			30.9			79.7	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	46.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.8
Intersection Capacity Utilization	90.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	0	22	1021	17	7	15	1312	1712	0	1944	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.6		5.0	5.0		4.8	4.8	4.0		4.8	
Lane Util. Factor		1.00		0.97	1.00		1.00	0.91	0.91		0.91	
Frt		0.96		1.00	0.95		1.00	0.94	0.85		1.00	
Flt Protected		0.97		0.95	1.00		0.95	1.00	1.00		1.00	
Satd. Flow (prot)		1764		3502	1812		1805	3266	1470		5182	
Flt Permitted		0.77		0.72	1.00		0.15	1.00	1.00		1.00	
Satd. Flow (perm)		1409		2647	1812		286	3266	1470		5182	
Peak-hour factor, PHF	0.71	0.71	0.71	0.93	0.93	0.93	0.90	0.90	0.90	0.93	0.93	0.93
Adj. Flow (vph)	79	0	31	1098	18	8	17	1458	1902	0	2090	13
RTOR Reduction (vph)	0	11	0	0	5	0	0	99	0	0	1	0
Lane Group Flow (vph)	0	99	0	1098	21	0	17	2215	1046	0	2102	0
Turn Type	Perm			Perm			Perm		Free			
Protected Phases		7			8			2			2	
Permitted Phases	7			8			2		Free			
Actuated Green, G (s)		5.0		29.0	29.0		26.6	26.6	75.0		26.6	
Effective Green, g (s)		5.0		29.0	29.0		26.6	26.6	75.0		26.6	
Actuated g/C Ratio		0.07		0.39	0.39		0.35	0.35	1.00		0.35	
Clearance Time (s)		4.6		5.0	5.0		4.8	4.8			4.8	
Vehicle Extension (s)		2.0		4.0	4.0		4.0	4.0			4.0	
Lane Grp Cap (vph)		94		1024	701		101	1158	1470		1838	
v/s Ratio Prot					0.01			c0.68			0.41	
v/s Ratio Perm		0.07		c0.41			0.06		c0.71			
v/c Ratio		1.05		1.07	0.03		0.17	1.91	0.71		1.14	
Uniform Delay, d1		35.0		23.0	14.3		16.6	24.2	0.0		24.2	
Progression Factor		1.00		1.00	1.00		0.78	1.21	1.00		1.00	
Incremental Delay, d2		107.3		49.6	0.0		0.3	411.1	0.3		71.7	
Delay (s)		142.3		72.6	14.3		13.3	440.5	0.3		95.9	
Level of Service		F		E	B		B	F	A		F	
Approach Delay (s)		142.3			71.3			302.0			95.9	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM Average Control Delay	196.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.36		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	9.8
Intersection Capacity Utilization	98.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	650	876	273	184	432	80	45	2226	269	46	2472	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0	5.0	6.0	6.0	4.0	6.0	6.0	4.0
Lane Util. Factor	0.97	0.95		0.97	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3502	3481		3502	3610	1615	1805	5187	1615	1805	5187	1615
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.05	1.00	1.00	0.05	1.00	1.00
Satd. Flow (perm)	3502	3481		3502	3610	1615	92	5187	1615	92	5187	1615
Peak-hour factor, PHF	0.95	0.95	0.95	0.87	0.87	0.87	0.94	0.94	0.94	0.95	0.95	0.95
Adj. Flow (vph)	684	922	287	211	497	92	48	2368	286	48	2602	232
RTOR Reduction (vph)	0	15	0	0	0	1	0	0	1	0	0	31
Lane Group Flow (vph)	684	1194	0	211	497	91	48	2368	285	48	2602	201
Turn Type	Prot			Prot		Perm	Perm		pm+ov	Perm		pm+ov
Protected Phases	7	4		3	8			2	3		6	7
Permitted Phases						8	2		2	6		6
Actuated Green, G (s)	13.0	39.5		12.5	39.0	39.0	83.0	83.0	95.5	83.0	83.0	96.0
Effective Green, g (s)	13.0	39.5		12.5	39.0	39.0	83.0	83.0	95.5	83.0	83.0	96.0
Actuated g/C Ratio	0.09	0.26		0.08	0.26	0.26	0.55	0.55	0.64	0.55	0.55	0.64
Clearance Time (s)	4.0	5.0		4.0	5.0	5.0	6.0	6.0	4.0	6.0	6.0	4.0
Vehicle Extension (s)	2.0	4.0		1.0	2.0	2.0	3.0	3.0	1.0	3.0	3.0	2.0
Lane Grp Cap (vph)	304	917		292	939	420	51	2870	1028	51	2870	1034
v/s Ratio Prot	c0.20	c0.34		0.06	0.14			0.46	0.02		0.50	0.02
v/s Ratio Perm						0.06	c0.52		0.15	0.52		0.11
v/c Ratio	2.25	1.30		0.72	0.53	0.22	0.94	0.83	0.28	0.94	0.91	0.19
Uniform Delay, d1	68.5	55.2		67.1	47.6	43.5	31.2	27.5	12.0	31.2	30.0	11.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.69	0.69	0.97	1.03	1.03	0.61
Incremental Delay, d2	573.0	144.0		7.3	0.2	0.1	90.6	2.0	0.0	25.8	0.5	0.0
Delay (s)	641.5	199.3		74.3	47.9	43.6	112.1	21.0	11.7	57.8	31.5	6.7
Level of Service	F	F		E	D	D	F	C	B	E	C	A
Approach Delay (s)		359.1			54.4			21.7			29.9	
Approach LOS		F			D			C			C	

Intersection Summary			
HCM Average Control Delay	104.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	98.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	234	8	62	10	2	17	21	2283	9	21	2854	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3	3.0	5.3	5.3		3.0	4.9		4.9	4.9	4.9
Lane Util. Factor		1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	1.00
Frt		1.00	0.85	1.00	0.87		1.00	1.00		1.00	1.00	0.85
Flt Protected		0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		1812	1615	1805	1647		1805	5184		1805	5187	1615
Flt Permitted		0.71	1.00	0.16	1.00		0.04	1.00		0.05	1.00	1.00
Satd. Flow (perm)		1356	1615	303	1647		69	5184		92	5187	1615
Peak-hour factor, PHF	0.76	0.76	0.76	0.72	0.72	0.72	0.95	0.95	0.95	0.97	0.97	0.97
Adj. Flow (vph)	308	11	82	14	3	24	22	2403	9	22	2942	204
RTOR Reduction (vph)	0	0	2	0	12	0	0	0	0	0	0	30
Lane Group Flow (vph)	0	319	80	14	15	0	22	2412	0	22	2942	174
Turn Type	Perm		pm+ov	Perm			pm+pt			Perm		Perm
Protected Phases		8	1		4		1	6			2	
Permitted Phases	8		8	4			6			2		2
Actuated Green, G (s)		25.1	30.1	25.1	25.1		114.7	114.7		106.7	106.7	106.7
Effective Green, g (s)		25.1	30.1	25.1	25.1		114.7	114.7		106.7	106.7	106.7
Actuated g/C Ratio		0.17	0.20	0.17	0.17		0.76	0.76		0.71	0.71	0.71
Clearance Time (s)		5.3	3.0	5.3	5.3		3.0	4.9		4.9	4.9	4.9
Vehicle Extension (s)		3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		227	324	51	276		111	3964		65	3690	1149
v/s Ratio Prot			0.01		0.01		0.01	c0.47			c0.57	
v/s Ratio Perm		c0.24	0.04	0.05			0.14			0.24		0.11
v/c Ratio		1.41	0.25	0.27	0.05		0.20	0.61		0.34	0.80	0.15
Uniform Delay, d1		62.5	50.4	54.5	52.5		19.4	7.8		8.2	14.4	7.0
Progression Factor		1.00	1.00	1.00	1.00		2.37	1.02		1.09	0.81	1.45
Incremental Delay, d2		206.6	0.4	2.9	0.1		0.5	0.4		5.9	0.8	0.1
Delay (s)		269.1	50.8	57.4	52.5		46.3	8.3		14.9	12.6	10.3
Level of Service		F	D	E	D		D	A		B	B	B
Approach Delay (s)		224.5			54.2			8.7			12.4	
Approach LOS		F			D			A			B	

Intersection Summary			
HCM Average Control Delay	25.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	15.1
Intersection Capacity Utilization	83.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	961	456	193	610	153	304	1925	147	394	2378	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.5	5.0	4.0	5.5	5.0	5.0	6.0		5.0	6.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.91		0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3610	1615	3502	5132		3502	5151	
Flt Permitted	0.33	1.00	1.00	0.10	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	625	3610	1615	199	3610	1615	3502	5132		3502	5151	
Peak-hour factor, PHF	0.95	0.95	0.95	0.94	0.94	0.94	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	204	1012	480	205	649	163	313	1985	152	410	2477	119
RTOR Reduction (vph)	0	0	27	0	0	6	0	6	0	0	4	0
Lane Group Flow (vph)	204	1012	453	205	649	157	313	2131	0	410	2592	0
Turn Type	pm+pt		pm+ov	pm+pt		pm+ov	Prot			Prot		
Protected Phases	3	8	5	7	4	1	5	2		1	6	
Permitted Phases	8		8	4		4						
Actuated Green, G (s)	39.2	34.2	49.9	55.5	46.5	53.6	15.7	70.9		7.1	62.3	
Effective Green, g (s)	39.2	34.2	49.9	55.5	46.5	53.6	15.7	70.9		7.1	62.3	
Actuated g/C Ratio	0.26	0.23	0.33	0.37	0.31	0.36	0.10	0.47		0.05	0.42	
Clearance Time (s)	4.0	5.5	5.0	4.0	5.5	5.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	2.0	2.0	1.0	2.0	2.0	1.0	1.0	5.0		1.0	5.0	
Lane Grp Cap (vph)	203	823	537	259	1119	577	367	2426		166	2139	
v/s Ratio Prot	0.03	c0.28	0.09	c0.09	0.18	0.01	0.09	c0.42		c0.12	c0.50	
v/s Ratio Perm	0.23		0.19	0.20		0.08						
v/c Ratio	1.00	1.23	0.84	0.79	0.58	0.27	0.85	0.88		2.47	1.21	
Uniform Delay, d1	54.4	57.9	46.4	38.8	43.5	34.3	66.0	35.7		71.5	43.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.74	0.55	
Incremental Delay, d2	64.4	114.0	11.1	14.2	0.5	0.1	16.6	4.9		672.3	98.2	
Delay (s)	118.8	171.9	57.5	53.0	44.0	34.4	82.6	40.6		725.1	122.3	
Level of Service	F	F	E	D	D	C	F	D		F	F	
Approach Delay (s)		133.1			44.3			46.0			204.6	
Approach LOS		F			D			D			F	

Intersection Summary			
HCM Average Control Delay	122.2	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.5
Intersection Capacity Utilization	111.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	815	89	2333	1115	384	2764
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	16	12
Total Lost time (s)	5.5	4.0	6.0	4.0	3.0	4.0
Lane Util. Factor	0.97	1.00	0.91	1.00	1.00	0.95
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	3152	1454	4668	1454	1841	3249
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	3152	1454	4668	1454	1841	3249
Peak-hour factor, PHF	0.86	0.86	0.96	0.96	0.96	0.96
Adj. Flow (vph)	948	103	2430	1161	400	2879
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	948	103	2430	1161	400	2879
Turn Type		Free		Free	Prot	
Protected Phases	3		1		2	
Permitted Phases		Free		Free		Free
Actuated Green, G (s)	67.3	204.1	103.3	204.1	19.0	204.1
Effective Green, g (s)	67.3	204.1	103.3	204.1	19.0	204.1
Actuated g/C Ratio	0.33	1.00	0.51	1.00	0.09	1.00
Clearance Time (s)	5.5		6.0		3.0	
Vehicle Extension (s)	3.0		6.5		1.5	
Lane Grp Cap (vph)	1039	1454	2363	1454	171	3249
v/s Ratio Prot	0.30		c0.52		c0.22	
v/s Ratio Perm		0.07		0.80		c0.89
v/c Ratio	0.91	0.07	1.03	0.80	2.34	0.89
Uniform Delay, d1	65.6	0.0	50.4	0.0	92.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	11.9	0.1	26.2	4.7	620.5	4.0
Delay (s)	77.4	0.1	76.6	4.7	713.0	4.0
Level of Service	E	A	E	A	F	A
Approach Delay (s)	69.9		53.3			90.5
Approach LOS	E		D			F

Intersection Summary			
HCM Average Control Delay	70.9	HCM Level of Service	E
HCM Volume to Capacity ratio	1.10		
Actuated Cycle Length (s)	204.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	118.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	169	82	278	143	44	0	2926	121	0	3023	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.6	5.6	5.6	5.6	5.6	5.6		6.5			6.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.95	1.00		0.91			0.86	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.99	
Flt Protected	0.95	1.00	1.00	0.95	0.98	1.00		1.00			1.00	
Satd. Flow (prot)	1715	1796	1615	1715	1776	1615		5156			6486	
Flt Permitted	0.95	1.00	1.00	0.95	0.98	1.00		1.00			1.00	
Satd. Flow (perm)	1715	1796	1615	1715	1776	1615		5156			6486	
Peak-hour factor, PHF	0.90	0.90	0.90	0.91	0.91	0.91	0.95	0.95	0.95	0.97	0.97	0.97
Adj. Flow (vph)	206	188	91	305	157	48	0	3080	127	0	3116	168
RTOR Reduction (vph)	0	0	19	0	0	41	0	3	0	0	6	0
Lane Group Flow (vph)	185	209	72	229	233	7	0	3204	0	0	3278	0
Turn Type	Split		Perm	Split		Perm						
Protected Phases	4	4		3	3			2			2	
Permitted Phases			4			3						
Actuated Green, G (s)	19.2	19.2	19.2	18.5	18.5	18.5		64.6			64.6	
Effective Green, g (s)	19.2	19.2	19.2	18.5	18.5	18.5		64.6			64.6	
Actuated g/C Ratio	0.16	0.16	0.16	0.15	0.15	0.15		0.54			0.54	
Clearance Time (s)	5.6	5.6	5.6	5.6	5.6	5.6		6.5			6.5	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)	274	287	258	264	274	249		2776			3492	
v/s Ratio Prot	0.11	c0.12		c0.13	0.13			c0.62			0.51	
v/s Ratio Perm			0.04			0.00						
v/c Ratio	0.68	0.73	0.28	0.87	0.85	0.03		1.15			0.94	
Uniform Delay, d1	47.5	47.9	44.3	49.6	49.4	43.1		27.7			25.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			1.00	
Incremental Delay, d2	6.4	8.9	0.6	24.5	21.5	0.0		72.3			6.4	
Delay (s)	53.9	56.8	44.9	74.1	70.9	43.2		97.5			32.3	
Level of Service	D	E	D	E	E	D		F			C	
Approach Delay (s)		53.5			69.7			97.5			32.3	
Approach LOS		D			E			F			C	

Intersection Summary			
HCM Average Control Delay	64.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	17.7
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1056	262	0	0	0	0	0	1993	170	0	2413	978
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0						6.0			6.0	6.0
Lane Util. Factor	0.94	1.00						0.91			0.91	1.00
Frt	1.00	1.00						0.99			1.00	0.85
Flt Protected	0.95	1.00						1.00			1.00	1.00
Satd. Flow (prot)	5090	1900						5126			5187	1615
Flt Permitted	0.95	1.00						1.00			1.00	1.00
Satd. Flow (perm)	5090	1900						5126			5187	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.25	0.25	0.25	0.94	0.94	0.94	0.97	0.97	0.97
Adj. Flow (vph)	1135	282	0	0	0	0	0	2120	181	0	2488	1008
RTOR Reduction (vph)	0	0	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	1135	282	0	0	0	0	0	2293	0	0	2488	1008
Turn Type	Split											pm+ov
Protected Phases	4	4						6			2	4
Permitted Phases												2
Actuated Green, G (s)	45.0	45.0						63.0			63.0	108.0
Effective Green, g (s)	45.0	45.0						63.0			63.0	108.0
Actuated g/C Ratio	0.38	0.38						0.52			0.52	0.90
Clearance Time (s)	6.0	6.0						6.0			6.0	6.0
Vehicle Extension (s)	3.0	3.0						3.0			3.0	3.0
Lane Grp Cap (vph)	1909	713						2691			2723	1615
v/s Ratio Prot	0.22	0.15						0.45			c0.48	c0.23
v/s Ratio Perm												0.39
v/c Ratio	0.59	0.40						0.85			0.91	0.62
Uniform Delay, d1	30.2	27.5						24.5			26.0	1.4
Progression Factor	0.90	0.84						0.09			0.33	1.00
Incremental Delay, d2	0.4	0.5						1.3			2.6	0.7
Delay (s)	27.7	23.6						3.4			11.2	2.1
Level of Service	C	C						A			B	A
Approach Delay (s)		26.9			0.0			3.4			8.6	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	10.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	189	855	87	179	892	6	210	1064	331	187	824	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	6.4		4.0	6.4		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	0.91		1.00	0.95		0.97	0.91		1.00	0.91	
Frt	1.00	0.99		1.00	1.00		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	5115		1805	3606		3502	5002		1805	5071	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.11	1.00	
Satd. Flow (perm)	1805	5115		1805	3606		3502	5002		217	5071	
Peak-hour factor, PHF	0.89	0.89	0.89	0.90	0.90	0.90	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	212	961	98	199	991	7	228	1157	360	210	926	162
RTOR Reduction (vph)	0	10	0	0	1	0	0	47	0	0	21	0
Lane Group Flow (vph)	212	1049	0	199	997	0	228	1470	0	210	1067	0
Turn Type	Prot			Prot			Prot			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases										4		
Actuated Green, G (s)	10.0	41.1		14.0	45.1		9.0	39.0		40.0	35.0	
Effective Green, g (s)	10.0	41.1		14.0	45.1		9.0	39.0		40.0	35.0	
Actuated g/C Ratio	0.08	0.34		0.12	0.38		0.08	0.32		0.33	0.29	
Clearance Time (s)	4.0	6.4		4.0	6.4		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	150	1752		211	1355		263	1626		139	1479	
v/s Ratio Prot	c0.12	0.21		c0.11	c0.28		0.07	c0.29		c0.06	0.21	
v/s Ratio Perm										c0.44		
v/c Ratio	1.41	0.60		0.94	0.74		0.87	0.90		1.51	0.72	
Uniform Delay, d1	55.0	32.6		52.6	32.3		54.9	38.7		37.6	38.1	
Progression Factor	1.00	1.00		0.81	0.65		1.00	1.00		1.07	0.94	
Incremental Delay, d2	220.6	1.5		38.9	2.8		24.5	8.7		259.9	2.7	
Delay (s)	275.6	34.2		81.3	23.7		79.4	47.4		300.2	38.5	
Level of Service	F	C		F	C		E	D		F	D	
Approach Delay (s)		74.4			33.3			51.6			80.8	
Approach LOS		E			C			D			F	

Intersection Summary			
HCM Average Control Delay	59.8	HCM Level of Service	E
HCM Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	28.9
Intersection Capacity Utilization	91.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1206	258	167	841	129	208	2033	177	256	2296	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4	5.4	4.0	5.4	5.4	4.5	5.7		4.5	5.7	
Lane Util. Factor		0.95	1.00	1.00	0.95	1.00	0.97	0.91		1.00	0.91	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3610	1615	1805	3610	1615	3502	5125		1805	5180	
Flt Permitted		1.00	1.00	0.11	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		3610	1615	211	3610	1615	3502	5125		1805	5180	
Peak-hour factor, PHF	0.85	0.85	0.85	0.94	0.94	0.94	0.95	0.95	0.95	0.93	0.93	0.93
Adj. Flow (vph)	0	1419	304	178	895	137	219	2140	186	275	2469	22
RTOR Reduction (vph)	0	0	134	0	0	55	0	8	0	0	1	0
Lane Group Flow (vph)	0	1419	170	178	895	82	219	2318	0	275	2490	0
Turn Type			Perm	pm+pt		Perm	Prot			Prot		
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases			4	8		8						
Actuated Green, G (s)		30.6	30.6	46.0	44.6	44.6	11.0	54.3		5.5	48.8	
Effective Green, g (s)		30.6	30.6	46.0	44.6	44.6	11.0	54.3		5.5	48.8	
Actuated g/C Ratio		0.26	0.26	0.38	0.37	0.37	0.09	0.45		0.05	0.41	
Clearance Time (s)		5.4	5.4	4.0	5.4	5.4	4.5	5.7		4.5	5.7	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		921	412	214	1342	600	321	2319		83	2107	
v/s Ratio Prot		c0.39		c0.07	0.25		0.06	c0.45		c0.15	c0.48	
v/s Ratio Perm			0.11	0.25		0.05						
v/c Ratio		1.54	0.41	0.83	0.67	0.14	0.68	1.00		3.31	1.18	
Uniform Delay, d1		44.7	37.2	50.0	31.5	25.0	52.8	32.8		57.2	35.6	
Progression Factor		0.58	0.29	1.00	1.00	1.00	1.00	1.00		0.63	0.42	
Incremental Delay, d2		247.1	2.1	23.2	2.6	0.5	5.9	18.6		1057.5	84.8	
Delay (s)		273.3	12.8	73.2	34.1	25.4	58.7	51.4		1093.6	99.9	
Level of Service		F	B	E	C	C	E	D		F	F	
Approach Delay (s)		227.3			38.9			52.0			198.7	
Approach LOS		F			D			D			F	

Intersection Summary			
HCM Average Control Delay	135.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.38		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	21.3
Intersection Capacity Utilization	116.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	209	615	46	270	483	60	24	458	145	694	1062	233
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.5		3.5	4.5		5.0	5.0		5.0	5.0	5.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		0.91	0.91	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.99	1.00
Satd. Flow (prot)	1805	3573		1805	3550		1805	3480		1643	3440	1615
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.99	1.00
Satd. Flow (perm)	1805	3573		1805	3550		1805	3480		1643	3440	1615
Peak-hour factor, PHF	0.97	0.97	0.97	0.86	0.86	0.86	0.92	0.92	0.92	0.96	0.96	0.96
Adj. Flow (vph)	215	634	47	314	562	70	26	498	158	723	1106	243
RTOR Reduction (vph)	0	5	0	0	10	0	0	31	0	0	0	140
Lane Group Flow (vph)	215	676	0	314	622	0	26	625	0	593	1236	103
Turn Type	Prot			Prot			Split			Split		Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases												7
Actuated Green, G (s)	7.5	24.1		19.9	36.5		12.0	12.0		26.0	26.0	26.0
Effective Green, g (s)	7.5	24.1		19.9	36.5		12.0	12.0		26.0	26.0	26.0
Actuated g/C Ratio	0.08	0.24		0.20	0.36		0.12	0.12		0.26	0.26	0.26
Clearance Time (s)	3.5	4.5		3.5	4.5		5.0	5.0		5.0	5.0	5.0
Vehicle Extension (s)	3.0	5.0		3.0	5.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	135	861		359	1296		217	418		427	894	420
v/s Ratio Prot	c0.12	c0.19		c0.17	0.18		0.01	c0.18		c0.36	0.36	
v/s Ratio Perm												0.06
v/c Ratio	1.59	0.78		0.87	0.48		0.12	1.50		1.39	1.38	0.25
Uniform Delay, d1	46.2	35.5		38.8	24.4		39.3	44.0		37.0	37.0	29.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	298.7	7.1		20.4	1.3		0.2	235.4		188.9	179.1	0.3
Delay (s)	344.9	42.6		59.2	25.7		39.5	279.4		225.9	216.1	29.6
Level of Service	F	D		E	C		D	F		F	F	C
Approach Delay (s)		115.2			36.8			270.2			197.0	
Approach LOS		F			D			F			F	

Intersection Summary			
HCM Average Control Delay	159.0	HCM Level of Service	F
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	214	1549	118	251	1207	51	73	1009	296	98	1191	262
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.6		5.6	5.6	5.6
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	5187	1615	1805	5187	1615	1805	3487		1805	3610	1615
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.09	1.00		0.10	1.00	1.00
Satd. Flow (perm)	1805	5187	1615	1805	5187	1615	173	3487		198	3610	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.93	0.93	0.93	0.91	0.91	0.91	0.89	0.89	0.89
Adj. Flow (vph)	228	1648	126	270	1298	55	80	1109	325	110	1338	294
RTOR Reduction (vph)	0	0	52	0	0	23	0	30	0	0	0	147
Lane Group Flow (vph)	228	1648	74	270	1298	32	80	1404	0	110	1338	147
Turn Type	Prot		Perm	Prot		Perm	pm+pt			Perm		Perm
Protected Phases	1	6		5	2		3	8			4	
Permitted Phases			6			2	8			4		4
Actuated Green, G (s)	10.0	23.0	23.0	8.0	21.0	21.0	48.0	45.4		38.4	38.4	38.4
Effective Green, g (s)	10.0	23.0	23.0	8.0	21.0	21.0	48.0	45.4		38.4	38.4	38.4
Actuated g/C Ratio	0.11	0.26	0.26	0.09	0.23	0.23	0.53	0.50		0.43	0.43	0.43
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0	5.0	3.0	5.6		5.6	5.6	5.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	201	1326	413	160	1210	377	165	1759		84	1540	689
v/s Ratio Prot	0.13	c0.32		c0.15	0.25		0.02	c0.40			0.37	
v/s Ratio Perm			0.05			0.02	0.24			c0.56		0.09
v/c Ratio	1.13	1.24	0.18	1.69	1.07	0.08	0.48	0.80		1.31	0.87	0.21
Uniform Delay, d1	40.0	33.5	26.1	41.0	34.5	27.0	32.5	18.5		25.8	23.5	16.3
Progression Factor	1.45	0.77	0.84	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	66.6	109.9	0.1	334.9	47.8	0.4	2.2	3.9		201.8	6.9	0.7
Delay (s)	124.6	135.8	22.0	375.9	82.3	27.4	34.7	22.4		227.6	30.4	17.0
Level of Service	F	F	C	F	F	C	C	C		F	C	B
Approach Delay (s)		127.3			129.3			23.0			40.6	
Approach LOS		F			F			C			D	

Intersection Summary			
HCM Average Control Delay	82.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.25		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	13.6
Intersection Capacity Utilization	106.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	810	21	408	511	57	15	847	710	320	786	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0		4.0	5.9		5.9	5.9	4.0	4.0	5.9	
Lane Util. Factor	1.00	0.91		0.97	0.95		1.00	0.95	1.00	0.97	0.95	
Frt	1.00	1.00		1.00	0.98		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	5167		3502	3556		1805	3610	1615	3502	3581	
Flt Permitted	0.42	1.00		0.95	1.00		0.26	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	800	5167		3502	3556		498	3610	1615	3502	3581	
Peak-hour factor, PHF	0.87	0.87	0.87	0.93	0.93	0.93	0.91	0.91	0.91	0.88	0.88	0.88
Adj. Flow (vph)	80	931	24	439	549	61	16	931	780	364	893	50
RTOR Reduction (vph)	0	3	0	0	10	0	0	0	10	0	5	0
Lane Group Flow (vph)	80	952	0	439	600	0	16	931	770	364	938	0
Turn Type	Perm			Prot			Perm		pm+ov	Prot		
Protected Phases		2		1	6			4	1	3	8	
Permitted Phases	2						4		4			
Actuated Green, G (s)	26.0	26.0		7.0	37.1		27.2	27.2	34.2	5.0	36.2	
Effective Green, g (s)	26.0	26.0		7.0	37.1		27.2	27.2	34.2	5.0	36.2	
Actuated g/C Ratio	0.31	0.31		0.08	0.44		0.32	0.32	0.40	0.06	0.43	
Clearance Time (s)	6.0	6.0		4.0	5.9		5.9	5.9	4.0	4.0	5.9	
Vehicle Extension (s)	7.4	7.4		2.0	3.0		5.4	5.4	2.0	2.0	4.0	
Lane Grp Cap (vph)	244	1579		288	1550		159	1154	649	206	1523	
v/s Ratio Prot		c0.18		c0.13	0.17			0.26	c0.10	c0.10	0.26	
v/s Ratio Perm	0.10						0.03		0.38			
v/c Ratio	0.33	0.60		1.52	0.39		0.10	0.81	1.19	1.77	0.62	
Uniform Delay, d1	22.8	25.2		39.0	16.3		20.4	26.5	25.4	40.0	19.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.0	1.5		252.9	0.2		0.7	4.9	99.1	364.2	0.9	
Delay (s)	25.8	26.6		291.9	16.4		21.0	31.4	124.6	404.3	19.9	
Level of Service	C	C		F	B		C	C	F	F	B	
Approach Delay (s)		26.6			131.7			73.4			126.9	
Approach LOS		C			F			E			F	

Intersection Summary			
HCM Average Control Delay	89.6	HCM Level of Service	F
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	641	15	72	243	118	17	1540	216	171	1019	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt		1.00		1.00	0.95		1.00	0.98		1.00	1.00	
Flt Protected		1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		3596		1805	3433		1805	3543		1805	3604	
Flt Permitted		0.95		0.21	1.00		0.19	1.00		0.08	1.00	
Satd. Flow (perm)		3421		402	3433		369	3543		147	3604	
Peak-hour factor, PHF	0.89	0.89	0.89	0.94	0.94	0.94	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	7	720	17	77	259	126	18	1674	235	182	1084	13
RTOR Reduction (vph)	0	2	0	0	11	0	0	12	0	0	1	0
Lane Group Flow (vph)	0	742	0	77	374	0	18	1897	0	182	1096	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		28.4		28.4	28.4		51.6	51.6		51.6	51.6	
Effective Green, g (s)		28.4		28.4	28.4		51.6	51.6		51.6	51.6	
Actuated g/C Ratio		0.32		0.32	0.32		0.57	0.57		0.57	0.57	
Clearance Time (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lane Grp Cap (vph)		1080		127	1083		212	2031		84	2066	
v/s Ratio Prot					0.11			0.54			0.30	
v/s Ratio Perm		c0.22		0.19			0.05			c1.24		
v/c Ratio		0.69		0.61	0.35		0.08	0.93		2.17	0.53	
Uniform Delay, d1		26.9		26.1	23.7		8.6	17.6		19.2	11.8	
Progression Factor		1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.4		11.5	0.4		0.8	9.5		562.2	1.0	
Delay (s)		29.3		37.5	24.1		9.4	27.2		581.4	12.8	
Level of Service		C		D	C		A	C		F	B	
Approach Delay (s)		29.3			26.3			27.0			93.7	
Approach LOS		C			C			C			F	

Intersection Summary			
HCM Average Control Delay	46.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	109.5%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	131	469	257	279	1282	347	497	30	60	147	30	259
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.90		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3610	1615	1805	1711		1805	1645	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	1805	3610	1615	1805	1711		1805	1645	
Peak-hour factor, PHF	0.79	0.79	0.79	0.92	0.92	0.92	0.89	0.89	0.89	0.91	0.91	0.91
Adj. Flow (vph)	166	594	325	303	1393	377	558	34	67	162	33	285
RTOR Reduction (vph)	0	0	151	0	0	52	0	61	0	0	145	0
Lane Group Flow (vph)	166	594	174	303	1393	325	558	40	0	162	173	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		
Protected Phases	3	8	5	7	4	1	5	2		1	6	
Permitted Phases			8			4						
Actuated Green, G (s)	13.0	36.6	78.5	28.0	51.6	104.6	41.9	11.9		53.0	23.0	
Effective Green, g (s)	13.0	38.1	80.5	28.0	53.1	106.6	42.9	13.9		54.0	25.0	
Actuated g/C Ratio	0.09	0.25	0.54	0.19	0.35	0.71	0.29	0.09		0.36	0.17	
Clearance Time (s)	4.0	5.5	5.0	4.0	5.5	5.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	2.0	1.0	3.0	2.0	1.0	1.0	5.0		1.0	5.0	
Lane Grp Cap (vph)	156	917	867	337	1278	1148	516	159		650	274	
v/s Ratio Prot	c0.09	0.16	0.06	0.17	c0.39	0.10	c0.31	0.02		0.09	c0.11	
v/s Ratio Perm			0.05			0.10						
v/c Ratio	1.06	0.65	0.20	0.90	1.09	0.28	1.08	0.25		0.25	0.63	
Uniform Delay, d1	68.5	50.0	18.0	59.6	48.5	7.9	53.5	63.2		33.7	58.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.77	0.75	
Incremental Delay, d2	90.1	1.2	0.0	25.2	53.4	0.0	63.4	1.8		0.7	5.0	
Delay (s)	158.6	51.1	18.1	84.8	101.9	7.9	117.0	65.0		26.6	48.9	
Level of Service	F	D	B	F	F	A	F	E		C	D	
Approach Delay (s)		57.7			82.3			109.0			41.4	
Approach LOS		E			F			F			D	

Intersection Summary			
HCM Average Control Delay	75.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	1338	217	0	796	152	2532
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	16	12
Total Lost time (s)	5.5	4.0		4.0	3.0	4.0
Lane Util. Factor	0.97	1.00		1.00	1.00	0.95
Frt	1.00	0.85		0.85	1.00	1.00
Flt Protected	0.95	1.00		1.00	0.95	1.00
Satd. Flow (prot)	3152	1454		1454	1841	3249
Flt Permitted	0.95	1.00		1.00	0.95	1.00
Satd. Flow (perm)	3152	1454		1454	1841	3249
Peak-hour factor, PHF	0.88	0.88	0.96	0.96	0.91	0.91
Adj. Flow (vph)	1520	247	0	829	167	2782
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1520	247	0	829	167	2782
Turn Type		Free		Free	Prot	
Protected Phases	3		1		2	
Permitted Phases		Free		Free		Free
Actuated Green, G (s)	72.4	100.1		100.1	19.2	100.1
Effective Green, g (s)	72.4	100.1		100.1	19.2	100.1
Actuated g/C Ratio	0.72	1.00		1.00	0.19	1.00
Clearance Time (s)	5.5				3.0	
Vehicle Extension (s)	3.0				1.5	
Lane Grp Cap (vph)	2280	1454		1454	353	3249
v/s Ratio Prot	0.48				0.09	
v/s Ratio Perm		0.17		0.57		c0.86
v/c Ratio	0.67	0.17		0.57	0.47	0.86
Uniform Delay, d1	7.4	0.0		0.0	36.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	0.3		1.6	0.4	3.1
Delay (s)	8.1	0.3		1.6	36.3	3.1
Level of Service	A	A		A	D	A
Approach Delay (s)	7.0		1.6			5.0
Approach LOS	A		A			A

Intersection Summary			
HCM Average Control Delay	5.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	100.1	Sum of lost time (s)	0.0
Intersection Capacity Utilization	128.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	167	129	488	236	69	187	225	59	177	1122	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	1.00		0.97	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.97		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1776		3502	1836		1805	1841		1805	1881	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1776		3502	1836		1805	1841		1805	1881	
Peak-hour factor, PHF	0.96	0.96	0.96	0.87	0.87	0.87	0.97	0.97	0.97	0.89	0.89	0.89
Adj. Flow (vph)	86	174	134	561	271	79	193	232	61	199	1261	88
RTOR Reduction (vph)	0	31	0	0	11	0	0	11	0	0	3	0
Lane Group Flow (vph)	86	277	0	561	339	0	193	282	0	199	1346	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7!	4!		7!	4!		5!	2!		5!	2!	
Permitted Phases												
Actuated Green, G (s)	16.0	16.0		16.0	16.0		64.4	61.9		64.4	61.9	
Effective Green, g (s)	16.0	16.0		16.0	16.0		64.4	61.9		64.4	61.9	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.73	0.70		0.73	0.70	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	327	321		634	332		1315	1289		1315	1317	
v/s Ratio Prot	0.05	0.16		0.16	c0.18		0.11	0.15		0.11	c0.72	
v/s Ratio Perm												
v/c Ratio	0.26	0.86		0.88	1.02		0.15	0.22		0.15	1.02	
Uniform Delay, d1	31.1	35.1		35.3	36.2		3.6	4.7		3.7	13.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	20.5		13.9	54.5		0.1	0.4		0.1	30.6	
Delay (s)	31.6	55.6		49.2	90.7		3.7	5.1		3.7	43.8	
Level of Service	C	E		D	F		A	A		A	D	
Approach Delay (s)		50.4			65.1			4.5			38.7	
Approach LOS		D			E			A			D	

Intersection Summary			
HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	88.4	Sum of lost time (s)	10.5
Intersection Capacity Utilization	120.1%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	931	0	0	0	0	0	0	471	40	0	392	1346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0							4.0			4.0	4.0
Lane Util. Factor	0.97							0.95			1.00	1.00
Frt	1.00							0.99			1.00	0.85
Flt Protected	0.95							1.00			1.00	1.00
Satd. Flow (prot)	3502							3568			1900	1615
Flt Permitted	0.95							1.00			1.00	1.00
Satd. Flow (perm)	3502							3568			1900	1615
Peak-hour factor, PHF	0.90	0.90	0.90	0.25	0.25	0.25	0.99	0.99	0.99	0.91	0.91	0.91
Adj. Flow (vph)	1034	0	0	0	0	0	0	476	40	0	431	1479
RTOR Reduction (vph)	0	0	0	0	0	0	0	16	0	0	0	0
Lane Group Flow (vph)	1034	0	0	0	0	0	0	500	0	0	431	1479
Turn Type	Prot											Free
Protected Phases	4							6			2	
Permitted Phases												Free
Actuated Green, G (s)	15.9							16.1			16.1	40.0
Effective Green, g (s)	15.9							16.1			16.1	40.0
Actuated g/C Ratio	0.40							0.40			0.40	1.00
Clearance Time (s)	4.0							4.0			4.0	
Vehicle Extension (s)	3.0							3.0			3.0	
Lane Grp Cap (vph)	1392							1436			765	1615
v/s Ratio Prot	0.30							0.14			0.23	
v/s Ratio Perm												c0.92
v/c Ratio	0.74							0.35			0.56	0.92
Uniform Delay, d1	10.3							8.3			9.2	0.0
Progression Factor	1.00							1.00			1.00	1.00
Incremental Delay, d2	2.2							0.7			3.0	9.7
Delay (s)	12.5							9.0			12.2	9.7
Level of Service	B							A			B	A
Approach Delay (s)		12.5			0.0			9.0			10.2	
Approach LOS		B			A			A			B	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	147	541	173	270	1454	304	366	60	35	91	285	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		0.95	0.95			0.95	
Frt	1.00	0.96		1.00	0.97		1.00	0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97			0.99	
Satd. Flow (prot)	1805	4998		1805	5052		1715	1714			3547	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.97			0.99	
Satd. Flow (perm)	1805	4998		1805	5052		1715	1714			3547	
Peak-hour factor, PHF	0.84	0.84	0.84	0.91	0.91	0.91	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	175	644	206	297	1598	334	389	64	37	97	303	17
RTOR Reduction (vph)	0	48	0	0	27	0	0	5	0	0	2	0
Lane Group Flow (vph)	175	802	0	297	1905	0	245	240	0	0	415	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)	10.0	31.0		21.3	42.3		26.7	26.7			25.0	
Effective Green, g (s)	10.0	31.0		21.3	42.3		26.7	26.7			25.0	
Actuated g/C Ratio	0.08	0.26		0.18	0.35		0.22	0.22			0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	150	1291		320	1781		382	381			739	
v/s Ratio Prot	c0.10	0.16		0.16	c0.38		c0.14	0.14			c0.12	
v/s Ratio Perm												
v/c Ratio	1.17	0.62		0.93	1.07		0.64	0.63			0.56	
Uniform Delay, d1	55.0	39.3		48.6	38.9		42.3	42.2			42.6	
Progression Factor	1.36	0.95		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	122.7	2.1		34.9	42.8		8.0	7.7			3.1	
Delay (s)	197.7	39.4		83.5	81.7		50.3	49.8			45.6	
Level of Service	F	D		F	F		D	D			D	
Approach Delay (s)		66.4			81.9			50.1			45.6	
Approach LOS		E			F			D			D	

Intersection Summary			
HCM Average Control Delay	70.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	961	456	193	610	153	304	30	147	394	30	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.88		1.00	0.88	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1805	3610	1615	1805	1663		1805	1674	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	3610	1615	1805	3610	1615	1805	1663		1805	1674	
Peak-hour factor, PHF	0.95	0.95	0.95	0.94	0.94	0.94	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	204	1012	480	205	649	163	313	31	152	410	31	119
RTOR Reduction (vph)	0	0	236	0	0	69	0	117	0	0	85	0
Lane Group Flow (vph)	204	1012	244	205	649	94	313	66	0	410	65	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		
Protected Phases	3	8	5	7	4	1	5	2		1	6	
Permitted Phases			8			4						
Actuated Green, G (s)	21.6	44.7	74.2	21.1	44.2	84.2	29.5	23.7		40.0	34.2	
Effective Green, g (s)	21.6	46.2	76.2	21.1	45.7	86.2	30.5	25.7		41.0	36.2	
Actuated g/C Ratio	0.14	0.31	0.51	0.14	0.30	0.57	0.20	0.17		0.27	0.24	
Clearance Time (s)	4.0	5.5	5.0	4.0	5.5	5.0	5.0	6.0		5.0	6.0	
Vehicle Extension (s)	3.0	2.0	1.0	3.0	2.0	1.0	1.0	5.0		1.0	5.0	
Lane Grp Cap (vph)	260	1112	820	254	1100	928	367	285		493	404	
v/s Ratio Prot	0.11	c0.28	0.06	c0.11	0.18	0.03	c0.17	0.04		c0.23	0.04	
v/s Ratio Perm			0.09			0.03						
v/c Ratio	0.78	0.91	0.30	0.81	0.59	0.10	0.85	0.23		0.83	0.16	
Uniform Delay, d1	62.0	49.9	21.4	62.5	44.2	14.4	57.6	53.6		51.3	44.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		0.64	0.59	
Incremental Delay, d2	14.3	10.8	0.1	16.9	0.5	0.0	16.6	1.9		6.9	0.5	
Delay (s)	76.3	60.7	21.5	79.4	44.7	14.4	74.2	55.5		39.7	26.8	
Level of Service	E	E	C	E	D	B	E	E		D	C	
Approach Delay (s)		51.5			46.9			67.3			36.3	
Approach LOS		D			D			E			D	

Intersection Summary			
HCM Average Control Delay	50.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	815	89	0	1115	384	2764
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	16	12
Total Lost time (s)	5.5	4.0		4.0	3.0	4.0
Lane Util. Factor	0.97	1.00		1.00	1.00	0.95
Frt	1.00	0.85		0.85	1.00	1.00
Flt Protected	0.95	1.00		1.00	0.95	1.00
Satd. Flow (prot)	3152	1454		1454	1841	3249
Flt Permitted	0.95	1.00		1.00	0.95	1.00
Satd. Flow (perm)	3152	1454		1454	1841	3249
Peak-hour factor, PHF	0.86	0.86	0.96	0.96	0.96	0.96
Adj. Flow (vph)	948	103	0	1161	400	2879
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	948	103	0	1161	400	2879
Turn Type		Free		Free	Prot	
Protected Phases	3		1		2	
Permitted Phases		Free		Free		Free
Actuated Green, G (s)	20.4	48.0		48.0	19.1	48.0
Effective Green, g (s)	20.4	48.0		48.0	19.1	48.0
Actuated g/C Ratio	0.42	1.00		1.00	0.40	1.00
Clearance Time (s)	5.5				3.0	
Vehicle Extension (s)	3.0				1.5	
Lane Grp Cap (vph)	1340	1454		1454	733	3249
v/s Ratio Prot	0.30				0.22	
v/s Ratio Perm		0.07		0.80		c0.89
v/c Ratio	0.71	0.07		0.80	0.55	0.89
Uniform Delay, d1	11.3	0.0		0.0	11.1	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	0.1		4.7	0.4	4.0
Delay (s)	13.1	0.1		4.7	11.6	4.0
Level of Service	B	A		A	B	A
Approach Delay (s)	11.8		4.7			4.9
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	6.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	48.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	118.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	185	169	82	278	58	44	348	26	121	330	874	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	6.5		4.0	6.5	
Lane Util. Factor	1.00	1.00		0.97	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.94		1.00	0.88		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1805	1807		3502	1778		1805	1665		1805	1855	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1805	1807		3502	1778		1805	1665		1805	1855	
Peak-hour factor, PHF	0.90	0.90	0.90	0.91	0.91	0.91	0.95	0.95	0.95	0.97	0.97	0.97
Adj. Flow (vph)	206	188	91	305	64	48	366	27	127	340	901	168
RTOR Reduction (vph)	0	20	0	0	31	0	0	37	0	0	7	0
Lane Group Flow (vph)	206	259	0	305	81	0	366	117	0	340	1062	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7!	4!		7!	4!		5!	2!		5!	2!	
Permitted Phases												
Actuated Green, G (s)	15.1	15.1		15.1	15.1		64.4	61.9		64.4	61.9	
Effective Green, g (s)	15.1	15.1		15.1	15.1		64.4	61.9		64.4	61.9	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.74	0.71		0.74	0.71	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	6.5		4.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	311	312		604	307		1328	1178		1328	1312	
v/s Ratio Prot	0.11	c0.14		0.09	0.05		0.20	0.07		0.19	c0.57	
v/s Ratio Perm												
v/c Ratio	0.66	0.83		0.50	0.27		0.28	0.10		0.26	0.81	
Uniform Delay, d1	33.8	35.0		32.8	31.4		3.8	4.0		3.8	8.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.2	16.9		0.7	0.5		0.1	0.2		0.1	5.5	
Delay (s)	39.0	51.8		33.5	31.9		3.9	4.2		3.9	14.2	
Level of Service	D	D		C	C		A	A		A	B	
Approach Delay (s)		46.4			33.0			4.0			11.7	
Approach LOS		D			C			A			B	

Intersection Summary			
HCM Average Control Delay	19.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	87.5	Sum of lost time (s)	10.5
Intersection Capacity Utilization	112.4%	ICU Level of Service	H
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1056	0	0	0	0	0	0	494	85	0	256	978
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0							4.0			4.0	4.0
Lane Util. Factor	0.97							0.95			1.00	1.00
Frt	1.00							0.98			1.00	0.85
Flt Protected	0.95							1.00			1.00	1.00
Satd. Flow (prot)	3502							3531			1900	1615
Flt Permitted	0.95							1.00			1.00	1.00
Satd. Flow (perm)	3502							3531			1900	1615
Peak-hour factor, PHF	0.93	0.93	0.93	0.25	0.25	0.25	0.94	0.94	0.94	0.97	0.97	0.97
Adj. Flow (vph)	1135	0	0	0	0	0	0	526	90	0	264	1008
RTOR Reduction (vph)	0	0	0	0	0	0	0	36	0	0	0	0
Lane Group Flow (vph)	1135	0	0	0	0	0	0	580	0	0	264	1008
Turn Type	Prot											Free
Protected Phases	4							6			2	
Permitted Phases												Free
Actuated Green, G (s)	17.1							14.9			14.9	40.0
Effective Green, g (s)	17.1							14.9			14.9	40.0
Actuated g/C Ratio	0.43							0.37			0.37	1.00
Clearance Time (s)	4.0							4.0			4.0	
Vehicle Extension (s)	3.0							3.0			3.0	
Lane Grp Cap (vph)	1497							1315			708	1615
v/s Ratio Prot	0.32							0.16			0.14	
v/s Ratio Perm												c0.62
v/c Ratio	0.76							0.44			0.37	0.62
Uniform Delay, d1	9.7							9.4			9.1	0.0
Progression Factor	1.00							1.00			1.00	1.00
Incremental Delay, d2	2.3							1.1			1.5	1.8
Delay (s)	12.0							10.5			10.6	1.8
Level of Service	B							B			B	A
Approach Delay (s)		12.0			0.0			10.5			3.7	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM Average Control Delay	8.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	53.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	262	1206	258	167	841	129	208	103	177	256	20	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		0.95	0.95			0.95	
Frt	1.00	0.97		1.00	0.98		1.00	0.91			0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.96	
Satd. Flow (prot)	1805	5050		1805	5084		1715	1640			3425	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00			0.96	
Satd. Flow (perm)	1805	5050		1805	5084		1715	1640			3425	
Peak-hour factor, PHF	0.85	0.85	0.85	0.94	0.94	0.94	0.95	0.95	0.95	0.93	0.93	0.93
Adj. Flow (vph)	308	1419	304	178	895	137	219	108	186	275	22	22
RTOR Reduction (vph)	0	28	0	0	17	0	0	43	0	0	5	0
Lane Group Flow (vph)	308	1695	0	178	1015	0	197	273	0	0	314	0
Turn Type	Prot			Prot			Split			Split		
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases												
Actuated Green, G (s)	20.0	39.1		13.2	32.3		26.7	26.7			25.0	
Effective Green, g (s)	20.0	39.1		13.2	32.3		26.7	26.7			25.0	
Actuated g/C Ratio	0.17	0.33		0.11	0.27		0.22	0.22			0.21	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0			4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	301	1645		199	1368		382	365			714	
v/s Ratio Prot	0.17	c0.34		c0.10	0.20		0.11	c0.17			c0.09	
v/s Ratio Perm												
v/c Ratio	1.02	1.03		0.89	0.74		0.52	0.75			0.44	
Uniform Delay, d1	50.0	40.5		52.7	40.0		41.0	43.5			41.4	
Progression Factor	1.25	0.72		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	49.1	26.8		41.1	3.7		4.9	13.2			2.0	
Delay (s)	111.7	56.1		93.8	43.7		45.9	56.7			43.4	
Level of Service	F	E		F	D		D	E			D	
Approach Delay (s)		64.6			51.1			52.5			43.4	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM Average Control Delay	57.4	HCM Level of Service	E
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX C: TRAVEL TIME DATA

La Cienega Corridor

7:00 AM - 9:00 AM - Northbound

Wednesday - 4/14/2010

Study Name **: 10-5147 NB AM**
Study Date **: 4/20/2010**

Overall Output Statistics

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	FLORENCE							
2	5824	CENTINELA	332.7	5.7	11.9	233.0	131.3	295.0	332.7
3	7844	STOCKER	179.7	1.3	29.8	45.7	37.7	87.3	179.7
4	7897	RODEO	235.7	4.3	22.8	100.7	31.3	155.3	223.0
5	3114	FAIRFAX	296.0	2.7	7.2	242.7	152.0	296.0	296.0
6	3570	CADILLAC	215.0	3.0	11.3	154.0	85.7	206.7	215.0
7	946	GUTHRIE	27.0	0.0	23.9	10.7	0.0	27.0	27.0
8	798	SAWYER	25.7	0.3	21.2	12.3	0.0	25.3	25.3
Total	**29,993**		**1311.7**	**17.3**	**15.6**	**799.0**	**438.0**	**1092.7**	**1298.7**

Stats based on 3 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 40 MPH.

La Cienega Corridor

11:00 AM - 1:00 PM - Northbound

Wednesday - 4/14/2010

Study Name **: 10-5147 NB MD**
Study Date **: 4/20/2010**
Page No. **: 3**

Overall Output Statistics

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	FLORENCE							
2	5831	CENTINELA	217.3	2.7	18.3	117.7	73.0	157.7	215.7
3	7921	STOCKER	155.3	1.0	34.8	20.0	15.0	58.7	149.3
4	7864	RODEO	106.3	0.0	50.4	0.0	0.0	1.0	84.3
5	3103	FAIRFAX	58.7	0.0	36.1	5.7	0.0	20.3	58.7
6	3670	CADILLAC	153.7	3.0	16.3	90.7	41.0	140.7	153.7
7	918	GUTHRIE	32.3	0.7	19.4	16.3	2.7	31.7	32.3
8	777	SAWYER	27.3	0.0	19.4	14.0	5.3	26.7	26.7
Total	**30,084**		**751.0**	**7.3**	**27.3**	**264.3**	**137.0**	**436.7**	**720.7**

Stats based on 3 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 40 MPH.

La Cienega Corridor

4:30 PM - 6:30 PM - Northbound

Wednesday - 4/14/2010

Study Name **: 10-5147 NB PM**
Study Date **: 4/20/2010**
Page No. **: 3**

Overall Output Statistics

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	FLORENCE							
2	5740	CENTINELA	297.0	4.5	13.2	199.0	110.3	259.8	294.3
3	7946	STOCKER	119.5	0.3	45.3	0.0	3.3	19.3	97.0
4	7880	RODEO	129.5	0.8	41.5	6.0	3.3	39.8	103.3
5	3112	FAIRFAX	177.8	1.5	11.9	124.5	70.0	174.8	177.8
6	3563	CADILLAC	162.0	2.3	15.0	101.0	54.5	147.3	162.0
7	934	GUTHRIE	36.8	0.8	17.3	20.5	3.0	36.5	36.8
8	842	SAWYER	22.8	0.0	25.2	8.5	0.0	22.3	22.3
Total	**30,017**		**945.3**	**10.0**	**21.7**	**459.5**	**244.3**	**699.5**	**893.3**

Stats based on 4 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 40 MPH.

La Cienega Corridor

7:00 AM - 9:00 AM - Southbound

Wednesday - 4/14/2010

Overall Output Statistics

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	SAWYER							
2	901	GUTHRIE	64.7	1.0	9.5	49.0	24.7	64.7	64.7
3	945	CADILLAC	61.0	1.3	10.6	45.0	21.0	61.0	61.0
4	3562	FAIRFAX	158.3	1.7	15.3	97.3	60.7	143.7	158.3
5	3050	RODEO	128.0	2.0	16.2	75.0	41.7	109.0	128.0
6	7953	STOCKER	105.3	0.0	51.5	0.0	0.0	0.0	79.3
7	7933	CENTINELA	158.3	1.3	34.2	23.0	9.7	74.3	147.0
8	5657	FLORENCE	210.0	2.0	18.4	113.0	66.0	155.0	209.3
Total	**30,001**		**885.7**	**9.3**	**23.1**	**402.3**	**223.7**	**607.7**	**847.7**

Stats based on 3 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 40 MPH.

La Cienega Corridor

11:00 AM - 1:00 PM - Southbound

Wednesday - 4/14/2010

Study Name **: 10-5147 MD SB**
Study Date **: 4/20/2010**
Page No. **: 3**

Overall Output Statistics

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	SAWYER							
2	899	GUTHRIE	73.8	2.0	8.3	58.5	21.0	73.8	73.8
3	946	CADILLAC	59.0	0.8	10.9	42.5	18.0	59.0	59.0
4	3587	FAIRFAX	233.8	4.0	10.5	172.5	91.5	217.0	233.8
5	3077	RODEO	186.3	3.0	11.3	133.8	59.0	173.3	186.3
6	7921	STOCKER	107.5	0.0	50.2	0.0	0.0	1.8	88.8
7	7909	CENTINELA	107.5	0.0	50.2	0.0	0.0	7.3	73.5
8	5736	FLORENCE	106.3	0.0	36.8	10.3	0.0	33.5	103.5
Total	**30,075**		**874.0**	**9.8**	**23.5**	**417.5**	**189.5**	**565.5**	**818.5**

Stats based on 4 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 40 MPH.

La Cienega Corridor

4:30 PM - 6:30 PM - Southbound

Wednesday - 4/14/2010

Study Name **: 10-5147 PM SB**
Study Date **: 4/20/2010**
Page No. **: 3**

Overall Output Statistics

Node #	Length	Node	Travel Time	# of Stops	Avg Speed	Total Delay	Time <= 0 MPH	Time <= 35 MPH	Time <= 55 MPH
1	0	SAWYER							
2	901	GUTHRIE	92.3	2.5	6.7	76.8	29.5	92.3	92.3
3	952	CADILLAC	75.0	1.0	8.7	58.8	29.3	75.0	75.0
4	3569	FAIRFAX	200.3	3.0	12.2	139.3	62.5	200.3	200.3
5	3108	RODEO	170.0	2.3	12.5	116.3	63.5	160.8	170.0
6	7904	STOCKER	108.3	0.0	49.8	0.0	0.0	3.0	88.3
7	7912	CENTINELA	302.5	5.8	17.8	167.5	58.3	239.0	281.0
8	5772	FLORENCE	246.5	3.0	16.0	148.5	87.8	194.5	244.5
Total	**30,118**		**1194.8**	**17.5**	**17.2**	**707.0**	**330.8**	**964.8**	**1151.3**

Stats based on 4 BEFORE runs.
Stops based on a Stop Speed of 5 MPH.
Total Delay based on a Normal Speed of 40 MPH.

APPENDIX D: PUBLIC OUTREACH SUMMARY

THE ROBERT GROUP

Date: 8/31/10 5:34 PM

To: Michael Meyer, Iteris

From: Chris Robert, The Robert Group
Ginny Brideau, The Robert Group

RE: Southern California Association of Governments
La Cienega Boulevard Corridor Project Wrap Up

Introduction

The Southern California Association of Governments (SCAG), in coordination with Los Angeles County and the Cities of Culver City, Inglewood and Los Angeles, has initiated a study identifying ways to improve traffic flow on La Cienega Boulevard and lessen the impact of regional traffic on local residents. The project study area includes the La Cienega Boulevard corridor between the San Diego (I-405) and Santa Monica (I-10) Freeways, and incorporates Fairfax Avenue from Venice to La Cienega Boulevards.

The study has identified potential locations for improvement strategies to improve traffic flow, such as medians, additional turn lanes, and enhanced traffic signal coordination. The study examined potential intersections that would benefit from the construction of an overpass or underpass for through traffic on La Cienega Boulevard.

Two rounds of two community meetings were hosted in the project study area to discuss the purpose of the study and review potential improvement alternatives with the community. The initial round of meetings took place on Monday, March 29, 2010, at 6 p.m. at Inglewood City Hall in the Community Room, One Manchester Boulevard in Inglewood, and Tuesday, March 30, 2010 at 6 p.m. at the Baha'i Center, 5755 Rodeo Road in Los Angeles. The second round of meetings took place on Wednesday, June 16, 2010 at 6 p.m. at the Baha'i Center, and Thursday, July 1, 2010 at 7 p.m. at Inglewood City Hall in the Community Room.

Outreach Activities

The community was alerted to the study and community meetings through email notification, direct canvassing, media notices, and calendar postings. A stakeholder database was developed shortly after the project was initiated. The database included state and local officials, homeowner, resident, property and business organizations, and local media outlets. Direct canvassing prior to the initial round of meetings was completed on Blackwelder Street, in Baldwin Hills and the Inglewood portion of the project study area. Information generated from direct canvassing was added to the stakeholder list prior to the second round of meetings. By the conclusion of the project, the stakeholder list contained over 350 individuals and organizations.

Electronic notifications regarding meetings and project website updates were distributed. Meeting notifications were distributed two weeks and one week prior to meetings. The project website included meeting notices and copies of presentations. The project website update email was distributed May 2010, alerting the community to the availability of the meeting presentation and opportunity to comment on the study.

In addition to the electronic notification, a media notification was distributed prior to each round of community meetings. Follow-up phone calls to local media netted calendar item placement and encouraged writers to attend the community meetings to interview project representatives.

Meeting flyers were distributed to Inglewood City Hall, and Inglewood Public Library. This was in addition to the notices distributed to Culver City Hall, and other venues and points of interest located around the project study area.

Summary of Initial Round of Meetings

Over 50 people attended the March 2010 meetings (29 people attended the City of Inglewood meeting, and 24 attended the Baha'i Center meeting). Over 15 people provided verbal comments on the project, and three people turned in written comment. Email Distribution took place on March 12th and 22nd.

SCAG distributed a media release on March 23rd. TRG redistributed meeting notices to the following media outlets that serve the City of Inglewood on March 12th and 22nd. TRG requested our meeting announcement be added to the community calendar section of the newspapers:

- California Crusader
- Daily Breeze
- Inglewood Today
- Los Angeles Sentinel
- Los Angeles Watts Times
- Los Angeles Wave
- Our Weekly

The Los Angeles Watts Times announced the meeting in the March 25th publication. Additionally, a reporter with The Wave attended the March 30th meeting at the Baha'i Center (and subsequently wrote an article on the project). The Los Angeles Wave and LAist covered the project. Copies of media coverage are available in the appendix. In addition to the print media, the online media was notified of the community meetings. This included LAist.com and Curbedla.com.

City of Inglewood Council members Judy Dunlap and Daniel Tabor attended and spoke at the meeting in Inglewood. Representatives from the Office of Supervisor Mark Ridley-Thomas attended both meetings. A representative from the office of Los Angeles City Councilman Herb Wesson attended the Baha'i Center meeting.

Representatives from the following organizations attended the meeting:

- Baldwin Hills Conservancy
- Baldwin Hills Homeowners Association
- Baldwin Hills Village Gardens Homeowners Association
- City of Inglewood
- Ladera Heights Civic Association
- Los Angeles County Parks Department
- PICO Neighborhood Council

During the question and answer sessions, there were voices of support for the project, and repeated requests to keep the community updated on the progress of the study. A number of residents discussed the current state of La Cienega Boulevard and their experience with traffic congestion. At each meeting, residents spoke in support of identifying a range of potential improvements that could be implemented quickly rather than one large project and waiting for a large funding package. A shared concern at both meetings involved ensuring coordination between the Cities of Inglewood, Culver City, and Los Angeles.

City of Inglewood residents were interested in receiving more information regarding the mitigations efforts for the Playa Vista development. In addition, residents did not support any changes to the intersection of Fairview at La Cienega Boulevards that would remove direct access to residents or local traffic.

Residents of Baldwin Hills requested that homeowners be notified once construction begins. They would like Soundwalls constructed prior to any street construction. There are concerns regarding the noise generated during construction, and would want mitigations put into place to help ensure their quality of life.

There was support for implementing an Intelligent Transportation System (ITS), in order to provide immediate traffic relief. One speaker spoke against any reversible lane proposals. There was one request to institute improvements on Sepulveda Boulevard rather than La Cienega Boulevard.

There were concerns from the Baldwin Hills residents that the project would be used to increase capacity of La Cienega Boulevard. Residents want to be sure to maintain local access from La Cienega Boulevard to their properties. They would also like to find out if the project would require any additional land, or if any homes would need to be relocated.

The Baldwin Hills Conservancy submitted a written request a meeting with SCAG to discuss their vision for connecting the east and west side of the Kenneth Hahn Park, and nearby parklands. The meeting took place April 14, 2010 with Executive Director David McNeill.

Summary of Second Round of Community Meetings

The second round of meetings took place on Wednesday, June 16, 2010 at 6 p.m. at the Baha'i Center, and Thursday, July 1, 2010 at 7 p.m. at Inglewood City Hall in the Community Room. The meeting notification process was identical to the initial round of meetings, with the exception of the canvassing of Blackwelder Street, and distribution to local libraries. Meeting notifications were distributed to businesses along Blackwelder via fax and email, which were collected during the initial canvassing of the area. Information was distributed to area libraries, community and senior centers via email and fax, based on information collected during the initial canvassing of the area.

The stakeholder list was updated to include meeting attendees from the initial round of community meetings, and additional outreach was conducted to the local media outlets that had shown interest in the project. Electronic meeting notifications were distributed on June 8, 17, and 23, 2010. The media notice was distributed to print and online media outlets on the same dates. TRG requested our meeting announcement be added to the community calendar section of the newspapers.

Representatives from the following organizations attended the meeting:

- Baha'i Center
- Baldwin Hills Homeowners Association
- Baldwin Hills Village Gardens Homeowners Association
- City of Culver City
- City of Inglewood
- East Ellis Neighborhood Association
- Empowerment Congress West Area
- Ladera Heights Civic Association
- United Neighborhoods Neighborhood Council

During the question and answer sessions, there were voices of support for the project, and repeated requests to keep the community updated on the progress of the study. There was support for implementing an Intelligent Transportation System (ITS), in order to provide immediate traffic relief. Many wanted more information regarding next steps and the responsibilities of each jurisdiction as the study moved forward.

City of Inglewood residents were supportive of grade separation opportunities, and did not support any changes to the intersection of Fairview at La Cienega Boulevards that would remove direct access to residents or local traffic. Access to local businesses such as the Pann's Restaurant was also a concern. Councilwoman Dunlap had multiple questions about the funding for the next phase of the project, SCAG participation and additional opportunities for community participation as the project moves forward.

A Blackwelder Street business owner spoke in support of the project moving forward, and hopes Culver City and the City of Los Angeles use the opportunity to fix the streets and alleys that have encouraged the cut-through traffic into residential areas.

There were concerns from the Baldwin Hills residents that the project would be used to increase capacity of La Cienega Boulevard, or create an expressway from Interstates 10 to the 405. Several people expressed the desire to keep longer-distance traffic on the freeways and to not provide them with a convenient short cut through the hills. Residents want to be sure to maintain local access from La Cienega Boulevard to their properties.

Overall, residents of Baldwin Hills do not support grade separations through the northern portion of the study area. There were no strong feelings expressed either for or against a grade separation at Stocker Street. There are concerns regarding the noise generated during construction, and residents would want mitigations put into place to help ensure their quality of life. In addition to the construction of the Metro Expo Light Rail Transit (LRT) line, they are feeling caught in the middle of a tremendous amount of construction, redevelopment, increased density and traffic congestion.

The Baldwin Hills and Baldwin Hills Village Gardens Homeowners Associations requested additional copies of the presentation for their members. The copies have been delivered.

In general, there was support amongst most of the public for median island and streetscape improvements between Rodeo Road and the I-10 freeway and opposition to grade separations at Rodeo road and the Fairfax/La Cienega intersection. Many expressed support for the concepts that would improve walkability and bicycle access to the Metro Expo LRT station. There was also support for off-street bicycle and pedestrian connections over the Baldwin Hills.

Several comments were received from members of the public who had visited the project website and reviewed posted materials. Some related to comments on the Existing Conditions Report as well as support for non-motorized improvements in the La Cienega Corridor. There was also an email comment in opposition to grade separations in residential areas.

The Empowerment Congress Neighborhood Council requested a presentation, which was provided on Saturday, July 10, 2010. Following the presentation, the Council voiced support for the recommendation of no grade separations at Rodeo Road or areas to the north. They also expressed strong support for non-motorized modes and concerns about environmental issues and health concerns along major highways. A letter was received from the Council expressing these concerns.

Next Step Recommendations

As the plan moves forward to towards its next phase, it is important to sustain the interest generated from the community. We recommend the following to accomplish this:

- Further engagement of local media by meeting with editorial teams.
- Encourage each jurisdiction to provide a quarterly update to key stakeholder organizations.
- Continued engagement with the Baldwin Hills Conservancy as they implement new master plans.

APPENDIX E: COST ESTIMATES

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 1 Access ControlImprovements

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14		$ -
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214		$ -
	Storm Drain	RF	$ 223		$ -
	Utility Relocation Allowance	RF	$ 318		$ -
Roadway Elements	Curb & Gutter Removal	LF	$ 23		$ -
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572		$ -
	Intersection Extra Work	EA	$ 90,000		$ -
	Street Lighting Replacement	LF	$ 237		$ -
	Median Island	LF	$ 271	5280	$ 1,430,880
	Landscaping Medium	LF	$ 423	5280	$ 2,233,440
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000		$ -
	Intersection Lighting	EA	$ 60,000		$ -
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 3,664,320
Design (20%)					$ 732,864
Contingency (25%)					$ 916,080
Right of Way					
Project Total					$ 5,313,264

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 1 ITS Improvements

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14		$ -
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214		$ -
	Storm Drain	RF	$ 223		$ -
	Utility Relocation Allowance	RF	$ 318		$ -
Roadway Elements	Curb & Gutter Removal	LF	$ 23		$ -
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572		$ -
	Intersection Extra Work	EA	$ 90,000		$ -
	Street Lighting Replacement	LF	$ 237		$ -
	Median Island	LF	$ 271		$ -
	Landscaping Medium	LF	$ 423		$ -
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	5	$ 1,500,000
	Intersection Lighting	EA	$ 60,000		$ -
	Fiber Optic Interconnect	LF	$ 45	7920	$ 356,400
	CCTV at Intersections	EA Int.	$ 100,000	5	$ 500,000
	Variable Message Signs	EA	$ 250,000	2	$ 500,000
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 2,856,400
Design (20%)					$ 571,280
Contingency (25%)					$ 714,100
Right of Way					
Project Total					$ 4,141,780

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 1 La Cienega Depressed Frontage Roads Centinela to Firview

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14	4500	$ 63,000
	Sidewalk Removal	LF	$ 49	4500	$ 220,500
	St Pavement Removal (48')	LF	$ 214	4000	$ 856,000
	Storm Drain	RF	$ 223	2000	$ 446,000
	Utility Relocation Allowance	RF	$ 318	2000	$ 636,000
Roadway Elements	Curb & Gutter	LF	$ 23	8500	$ 195,500
	Sidewalk	LF	$ 93	4500	$ 418,500
	Street Reconstruction (48')	LF	$ 572	5000	$ 2,860,000
	Intersection Extra Work	EA	$ 90,000	3	$ 270,000
	Street Lighting Replacement	LF	$ 237	4000	$ 948,000
	Median Island	LF	$ 271	500	$ 135,500
	Landscaping Medium	LF	$ 423		$ -
	Sidewalk Planter	LF	$ 122	4000	$ 488,000
	Traffic Signals	EA	$ 300,000	3	$ 900,000
	Intersection Lighting	EA	$ 60,000	3	$ 180,000
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700	2000	$ 47,400,000
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 56,017,000
Design (20%)					$ 11,203,400
Contingency (25%)					$ 14,004,250
Right of Way					
Project Total					$ 81,224,650

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 1 La Cienega Underpass with ramps to Centinela

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14	4900	$ 68,600
	Sidewalk Removal	LF	$ 49	4900	$ 240,100
	St Pavement Removal (48')	LF	$ 214	4400	$ 941,600
	Storm Drain	RF	$ 223	2400	$ 535,200
	Utility Relocation Allowance	RF	$ 318	2400	$ 763,200
Roadway Elements	Curb & Gutter	LF	$ 23	8900	$ 204,700
	Sidewalk	LF	$ 93	4900	$ 455,700
	Street Reconstruction (48')	LF	$ 572	3000	$ 1,716,000
	Intersection Extra Work	EA	$ 90,000	1	$ 90,000
	Street Lighting Replacement	LF	$ 237	4900	$ 1,161,300
	Median Island	LF	$ 271		$ -
	Landscaping Medium	LF	$ 423		$ -
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	1	$ 300,000
	Intersection Lighting	EA	$ 60,000	2	$ 120,000
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500	250	$ 7,125,000
	Roadway in Retained Cut	RF	$ 23,700	2400	$ 56,880,000
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 70,601,400
Design (20%)					$ 14,120,280
Contingency (25%)					$ 17,650,350
Right of Way					$ 5,000,000
Project Total					$ 107,372,030

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 2 ITS Improvements

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14		$ -
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214		$ -
	Storm Drain	RF	$ 223		$ -
	Utility Relocation Allowance	RF	$ 318		$ -
Roadway Elements	Curb & Gutter Removal	LF	$ 23		$ -
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572		$ -
	Intersection Extra Work	EA	$ 90,000		$ -
	Street Lighting Replacement	LF	$ 237		$ -
	Median Island	LF	$ 271		$ -
	Landscaping Medium	LF	$ 423		$ -
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	1	$ 300,000
	Intersection Lighting	EA	$ 60,000		$ -
	Fiber Optic Interconnect	LF	$ 45	15840	$ 712,800
	CCTV at Intersections	EA Int.	$ 100,000	1	$ 100,000
	Variable Message Signs	EA	$ 250,000	6	$ 1,500,000
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 2,612,800
Design (20%)					$ 522,560
Contingency (25%)					$ 653,200
Right of Way					
Project Total					$ 3,788,560

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 2 Northbound La Cienega Depressed Below Stocker

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14	1000	$ 14,000
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214	1000	$ 214,000
	Storm Drain	RF	$ 223	1000	$ 223,000
	Utility Relocation Allowance	RF	$ 318	1000	$ 318,000
Roadway Elements	Curb & Gutter	LF	$ 23	100	$ 2,300
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572	1000	$ 572,000
	Intersection Extra Work	EA	$ 90,000	1	$ 90,000
	Street Lighting Replacement	LF	$ 237	1000	$ 237,000
	Median Island	LF	$ 271		$ -
	Landscaping Medium	LF	$ 423		$ -
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	1	$ 300,000
	Intersection Lighting	EA	$ 60,000	1	$ 60,000
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700	1000	$ 23,700,000
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 25,730,300
Design (20%)					$ 5,146,060
Contingency (25%)					$ 6,432,575
Right of Way					
Project Total					$ 37,308,935

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 2 Stocker Elevated with Half Diamond

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14	1200	$ 16,800
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214	1200	$ 256,800
	Storm Drain	RF	$ 223	1200	$ 267,600
	Utility Relocation Allowance	RF	$ 318	1200	$ 381,600
Roadway Elements	Curb & Gutter	LF	$ 23	2400	$ 55,200
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572	1200	$ 686,400
	Intersection Extra Work	EA	$ 90,000	1	$ 90,000
	Street Lighting Replacement	LF	$ 237	1200	$ 284,400
	Median Island	LF	$ 271		$ -
	Landscaping Medium	LF	$ 423		$ -
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	1	$ 300,000
	Intersection Lighting	EA	$ 60,000	1	$ 60,000
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500	100	$ 2,850,000
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500	1200	$ 13,800,000
Construction Cost Subtotal					$ 19,048,800
Design (20%)					$ 3,809,760
Contingency (25%)					$ 4,762,200
Right of Way					
Project Total					$ 27,620,760

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 3 Access ControlImprovements

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14		$ -
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214		$ -
	Storm Drain	RF	$ 223		$ -
	Utility Relocation Allowance	RF	$ 318		$ -
Roadway Elements	Curb & Gutter Removal	LF	$ 23		$ -
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572		$ -
	Intersection Extra Work	EA	$ 90,000		$ -
	Street Lighting Replacement	LF	$ 237		$ -
	Median Island	LF	$ 271	5280	$ 1,430,880
	Landscaping Medium	LF	$ 423	5280	$ 2,233,440
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000		$ -
	Intersection Lighting	EA	$ 60,000		$ -
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 3,664,320
Design (20%)					$ 732,864
Contingency (25%)					$ 916,080
Right of Way					
Project Total					$ 5,313,264

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 3 ITS Improvements

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14		$ -
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214		$ -
	Storm Drain	RF	$ 223		$ -
	Utility Relocation Allowance	RF	$ 318		$ -
Roadway Elements	Curb & Gutter Removal	LF	$ 23		$ -
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572		$ -
	Intersection Extra Work	EA	$ 90,000		$ -
	Street Lighting Replacement	LF	$ 237		$ -
	Median Island	LF	$ 271		$ -
	Landscaping Medium	LF	$ 423		$ -
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	4	$ 1,200,000
	Intersection Lighting	EA	$ 60,000		$ -
	Fiber Optic Interconnect	LF	$ 45	3960	$ 178,200
	CCTV at Intersections	EA Int.	$ 100,000	4	$ 400,000
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 1,778,200
Design (20%)					$ 355,640
Contingency (25%)					$ 444,550
Right of Way					
Project Total					$ 2,578,390

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 3 La Cienega Elevated over Rodeo

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14		$ -
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214	1300	$ 278,200
	Storm Drain	RF	$ 223	1300	$ 289,900
	Utility Relocation Allowance	RF	$ 318	1300	$ 413,400
Roadway Elements	Curb & Gutter	LF	$ 23	400	$ 9,200
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572	1300	$ 743,600
	Intersection Extra Work	EA	$ 90,000	1	$ 90,000
	Street Lighting Replacement	LF	$ 237	1300	$ 308,100
	Median Island	LF	$ 271	400	$ 108,400
	Landscaping Medium	LF	$ 423	400	$ 169,200
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	1	$ 300,000
	Intersection Lighting	EA	$ 60,000	1	$ 60,000
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500	500	$ 14,250,000
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500	800	$ 9,200,000
Construction Cost Subtotal					$ 26,220,000
Design (20%)					$ 5,244,000
Contingency (25%)					$ 6,555,000
Right of Way					
Project Total					$ 38,019,000

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 3 RTO lane NB Fairfax at Venice

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14	250	$ 3,500
	Sidewalk Removal	LF	$ 49	250	$ 12,250
	St Pavement Removal (48')	LF	$ 214		$ -
	Storm Drain	RF	$ 223	250	$ 55,750
	Utility Relocation Allowance	RF	$ 318	250	$ 79,500
Roadway Elements	Curb & Gutter	LF	$ 23	250	$ 5,750
	Sidewalk	LF	$ 93	250	$ 23,250
	Street Reconstruction (48')	LF	$ 572	60	$ 34,320
	Intersection Extra Work	EA	$ 90,000	1	$ 90,000
	Street Lighting Replacement	LF	$ 237	200	$ 47,400
	Median Island	LF	$ 271		$ -
	Landscaping Medium	LF	$ 423		$ -
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	1	$ 300,000
	Intersection Lighting	EA	$ 60,000	1	$ 60,000
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 711,720
Design (20%)					$ 142,344
Contingency (25%)					$ 177,930
Right of Way					
Project Total					$ 1,031,994

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 3 Southobound Fairfax Flyover La Cienega

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14		$ -
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214	600	$ 128,400
	Storm Drain	RF	$ 223		$ -
	Utility Relocation Allowance	RF	$ 318	1200	$ 381,600
Roadway Elements	Curb & Gutter	LF	$ 23		$ -
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572	600	$ 343,200
	Intersection Extra Work	EA	$ 90,000	1	$ 90,000
	Street Lighting Replacement	LF	$ 237	1200	$ 284,400
	Median Island	LF	$ 271	600	$ 162,600
	Landscaping Medium	LF	$ 423	600	$ 253,800
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	1	$ 300,000
	Intersection Lighting	EA	$ 60,000	1	$ 60,000
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500	60	$ 1,710,000
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500	800	$ 9,200,000
Construction Cost Subtotal					$ 12,914,000
Design (20%)					$ 2,582,800
Contingency (25%)					$ 3,228,500
Right of Way					
Project Total					$ 18,725,300

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 3 Triple left SB Fairfax at La Cienega

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14	150	$ 2,100
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214	100	$ 21,400
	Storm Drain	RF	$ 223		$ -
	Utility Relocation Allowance	RF	$ 318	120	$ 38,160
Roadway Elements	Curb & Gutter	LF	$ 23		$ -
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572	100	$ 57,200
	Intersection Extra Work	EA	$ 90,000	1	$ 90,000
	Street Lighting Replacement	LF	$ 237		$ -
	Median Island	LF	$ 271	250	$ 67,750
	Landscaping Medium	LF	$ 423	250	$ 105,750
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	1	$ 300,000
	Intersection Lighting	EA	$ 60,000	1	$ 60,000
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 742,360
Design (20%)					$ 148,472
Contingency (25%)					$ 185,590
Right of Way					
Project Total					$ 1,076,422

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 4 Access ControlImprovements

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14		$ -
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214		$ -
	Storm Drain	RF	$ 223		$ -
	Utility Relocation Allowance	RF	$ 318		$ -
Roadway Elements	Curb & Gutter Removal	LF	$ 23		$ -
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572		$ -
	Intersection Extra Work	EA	$ 90,000		$ -
	Street Lighting Replacement	LF	$ 237		$ -
	Median Island	LF	$ 271	2640	$ 715,440
	Landscaping Medium	LF	$ 423	2640	$ 1,116,720
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000		$ -
	Intersection Lighting	EA	$ 60,000		$ -
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 1,832,160
Design (20%)					$ 366,432
Contingency (25%)					$ 458,040
Right of Way					
Project Total					$ 2,656,632

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 4 ITS Improvements

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14		$ -
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214		$ -
	Storm Drain	RF	$ 223		$ -
	Utility Relocation Allowance	RF	$ 318		$ -
Roadway Elements	Curb & Gutter Removal	LF	$ 23		$ -
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572		$ -
	Intersection Extra Work	EA	$ 90,000		$ -
	Street Lighting Replacement	LF	$ 237		$ -
	Median Island	LF	$ 271		$ -
	Landscaping Medium	LF	$ 423		$ -
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	2	$ 600,000
	Intersection Lighting	EA	$ 60,000		$ -
	Fiber Optic Interconnect	LF	$ 45	2640	$ 118,800
	CCTV at Intersections	EA Int.	$ 100,000	2	$ 200,000
	Variable Message Signs	EA	$ 250,000	2	$ 500,000
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 1,418,800
Design (20%)					$ 283,760
Contingency (25%)					$ 354,700
Right of Way					
Project Total					$ 2,057,260

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 5 Access ControlImprovements

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14		$ -
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214		$ -
	Storm Drain	RF	$ 223		$ -
	Utility Relocation Allowance	RF	$ 318		$ -
Roadway Elements	Curb & Gutter Removal	LF	$ 23		$ -
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572		$ -
	Intersection Extra Work	EA	$ 90,000		$ -
	Street Lighting Replacement	LF	$ 237		$ -
	Median Island	LF	$ 271	2640	$ 715,440
	Landscaping Medium	LF	$ 423	2640	$ 1,116,720
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000		$ -
	Intersection Lighting	EA	$ 60,000		$ -
	Fiber Optic Interconnect	LF	$ 45		$ -
	CCTV at Intersections	EA Int.	$ 100,000		$ -
	Variable Message Signs	EA	$ 250,000		$ -
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 1,832,160
Design (20%)					$ 366,432
Contingency (25%)					$ 458,040
Right of Way					
Project Total					$ 2,656,632

LA Cienega Corridor Study Improvement Alternative Cost Estimates
2010 $
Segment 5 ITS Improvements

General Description	Items	Unit	Unit Cost	Quantity	Cost
Sitework	Curb & Gutter Removal	LF	$ 14		$ -
	Sidewalk Removal	LF	$ 49		$ -
	St Pavement Removal (48')	LF	$ 214		$ -
	Storm Drain	RF	$ 223		$ -
	Utility Relocation Allowance	RF	$ 318		$ -
Roadway Elements	Curb & Gutter Removal	LF	$ 23		$ -
	Sidewalk	LF	$ 93		$ -
	Street Reconstruction (48')	LF	$ 572		$ -
	Intersection Extra Work	EA	$ 90,000		$ -
	Street Lighting Replacement	LF	$ 237		$ -
	Median Island	LF	$ 271		$ -
	Landscaping Medium	LF	$ 423		$ -
	Sidewalk Planter	LF	$ 122		$ -
	Traffic Signals	EA	$ 300,000	2	$ 600,000
	Intersection Lighting	EA	$ 60,000		$ -
	Fiber Optic Interconnect	LF	$ 45	2640	$ 118,800
	CCTV at Intersections	EA Int.	$ 100,000	2	$ 200,000
	Variable Message Signs	EA	$ 250,000	2	$ 500,000
Grade Crossings	Underpass	RF	$ 135,000		$ -
	Overpass	RF	$ 28,500		$ -
	Roadway in Retained Cut	RF	$ 23,700		$ -
	Roadway in Retained Fill	RF	$ 11,500		$ -
Construction Cost Subtotal					$ 1,418,800
Design (20%)					$ 283,760
Contingency (25%)					$ 354,700
Right of Way					
Project Total					$ 2,057,260